



18 December 2015

Mr Neville Henderson
Chairman
Reliability Panel
Level 6, 201 Elizabeth Street
Sydney NSW 2000

Lodged via www.aemc.gov.au

Dear Mr Henderson,

RE: Review of the System Restart Standard (Ref REL0057)

GDF SUEZ Australian Energy (GDFSAE) appreciates the opportunity to comment on the Reliability Panel review of the system restart standard issues paper (Issues Paper).

The Reliability Panel has responsibility under the national electricity rules for determining the system restart standard, against which the Australian Energy Market Operator (AEMO) procures System Restart Ancillary Services (SRAS) to restart the power system in the event of a major supply disruption.

GDFSAE has addressed the questions raised in the Issues Paper below.

Additionally, it is important to reflect upon for whose preferences the system restart standard should be set. In GDFSAE view it is inherently a policy decision, via elected governments, to assess the trade-offs that the citizenry, as consumers, are willing to make. On this basis, the ultimate metric against which the system restart standard should be set and in turn the level of service that should be procured needs to be considered and set economically and to the satisfaction of consumers.

A noted concern to date has been the disconnect between operational implementation and the interests of consumers.

Question 1: Time and level of restoration

The existing standard requires sufficient SRAS to:

- i. restore station auxiliaries of generating units within 1.5 hours to provide sufficient capacity to meet 40 per cent of peak demand in the sub-network, and
- ii. restore generation and transmission so that 40 per cent of peak demand could be supplied within four hours.

The first part of this standard seeks to secure auxiliary supply to sufficient generating capacity to be capable of meeting 40 per cent of peak demand, but imposes no particular requirement for any actual generation

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output. The second part of the standard requires both generation and transmission capacity restored so that within 4 hours, 40 per cent of peak demand could be supplied.

The first part of the standard is in effect, an intermediate step towards achieving the second objective of meeting 40 per cent of peak demand within 4 hours. Having this intermediate step provides the benefit of being more directly related to the amount of SRAS that AEMO would need to procure to meet the standard, thus providing a more transparent and measurable standard to guide both AEMO and potential SRAS providers.

GDFSAE supports the system restart standard retaining this intermediate step to provide AEMO and potential SRAS providers a more transparent framework within which to procure and utilise system restart services.

The second part of the standard as currently written is not impacted directly by the amount of SRAS procured, but more by the subsequent performance of generating units that are re-started by the SRAS sources, and the success of AEMO and the Transmission Network Service Providers in restoring the network to be ready to supply blocks of load.

GDFSAE believes that the requirement for AEMO to establish a defined amount of generation and transmission capacity within a set time frame is an appropriate form for the system restart standard, which also enables jurisdictions to assess consumers' satisfaction with the system restart standard and its risks. On this basis, it is suggested that the Reliability Panel give consideration as to whether the existing metrics of 4 hours and 40 per cent of peak demand remain appropriate.

GDFSAE understands that the origin of these metrics was the AEMO Interim System Restart Standard (2006), which was subsequently considered and broadly adopted by the Reliability Panel in their 2012 System Restart Review. The AEMO 2006 Interim Standard includes the following statement¹:

AEMO believes that a target to restore 40% of an affected electrical sub-network's peak demand supply capability from the transmission network within 4 hours would represent an effective benchmark because achieving 40% restoration marks a point at which most of the available network paths would need to have been restored.

This AEMO description in support of a target restoration of 40 per cent is based on a practical assessment of the number of network paths restored. The purpose of the system restart standard however, is to achieve the system restart objective, which is based on minimising the cost of a major supply disruption with regard to the national electricity objective.

It is not sufficiently clear that the current metrics of 4 hours and 40 per cent of peak demand have been developed with the aim of optimally meeting the requirements of the system restart objective. As noted by the Reliability Panel in section 3.1 of the Issues Paper, the optimal level is where the marginal benefit of procuring an additional service is approximately equal to the marginal cost of procuring that service. GDFSAE does not believe the system restart standard is currently developed along such lines.

Consideration should also be given to whether the peak demand measure remains appropriate. Recent growth in non-scheduled generation (e.g. solar, small scale wind, etc.) has led to a need to re-consider what is intended by the word "demand". AEMO more commonly refer to "Operational Demand", which is the amount of customer load that is met by scheduled and semi-scheduled generators in the NEM.

The increasing peaky nature of operational demand in the NEM² invites a question of how appropriate is it to base a system restart standard on a relatively rare demand peak, which includes more discretionary demand

¹ AEMO Interim System Restart Standard 2006; accessed at <http://www.aemc.gov.au/getattachment/c03f9653-d44d-46c7-b408-998a22b67324/AEMO-s-Interim-System-Restart-Standard.aspx>

such as air conditioners and pool pumps. Perhaps a better measure would be an assessment of the level of demand needed to meet more critical customer loads.

Question 2: Aggregate reliability

The AEMC's 2015 SRAS Rule removed the classification of system restart services as being either primary or secondary services, and requires the Reliability Panel to determine an aggregate reliability to be met in each sub-network. In making the 2015 SRAS Rule, the AEMC considered that this change may expand the range of restart services able to be procured by AEMO.

