

11 July 2017

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Consultation on SRAS Guideline – Issues Paper (June 2017)

Dear Mr Gillin

Energy Networks Australia welcomes the opportunity to make a submission to the Australian Energy Market Operator's (AEMO) *Consultation on SRAS Guideline Electrical Sub-Network Boundaries, NCAS Tender Guidelines – Issues Paper* released in June 2017.

Energy Networks Australia is the national industry body representing businesses operating Australia's electricity transmission and distribution and gas distribution networks. Member businesses provide energy to virtually every household and business in Australia.

Energy Networks Australia recognises the importance of a holistic and well-understood process for System Restart arrangements, heightened by the experience of South Australia on 28 September 2016. We also appreciate AEMO's collaborative approach in progressing this important consultation in light of the lessons learnt from the 2016 SA 'system black' event and subsequent system restart-related recommendations made by:

- » the Australian Energy Market Commission's Reliability Panel in its December 2016 [Final Report](#) on its latest Review of the System Restart Standard
- » AEMO itself in its March 2017 [Final Report](#) on the events of 28 September 2016, and
- » The [Final 'Finkel' Report of the Independent Review into the Future Security of the National Electricity Market's \(June 2017\)](#) recommendation 2.4 that proposes *"By mid-2018, the Australian Energy Market Operator should take steps to ensure the black system restart plan for each National Electricity Market region clearly identifies the roles of the parties involved at each stage of the restoration process, and includes regular testing of black start equipment and processes"*.

Energy Networks Australia also notes that a number of member businesses will be lodging individual submissions that will focus on specific jurisdictional issues.

Energy Networks Australia acknowledges the challenges facing AEMO and the wider industry in developing a robust revised SRAS Guideline to take into account, but not be restricted to, the following key issues:

1. **The individual reliability of each SRAS source** (recognising that they should not be assumed equivalent) assessed against availability, start-up performance and the *“reliability of any transmission components between the restart source and the delivery point (essentially the first transmission substation)”*¹. AEMO also proposes to incorporate a redundancy factor (point of failure within the SRAS equipment) and (potentially) additional operational reliability factors (for example, back-up fuel supplies, history of operational trips, and sources’ ability to perform sequential starts).
2. **The establishment of an aggregate reliability² requirement** for each electrical sub-network. In doing so, AEMO needs to critically assess any single points of failure and identify in collaboration with Transmission Network Service Providers (TNSPs) matters that impact the reliability of transmission corridors associated with SRAS sources.
3. **Whether existing electrical sub-networks are capable of *“remaining in at least a satisfactory operating state during the supply restoration process”***.
4. **What in practical terms, AEMO considers is appropriate in undertaking *“more robust verification of test procedures and an additional ad-hoc test”*** The Issues Paper indicatively considers this would involve *“at least two SRAS tests in any financial year”*, with some potential permutations as to when and as to whom will determine the timing of such tests.
5. **An assessment of whether the existing electrical sub-networks will continue to meet the revised System Restart Standard requirements, effective 1 July 2018.**

Energy Networks Australia acknowledges that the Issues Paper identifies at a high level, the key issues that need to be addressed. The remainder of this submission provides some discussion on the key issues, noting that AEMO and member businesses are actively participating in regional forums that may progress some of the identified issues.

Consequently, any future submissions as part of this consultation process may reflect more developed positions than is currently possible.

¹ This is to apply the Reliability Panel’s 2016 suggestion to the new Standard to take into account *“... the risk that network damage or unavailability could prevent ... the operation of a source of SRAS”*. Executive Summary, p.viii.

² Page 6 of the Issues Paper explains, *“Aggregate reliability is the probability that generation and transmission in an electrical sub-network is expected to be restored to the specified level within the specified time. The SRS guidelines require AEMO to consider the expected reliability of individual SRAS (incorporating availability, start-up performance and reliability of transmission components within the service), in combination with an assessment of the electrical, geographical and energy source diversity of services procured”*.

Discussion Points

» Individual Reliability and state of the transmission network

Energy Networks Australia is supportive of the need for AEMO to take into account the state of the transmission network in undertaking SRAS assessments. Whether or not transmission infrastructure is intact or feeders are effective and operational can be quite problematic in the case of bushfires or cyclones/tornadoes that may initiate 'system black' events.

