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Australian Energy Market Commission  
PO Box A2449  
SYDNEY SOUTH NSW 1235

Submission by e-mail to:  
submissions@aemc.gov.au

Dear Dr Tamblyn

**Ramp rates, Market Ancillary Service offers, and Dispatch Inflexibility Draft Rule Determination**

Thank you for the opportunity to comment further on this Rule change proposal made by the AER. This is a joint submission by Hydro Tasmania, AGL, and Snowy Hydro (the Group).

The Group supports the need for minimum ramp rates. The key issue of contention is the level of minimum down rates. We believe that setting the level of minimum down ramp rates is a balance between system security concerns and addressing the commercial driver of generators to maintain output at times of transmission constraints.

It is important that it is recognized that this rule imposes a system security constraint on the market operation of generators. It is therefore important that the impost is equitably shared between the impacted generators.

We also note that this rule change was proposed by the AER as a result of large thermal generators using low ramp down rates to maintain their output at times of transmission constraints leading to a system security issue. It is therefore surprising that these larger generators now receive a relatively more favourable outcome under the Draft Determination to the direct detriment of smaller generators.

The Group would like to raise two issues and propose changes. The first issue is the minimum ramp down rate threshold of the lower of 3MW or 3% of registered capacity. The second issue is the requirement being based on registered capacity of individual generator units and how this adversely impacts on aggregated generator units.

**Issue 1 - The threshold of the lower of 3MW/minute or 3% of registered capacity**

The Group considers that the Draft Rule Determination 3.8.3A(b)(1)(ii) disadvantages smaller generator units without providing a justifiable benefit to system security.

The Group believes that this is inequitable and also inefficient as larger generator units are generally more efficient at ramping. Hence this places a disproportionately higher obligation on smaller generators to provide more of the ramp down capability. Such an outcome would increase the wear and tear of these plants to the long term detriment of system security and reliability. In the long term consumers are disadvantaged under the Draft Determination position.

The Group made a presentation to the AEMC illustrating the disproportional ramp down obligations depending on generator size. We request that the Commission consider our presentation to the AEMC on the 19 November 2008 as an integral part of this submission.

In the presentation we provided a simple example which is worth repeating here:

Two competitors behind a binding constraint.

Competitor A has 1 generator unit of 600MW, Competitor B has 10 times 60MW units total of 600MW (Both the same overall capacity)

Ramp down obligations:

Competitor A = 3MW/minute

Competitor B (3%) = 2MW/minute

Resultant reduction in dispatch (for the next 5 minute dispatch interval):

Competitor A = 3MW \* 5 minutes = -15 MW

Competitor B = 10 units \* 2MW \* 5 minutes = -100MW

Difference in dispatch = **85 MW**

If the Spot price was \$10,000 for the dispatch period, Competitor B is disadvantaged by over \$70,000 per dispatch interval.

The simplified example highlights the inequity in the draft determination position of the lower of 3MW or 3% of registered capacity.

To resolve this issue the Group recommends the threshold be changed to the lower of 3MW/minute or **0.5%** for both individual and aggregated generator units.

## **Issue 2 – the threshold is based on registered capacity and how this adversely impacts aggregate generator units**

The Draft Rule does not consider the legitimate efficiency reasons for using aggregate generator units.

Aggregated generator units are an efficient mechanism to allocate generation to multiple generator units that share a common fuel resource. NEMMCO have had no operational or market related issues with the use of aggregated generator units.

As highlighted in the Group's presentation to the AEMC, the generation from individual generators in the aggregate group is dynamic and depends on optimisation of all the individual units in the aggregate group. For any given dispatch target for the aggregate generator unit, all individual generator units in the group may be providing 0 to 100% of its individual unit capacity to meet the overall target dispatch for the aggregate group.

To illustrate our concern, we use the following example.

The Murray aggregate generator has 14 units for a total aggregated capacity of 1500MW.

The Murray aggregated generator receives a dispatch target for the next dispatch interval of 14MW. This target can be provided by any combination output of the 14 individual generator units. Snowy Hydro dispatch optimisation program dispatches each of the 14 units at 1MW each to provide the target dispatch of 14MW for the next 5 minutes. If the draft determination were to hold then the aggregate generator unit may have to ramp down by 45 MW/minute (ie. 3% \* 1500MW). It is clear from this example that ramp down obligation for an aggregate generator unit based on 3% of the registered capacity of individual generator units in an aggregate group is unworkable and inefficient and would perversely negate the efficiency gains from using aggregate generator units in the first place.

To resolve this issue the Group recommends the threshold be changed from registered capacity to **available capacity**. This ensures in an aggregate generator unit that the ramp down obligation is limited to only the units that are available. A ramp down rate based on available capacity also makes sense for individual generator units whose output may be derated due to technical issues.