Specifically, the system restart standard must now include the aggregate required reliability of system restart ancillary services for each electrical sub-network. AEMO are required to describe how it will meet these requirements in the SRAS Guidelines.

Removing the previous requirement for restart services to meet the requirements of one of either a primary or a secondary restart service does enable a greater range of potential service providers to compete in the procurement process. To ensure that an adequate and transparent quantity and quality of system restart service is obtained for each sub-network, it is important that a well-defined aggregate reliability is defined by the Reliability Panel.

An aggregate reliability could conceivably be written as either an inputs based standard (minimum requirements that system restart service providers must meet), or an outcomes based standard (time and volume metrics to be achieved with defined levels of confidence).

An input based standard is potentially easier to define and assess, but it can be difficult to gauge the extent to which the input based standard actually contributes to the desired outcomes. An input based standard is also moving back towards the previous definitions of primary and secondary services, which have recently been removed from the national electricity rules.

GDFSAE supports an output based standard, which establishes in a more direct manner, the outcomes that the system restart arrangements are striving to achieve. The most direct way to achieve this would be to assign levels of confidence to be maintained for the time taken, and level of restoration. This would be most relevant to the first part of the standard, which currently requires restoration of auxiliary supplies to generators within 1.5 hours.

For example, an aggregate reliability standard might require that AEMO demonstrate through detailed modelling and testing, that the proposed combination of system restart sources within a sub-network are capable of restoring auxiliary supplies to the required level of generation within 1.5 hours with a level of confidence of 90 percent, and within, say, 3 hours with a level of confidence of 99 percent.

The second part of the time and level standard, to achieve 40 per cent of peak demand within 4 hours, as noted earlier, is not directly related to the performance of SRAS providers. The aggregate reliability standard should nevertheless also apply to this aspect of the system restart process to ensure appropriate obligations on AEMO and the Transmission Network Service Providers to prepare for and manage the system restart process.

As an example, the aggregate reliability standard could require AEMO to demonstrate through detailed modelling and testing that 40 per cent of peak demand (or whatever the new standard requires) can be re-established with a 90 per cent confidence, and within, say, 8 hours with a 99 per cent confidence level.

GDFSAE is aware that it will not be possible for AEMO to demonstrate confidence levels as described above with absolute rigour, and that an allowance will need to be made for reasonable power system expertise and

² For example, the peak demand for the South Australian region for 2015 to date was 2,887 MW. However, the demand in South Australia was below 2,000 MW for over 95 per cent of the 5-minute dispatch intervals throughout the year.

judgement. The main aim nevertheless, is to ensure a high level of transparency regarding any testing, modelling and assumptions.

As an added measure to provide confidence that the aggregate reliability level is being maintained appropriately, the Reliability Panel could periodically arrange for an independent review of the AEMO modelling and results.

Question 3: Regional variation

The specific nature and characteristics of each individual region are likely to influence the relative complexity of rebuilding any one region compared with another. The factors that are likely to contribute to these differences include concentration of generation sources, distance from generation to demand centres, length of the transmission network, diversity of fuel sources and technologies, degree of AC interconnection, voltage control devices, and importantly preferences of consumers within each region.

GDFSAE is of the view that with the system restart standard expressed in terms of confidence levels as suggested above, there is less need for the Reliability Panel to consider the relative complexity of one region compared to another. These matters would need to be considered by AEMO in ensuring that it is able to meet the aggregate reliability standard.

For example, if a particular region presents a number of unique challenges in a rebuild scenario, then AEMO would be required to include consideration of these challenges in its decision on procurement of system restart service, and to transparently demonstrate how they are achieving the aggregate reliability for the region.

The Issues Paper makes the point that the costs of system restart services are recovered regionally, and so a region that is more complex to rebuild is likely to require more system restart services at greater cost to customers in that region. GDFSAE would therefore suggest that the system restart standard include an option for a jurisdiction to request a relaxation of the standard for their particular region, if they make the decision that the additional cost imposed on customers in their region for more stringent service delivery is not justified.

Question 4: Sub-network guidelines

GDFSAE notes that the existing system restart standard includes a number of factors that AEMO are required to take into account when determining the boundaries of electrical sub-networks.

GDFSAE believes that the factors listed are reasonable, however it has been difficult in the past for industry stakeholders to understand exactly how these factors have been applied by AEMO in their decision processes. GDFSAE therefore suggests that a new obligation should be included in the system restart standard that requires AEMO to publish the method in which they applied the factors, and how they have determined the electrical sub-network boundaries.

Question 5: Diversity requirements

GDFSAE believes that the current requirements for diversity of system restart sources are adequate. Introducing the probabilistic approach to the aggregate reliability standard would provide further impetus for AEMO to consider diversity of its proposed system restart sources.

GDFSAE trusts that the comments provided in this response are of assistance to the AEMC in its deliberations. Should you wish to discuss any aspects of this submission, please do not hesitate to contact me on, telephone, 03 9617 8331.

Yours sincerely,



Chris Deague
Wholesale Regulations Manager