In terms of AEMO assessments, Energy Networks Australia understands that in assessing individual SRAS reliability some form of weighting will need to be undertaken, and a clear elucidation of this weighting process of potential SRAS providers would be welcomed.

It will also be important for AEMO to clearly state the number of units a potential SRAS Provider must have available (inclusive of maintenance requirements) to be a valid SRAS supplier candidate.

» Aggregate Reliability measure

Energy Networks Australia understands that there are common concerns as to the detail, form, and potential formulaic representation of such a measure.

- *Reliability Input from TNSPs* Energy Network Australia understands that TNSPs will need to develop and provide reliability data for a black start context. This will be different to that which applies under normal operating conditions. To undertake this, our members need to understand from AEMO, the likely black start sources and the relevant parts of the network that form part of the calculation.

AEMO and TNSPs should jointly develop the approach used to determine aggregate reliability. We look forward to providing more comments on this as AEMO develops its interpretation of, and approach to, this important measure (as defined in footnote 2) over coming months.

» Strategic location of services

It is clear that the Reliability Panel has recognised the need to take account the risk of transmission network damage when assessing potential sources of SRAS³ and/or the failure of any single significant transmission element, such as a single line or corridor that is downstream of the first transmission substation in the restoration path. Further, the new standard requires AEMO to consider diversity in geography "*particularly* to account for any single points of failure related to the potential impact of geographical events such as natural disasters" (Clause 8, System Restart Standard effective 1 July 2018). Therefore, in the SRAS assessment, AEMO must include the ability to restore significant customer

³ For e.g. page v of the Executive Summary of its Final Report of the System Restart Standard (December 2016)

load from the SRAS source(s) and not confine the application of clauses 8 & 9 to the electrical diversity of restart sources only.

For example, it is insufficient for AEMO to procure restart sources in an area of a sub-network that is rich in generation that satisfies the level of restoration, restoration time and aggregate reliability if that generation cannot “*facilitate the power system restoration*” (Clause 9, System Restart Standard effective 1 July 2018) because of a vulnerable transmission corridor connecting that generation to a significant load.

Of particular relevance is how AEMO interprets part 8 of the revised System Restart Standard, in determining the aggregate reliability of SRAS in an electrical sub-network. AEMO will incorporate an assessment of the impact of diversity of the services by taking into account the following ‘Guidelines for assessing the diversity of services’:

- diversity in the **electrical** characteristics, to account for any single points of electrical or physical failure across the procured SRAS sources for each electrical sub-network.

In accounting for the electrical diversity, the Reliability Panel states that AEMO needs to consider the failure of any single significant transmission element, such as a single line or corridor that is downstream of the first transmission substation in the restoration path.

- diversity in **geography** to account for any single points of failure related to the potential impact of geographical events such as natural disasters, and
- diversity in the **energy source** or fuel utilised by services to account for any single points of failure across the procured SRAS sources for each electrical sub-network.

It is also important that AEMO confirm Energy Network Australia’s current understanding that aggregate reliability will take into account both credible and non-credible events.

» **Determination of electrical sub-networks**

Energy Networks Australia considers that it is imperative for a common industry and stakeholder understanding as to what “secure” means in relation to the system restart process. In particular, how AEMO is to interpret and implement the following Reliability Panel position (pp.104-105 of Final Report) is critical:

“The Panel considers that the requirement that AEMO should seek to have in the order of 1000 MW or more of load and generation in a sub-network may potentially lead to barriers in the creation of multiple sub-networks in smaller NEM regions, such as Tasmania. Therefore, the Panel removed the load and generation thresholds from the electrical sub-network guidelines in the Standard to reduce the potential barriers to the creation of smaller electrical sub-networks.

In place of the minimum generation and load thresholds the Panel has included an additional requirement that:

- *an electrical sub-network should be capable of being maintained in a satisfactory operating state to the extent practicable during the restoration process, and in a secure operating state from a stage in the restoration when it is practicable to do so, as determined by AEMO.*

This requirement allows AEMO to determine the lower limit for the size of an electrical sub-network, based on the characteristics of the power system, such that it is practical to restart the resultant electrical sub-network as an isolated system.

