snowy hydro Limited
renewable energy

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The Reliability Panel
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

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Submission to: Issues Paper -
System Restart Standard

Snowy Hydro appreciates the opportunity to respond to this important Review.

Please contact me on (02) 9278 1862 if you would like to discuss any issue associated with this submission.

Yours sincerely,

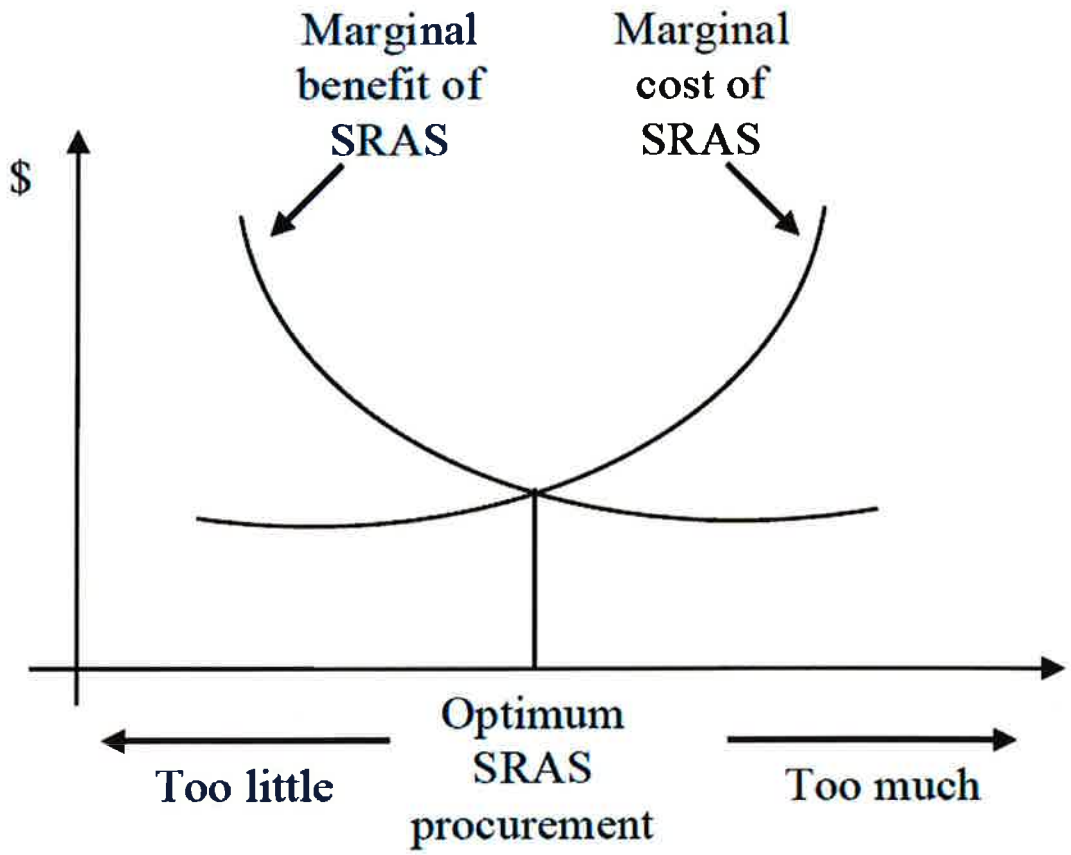
Kevin Ly
Manager, Market Development & Strategy

Question 1 How to achieve consistency with the SRAS objective?

How can we measure the value provided to the market by SRAS?

From the Firecone[1] report commissioned by the AEMC in 2005, the optimum procurement of SRAS is where the marginal benefit from SRAS (in terms of a reduced expected cost of system outage) is equal to the marginal cost of SRAS provision. This is illustrated in Figure 2 below:

Figure 2: Optimum level of SRAS supply



The marginal cost of SRAS is more certain as it can be derived by the tender offers provided the assessment of the tenders is done on a like to like basis.

The marginal benefit of SRAS is more subjective as it would depend on the value of customer reliability and the probability assigned to a system restart event.

It would be informative for the Reliability Panel to undertake this sought of marginal cost / marginal benefit analysis as a key input into the setting of the reliability standard for System Restart Standard.

We note AEMO's letter to the Commission dated the 12 October 2011 stated that, "we consider that the level and cost of the services is not unreasonable viewed in light of the severity of the risk". AEMO quantified these comments with reference to a calculation based

[1] Firecone, Review for AEMC of the Proposed NEMMCO Rule for System Restart Ancillary Services, December 2005.

on cost of unserved energy at $50,000/MWh, a 1 in 20 year event, and unserved load of 15,000 MW for 1 hour. Snowy Hydro believes these numbers are very conservative and are likely to understate the value to the market of SRAS.

