



Hydro Tasmania
the renewable energy business

13 May 2009

Australian Energy Market Commission,
PO Box A2449,
Sydney South NSW 1235

By email: submissions@aemc.gov.au

**Supplementary Submission to Proposal to Implement Causer Pays for
Ancillary Services in Tasmania**

Dear John,

Thank you for your letter of 29 April 2009 offering us the opportunity to provide further information on the costs associated with the changes to the Tasmanian Frequency Operating Standards. As with many very complex situations, the estimates are continually changing as more information comes to light.

In this letter we have provided more detail on the original costs of the fast raise service and also what our current estimates are. As you are aware, we have been working with NEMMCO to reduce the costs and complexity in implementing the rule change. The second part of this letter proposes some amendments to our proposed rule change as a result of this work.

Original Fast Raise Market Ancillary Service (R6) Estimate of \$3.5m pa

These cost estimations are extremely difficult to undertake due to the complexity of the FCAS market and the co-optimisation between services and with the energy market. Whilst we have spent considerable effort in assessing these costs, they should be treated in this light. They are also based on the assumption that Hydro Tasmania will be required to provide an additional 30 - 60 MW of fast raise FCAS depending on the system load in Tasmania. It is assumed AETV would generate at least 144 MW and Basslink headroom could supply the additional FCAS requirement such that Hydro Tasmania was neutral to any impact at high import levels.

The additional costs were associated with

- foregone market opportunity associated with a shortage of fast raise services such that Basslink would be delayed in reversing in some situations,
- inefficient operation to enable reversals north and south
- associated plant deterioration with increased start/stops
- Restrictions in timing of outages of plant with significant fast raise capability

No allowance was made in the assessment for the increased cost associated with a sustained period of Basslink outage. A Basslink outage would necessitate all FCAS requirements being sourced locally. If other on island participants choose to provide some fast raise, this is clearly a better market outcome as costs may well be lower. Other Tasmanian generation participants are not exposed to the same risk.

The breakdown of the costs assuming Hydro Tasmania provides all the fast raise is shown in Attachment 1.

Revised Inertia Assessment

In assessing the Tasmanian situation, NEMMCO have become concerned at the significant inertia which would be removed from the system in the event of a trip by the AETV CCGT. This is not a problem on the mainland because no single plant makes a significant contribution to the inertia of the system. NEMMCO are implementing a revised method of assessing the amount of FCAS in Tasmania from mid May which addresses this issue.

The new methodology will consider both the generating unit with the largest MW output in Tasmania (as in other regions) and the trip of the generating unit with the largest inertia in Tasmania. The FCAS requirements chosen will be the one which is largest.

We recognise that this is an entirely appropriate approach by NEMMCO. The effect of this change is expected to be significant on fast raise FCAS requirements in Tasmania. This will be further impacted by tightening of the Tasmanian Frequency Operating Standards later this year.

In the worst case of a light load, the increase in R6 will be from 164 MW to 239 MW under the new standard. This value should also be compared with the current R6 requirement which is typically 66 MW (93 MW) for the same load at 120 MW (144 MW) contingency.

Table 1 R6 Requirements under different situations

Tas Load MW (Inertia assumed to be 4x load)	120 MW* Unit Contingency Trip 47.5 Hz	144 MW Unit Contingency Trip 47.5 Hz	144 MW / Discount Inertia of 1750 MWs 47.5 Hz	144 MW / Discount Inertia of 1750 MWs 48.0 Hz
1000	66	93	164	239
1200	55	80	104	158
1400	45	69	72	111
1600	36	59	61	81

* Hydro Tasmania capable of managing contingency size prior to CCGT

This increased requirement from the revised approach to inertia has an even more dramatic effect on costs. The additional cost impact will be significantly increased above the original \$3.5m pa as a result of moving up a non-linear supply curve. We estimate the increase in costs will be in excess of 100%.

Revised Rule Proposal

We have worked closely with NEMMCO to find a simpler and more cost effective basis for the rule change. In this section we have only amended the rule in relation to these changes. We have not incorporated the several suggestions for improvement which we noted in our supplementary submission.

The essence of the proposed changes to the rule change is to focus solely on the fast raise service where almost all the value occurs. Lower services will also be ignored. We have also proposed a simpler assessment methodology which focuses on just three constraint equations. In rare situations, other constraint equations bind and would cause a greater difference in R6 requirement than the one we would calculate and we will not recover the full amount of R6. Some discussion of the proposed changes and revised drafting are shown in Attachment 2.

This approach does not recognise that cheaper mainland fast raise may be provided for the generator contingency. In this event and when the generator

contingency is binding, the costs attributed to AETV may be slightly overestimated.

We understand that NEMMCO will be writing to you in respect to the implementation approach for this revised rule change.