### **Proposed Change to the Draft Rule Determination**

In order to preserve neutrality with different generator size and preserve the efficiency of using aggregate generator units the Group proposes that 3.8.3A(b)(1)(ii) be altered as follows:

“The lower of 3MW/minute or 0.5% of the *available capacity* in the case of a *scheduled generating unit* .....with a lower bound of 1MW/minute”

Insert an additional clause (iii)

“0.5% of the *available capacity* in the case of Aggregate Generator units.....with a lower bound of 1MW/minute”

In the proposed solution the minimum ramp down rate for all aggregated generator units is set at 0.5% of the available capacity of the aggregated generator. Using the Murray aggregated generator as an example, if the available capacity is 1500MW, then the ramp down rate is  $1500 \text{ MW} * 0.5\% = 7.5 \text{ MW / minute}$

Under the proposed percentage of 0.5%, the Group proposes a lower bound for each generator unit or aggregated generator unit to provide at least 1MW/minute.

If the AEMC deems that this ramp rate capability is insufficient then the Group suggests that **both** the 3MW and 0.5% be proportionally increased to an acceptable level. This proportional increase maintains the equity for all generation plant of different sizes.

Market Participants have not seen any data to confirm or reject whether the Group’s position would be sufficient to meet NEMMCO’s general system security requirements. The Group believes that any final decision on the relevant thresholds must be based on verifiable data to meet good regulatory practice.

The Group has analysed offered down ramp rates from generators from the period 01/01/06 to 01/12/08. This is presented in figure 1 below:

<b>ROC DOWN</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Mode</b>
BW01	0	10	4	4
BW02	0	10	4	4
BW03	0	10	4	4
BW04	1	10	4	4
LD01	0	10	3	3
LD02	0	10	3	3
LD03	0	10	3	3
LD04	0	20	3	3
ER01	1	20	9	10
ER02	1	10	9	10
ER03	1	66	10	10
ER04	1	20	10	10
REDBANK1	1	1	1	1
SITHE01	3	3	3	3
MP1	0	10	5	5
MP2	0	10	5	5
MM3	0	8	2	2
MM4	0	10	2	2
VP5	0	20	5	5
VP6	0	10	5	5
WW7	0	6	2	2
WW8	0	6	2	2
LYA1	2	10	7	5
LYA2	0	20	7	5
LYA3	1	10	10	10
LYA4	1	100	10	10
LOYYB1	0	10	10	10
LOYYB2	0	10	10	10
YWPS1	0	4	1	1
YWPS2	0	3	1	1
YWPS3	0	4	1	1
YWPS4	0	4	1	1
HWPS1	0	3	2	2
HWPS2	1	2	2	2
HWPS3	0	5	2	2
HWPS4	0	2	2	2
HWPS5	2	2	2	2
HWPS6	0	2	2	2
HWPS7	1	2	2	2
HWPS8	0	5	1	1
STAN-1	1	7	3	3
STAN-2	1	10	3	3
STAN-3	0	6	3	3
STAN-4	1	7	3	3
GSTONE1	1	10	8	10
GSTONE2	1	15	8	10
GSTONE3	1	10	8	10
GSTONE4	1	10	8	10
GSTONE5	0	10	8	10
GSTONE6	0	20	8	10
TARONG#1	1	4	4	4
TARONG#2	0	10	4	4
TARONG#3	1	10	4	4
TARONG#4	1	4	4	4
CPP_3	2	10	10	10
CPP_4	4	10	10	10
MPP_1	1	5	2	2
MPP_2	1	5	2	2

Figure 1: Offered ramp down rates from thermal generators from 01/01/06 to 01/12/08.

From figure 1, the evidence suggests that the mean offered down ramp rates for most of the larger thermal generators (in excess of 300MW) have been in excess of 3MW/minute. Further to this, the Max offered down ramp rates for nearly all of the thermal generators have been well in excess of 3MW/minute. The evidence strongly supports the Group's recommendation that if NEMMCO deems that the lower of 3MW or 0.5% of available capacity is insufficient to meet its system security obligations then both the 3MW/minute and 0.5% should be proportionally scaled up.

## **Conclusion**

The Group supports the objective behind the rule change.

For market efficiency and equity reasons the ramp down rate should be set at:

- For individual generator units
  - The lower of 3MW/minute or 0.5% of available capacity
  - The lower bound for the ramp down rate is 1MW / minute

For aggregated generator units:

- 0.5% of available capacity
- The lower bound for the ramp down rate is 1MW / minute

If NEMMCO believes the ramp down capability is insufficient then the 3MW/minute and 0.5% should be proportionally scaled up.

This proposed change would result in better market efficiency and a more equitable outcome for ALL individual and aggregate generators units of varying sizes.

Should you have any enquiries in relation to this issue please contact Kevin Ly, Manager Market Development and Strategy on (02) 9278 1862.

Yours sincerely,

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