Firstly the cost of unserved energy from surveys conducted can exceed over $100,000/MWh, the probability of 1 in 20 years is optimistic, and the presence of SRAS is much more likely to reduce the level of unserved energy by more than 15,000 MWh given that the NEM peak demand level is in excess of 30,000MW and presence of the SRAS is likely to reduce the level of unserved energy by much more than 1 hour. Hence in our view the current annual cost of SRAS of $36.7 millions represents a minimum cost to ensure that the NEM is operated in an efficient manner taking into account the severe risks and substantial unserved energy costs of a black start market event.

What factors affect the costs of SRAS and how can these costs be minimised?

As set out in clause 3.11.4A(a), the SRAS objective states:

> "The objective for system restart ancillary service is to minimise the expected economic costs to the market in the long term and in the short term, of a major supply disruption, taking into account the cost of supplying system restart ancillary services, consistent with the national electricity objective"

This objective recognises both the economic cost of SRAS and the cost from a major supply disruption. In contrast this question in the Issues paper is framed from the perspective of the minimising the cost of SRAS only.

The procurement of SRAS is a competitive process. Service Providers will price their offers on a risk adjusted basis taking into account the contractual obligations of supplying the service, the cost to maintain the facilities to provide this service, and the cost associated with the testing regimes. We believe a focus on the cost of the SRAS alone would be sub-optimal as it might create a situation where Service Providers are unable to make a commercial return on these facilities which would lead to a long term degradation of the services needed to restore the system in an economic manner which is in the long term interest of consumers.

Question 3 What are the assumptions that should apply to determining a restoration timeframe?

What are the key factors that affect the time in which supply could be restored following a major supply interruption?

Snowy Hydro agrees with the Panel's comments that the time required to restore supply would be dependent on a number of physical factors. These physical factors are based on the current capital stock of generation plant. However the NEM is an open and transparent market and has been observed to be very responsive to any market need. If there is an economic justification to restore supply in a shorter timeframe then it is envisaged that the market will respond to this requirement if it is commercially viable to do so.

We also note that the co-ordination between all relevant bodies involved in the restoration of the system ie. AEMO, TNSPs, and local Distribution Companies would be a key factor in the time required to restore load. Hence all effects by these Bodies to prepare for such an event should ensure a more efficient restoration process.

What would be a reasonable target timeframe?

We believe the concept of a "target" timeframe provides weak incentives for all relevant bodies to achieve the System Restart Standard. The Panel should instead set a specific timeframe in the Rules that is economically determined based on the SRAS objective which must be achieved in the event of a Black System event.

Question 4 What is the appropriate target timeframe to restore supply?

Are the timeframes and supply capability targets set out in the interim system restart standard appropriate? Does this target timeframe allow efficient and economical SRAS to be procured? Is the use of a percentage of peak demand the appropriate measure?

All these questions can not be properly answered without understanding, what is the optimal level of SRAS for each electrical sub-network to meet the SRAS objective? Once this optimal level is understood the Reliability Panel can then set deterministic parameters to achieve this Standard.

Question 5 What should be the guidelines for reliability of primary and secondary restart services?

What factors affect the reliability of restart services?

The reliability of a Restart Service is ultimately determined by how well the plant and its restart capability are maintained. Service Providers must make a commercial decision on how much is spent to maintain the commercial capability of their plant to provide SRAS. A number of factors are relevant in this decision process that ultimately can affect the reliability of restart services:

- The cash flow from SRAS contracts is inherently risky. The relatively short contract periods mean that SRAS providers would need to factor in an uncertain timeframe from which the Service Provider can recover capital / operational costs used to maintain the reliability of the plant; and
- Reputation risk of non-conformance in the event of a system restart.

Are the current definitions in the interim system restart standard acceptable (a primary service would be likely to be perform on more than 90 per cent of the time; and a secondary service would be likely to perform 60 per cent of the time)?

The current definitions in the interim system restart standard are vague and do not attempt to quantify the reliability of a Service Providers SRAS.

Snowy Hydro believes the lack of recognition of the importance of the reliability of a SRAS source is encapsulated in these definitions. This should be a source of concern for consumers as the value of system restart sources decreases exponentially with decreasing start reliability. For instance, the following table shows the number of sources required to

provide 99% reliability for restart reliabilities ranging from 0.99% to 0.30%. The table also shows the relative value of each source.

Reliability of each source	Probability Source won't Start	Number of Sources required for 99% Reliability	Relative value of each source
0.99	0.01	1	100%
0.9	0.1	2	50%
0.8	0.2	2.87	35%
0.7	0.3	3.83	26%
0.6	0.4	5.03	20%
0.5	0.5	6.65	15%
0.4	0.6	9.02	11%
0.3	0.7	12.92	8%

Since the number of SRAS required to meet a 99% reliability target dramatically increases with decreasing source reliability, the analysis demonstrates that the Reliability Panel needs to consider amongst other considerations the affect of different SRAS source reliability in deriving an output standard that meets the SRAS objective.