In summary, we have significantly reduced the costs of implementing the rule change by using an approximate process which nevertheless captures the vast majority of the value. At the same time, the benefits have more than doubled as a result of the changed approach to inertia adopted by NEMMCO.

I trust that this letter addresses the questions which you raised in your letter. If you have any further queries please contact David Bowker on 03-62305775.

Yours sincerely,



Vince Hawksworth
Chief Executive Officer

Attachment 1; Breakdown of \$3.5m pa Costs

Cost Component	144 MW contingency 48 Hz \$m pa
Foregone Market Value	\$2.332
Inefficient Operation associated with Basslink Reversal	\$0.370
Plant Outage Management of high capability plant and increased start/stops	\$0.680
Total	\$3.822

Analysis was based upon market data observed in 2007/08 and adjusted for expected increased requirements of R6 in the order of 30-60 MW. ie pre inertia re-assessment

The impact was seen as reducing to \$3.5m pa over time with incremental investment in a range of investment opportunities.

Attachment 2: Proposed Changes to the Rule Proposal to Limit it to R6

Further to our discussions with NEMMCO on the practical implementation of this rule change, we have concluded that the material impact arises from the provision of fast raise service and suggest a simplified proposal as outlined at the end of this attachment.

For the Tasmanian fast raise service requirements, the material impact can be further simplified by considering the provision of this service to cover the following two contingencies only:

- (1) a Basslink trip; or
- (2) maximum generator trip (ignoring inertia of the largest generating unit in Tasmania).

Therefore, we propose to implement the rule change so that the maximum of the above two scenarios is considered and other scenarios, such as transmission outages, are ignored.

We note that, the Additional Cost is calculated based on the current Tasmanian fast raise service price so that, NEMMCO is not required to rerun NEMDE to compute the Tasmanian fast raise service price under the Old Standards. Both this and the present simplification favour the causer, but this approximation has been accepted as a means to assist with practical implementation.

Finally, clause 6(2) has been changed to remove the inconsistency between the mathematical part of the Rule as originally presented and the text. The use of registered capacity as a basis reflects the fact that the frequency standards change has a continuous impact on the system, even when the new plant is not generating.

The proposed changes to section 5 and 6 of the Rule change are shown below. Note that this is not a complete version of the rule and only contains the relevant sections.

Draft Chapter 8A Rule Change

Part 13 – Participant Derogation Granted to Hydro Tasmania to restore Causer Pays Arrangements Subsequent to Tasmanian Frequency Standard Changes

5. Determination of Additional Market Ancillary Services in Tasmania after the commencement date

For the *fast raise service* requirement in Tasmania, set by either:

- a Basslink trip if the Basslink FCSPS scheme is in service; or
 - a trip of the generating unit with largest MW output in Tasmania with the Tasmanian inertia discounted by the inertia of this generating unit;
- or
- a trip of the generating unit with largest inertia in Tasmania with the Tasmanian inertia discounted by the inertia of this generating unit;

NEMMCO must compute the Additional Requirement as the quantity in MW by which the actual *fast raise service* requirement in Tasmania in that *dispatch interval* exceeds the requirement which would arise in that dispatch interval if the Old Frequency Standard were to apply in Tasmania. If either value of *fast raise service* requirement is less than zero, then that value is to be set to zero. If the calculation gives a negative quantity, then the Additional Requirement is set to zero.

NEMMCO must compute the Additional Cost as the product of the *ancillary service* price for the *fast raise service* for the *dispatch interval* for Tasmania and the Additional Requirement.

6. Cost Recovery for Market Ancillary Services in Tasmania after the commencement date

Where NEMMCO determines that there is a non-zero Additional Cost in fast raise service requirement under this derogation 8A Part 13.5 and the aggregate of the registered capacity for all NCGU is greater than zero, then NEMMCO

must adjust the allocation of fast raise service costs under 3.15.6A in accordance with the following and the information provided under clause 3.9.2A(b). NEMMCO must:

(1) Reduce the quantity RTCRSP relating to the *fast raise service* in clause 3.15.6A (f) by the Additional Cost; and

(2) For each Market Generator, increase the (negative) magnitude of the Trading Amount relating to the *fast raise service* in clause 3.15.6A (f) by a share of the Additional Cost, pro-rata to the registered capacity for that Market Generator's NCGU and the aggregate registered generator capacity for all NCGU. The addition (more negative) to the Trading Amount magnitude is determined in accordance with the following formula:

$$\text{TAINC} = \text{Additional Cost} \times \text{RGEN} / \text{TRGEN} \times -1$$

Where:

TAINC (in \$) = the increase in magnitude of the Trading Amount, (more negative)

RGEN (in MW) = the sum of the registered capacity of all NCGU of the *Market Generator* for the *trading interval*;

TRGEN (in MW) = the aggregate of the registered capacity for all NCGU for the *trading interval*;