The Panel considers that the criteria for determining the boundaries for the electrical sub-networks should only relate to the technical characteristics of the resulting electrical sub-networks. The Panel is concerned that adopting an objective that includes minimising the costs of procuring SRAS could result in larger sub-networks with potentially slower restoration times. The Panel has included additional guidance in section 7 of the Standard to clarify that, AEMO must give consideration to the technical characteristics of the power system when determining the boundaries for electrical sub-networks to facilitate the achievement of its power system security responsibility of procuring adequate restart services for it to co-ordinate a response to a major supply disruption.”

» **Modelling of alternate re-energisation paths**

Energy networks will work together with AEMO in providing additional data and information in undertaking the modelling of alternate re-energisation paths given due consideration to both the timing and cost-effectiveness to do so. It is understood that such alternative paths would be at the initiation of the relevant TNSP involved.

» **Transparency of Models and Restart System Studies**

Energy Networks Australia notes that AEMO intends to collect data and undertake modelling as part of its SRAS assessment processes. To the extent that it does not breach commercial confidentiality, it would be beneficial if AEMO could share the models and restart studies with TNSPs. Such a move would be consistent with the policy intent of AEMO’s own [Generating System Model Guidelines](#) rule change proposal and AEMO’s impending rule change proposal on sharing more SRAS information with key participants. This approach will provide useful insights in developing regional system restart plans.

» **Testing arrangements**

Energy Networks Australia supports the need for appropriate testing of SRAS equipment and are key participants in such tests. Careful consideration and proper co-ordination of technical testing arrangements is essential.

When scheduling such tests, there is a requirement to optimise factors such as: the extent of testing, third party testing, operations and network switching, and managing planned outages. As a result, further thought will need to be given to the amount of short-notice that will be required in undertaking such tests. There appears to be stakeholder consensus that AEMO and TNSPs need to liaise closely to ensure the scheduling window options for such tests have minimal market impacts and participant costs.

Energy Networks Australia members are happy to work with AEMO to implement an appropriate testing regime. However, short notice testing can create both costs and risks for TNSPs, customers and generators and it is not clear in the current draft how AEMO intends to address these, e.g. by measures such as direct payments or indemnities.

Energy Networks Australia considers that it is appropriate that the Australian Energy Regulator provide ‘in-principle’ support that when TNSPs participate in such tests that

they are immune from financial penalties that could be invoked in relation to its Service Target Performance Incentive Scheme 'availability' penalties and/or that TNSPs be appropriately indemnified.

Other issues

- a. **Cost of testing.** Appropriate consideration will need to be given as to what arrangements and cost recovery mechanisms will need to be put in place to conduct additional testing.
- b. Energy Networks Australia **supports the role that new technologies (other than synchronous generation) can play in providing ancillary services** and that the rules and SRAS guidelines have to be flexible to accommodate these new technologies.
- c. Members consider there may be value in requiring that **mandatory reporting** be implemented for contracted SRAS generators in relation to any failures to start, non-conformances or any trips that occur, with AEMO.
- d. **Need to address sensitive loads.** The Reliability Panel considered at page 84 of its Final Report that *"In the event that an individual customer or customers require an increased level of protection from major supply disruptions over and above that provided to them under the Standard, the Rules allow them to negotiate an energy support arrangement. This would be a contract arrangement between the customer or the associated jurisdiction and either a generator or network business"*.

There appears to be a clear need to better understand AEMO's obligations and role in such arrangements. AEMO and TNSPs will need to develop an understanding and respective obligations in regards to the linking of Energy Support Agreements (ESA) and SRAS. Other related considerations include: (i) how a support generator is managed in regard to SRAS sources; (ii) priority of ESA's in relation to SRAS restoration, and (iii) the impact of transmission elements on restoration paths.

Energy Networks Australia looks forward to on-going industry engagement in the development of the revised AEMO SRAS Guideline during the remainder of 2017.

Should you have any additional queries, please feel free to contact Norman Jip, Energy Network Australia's Senior Program Manager - Transmission on (02) 6272 1521 or njip@energynetworks.com.au.

Yours sincerely,



John Bradley
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