

30 January 2025

Mr Tim Jordan
Chair, Reliability Panel
Level 15, 60 Castlereagh St
Sydney NSW 2000

Reference: REL0091

Dear Mr Jordan,

AEMO submission to Issues Paper - Review of the System Restart Standard

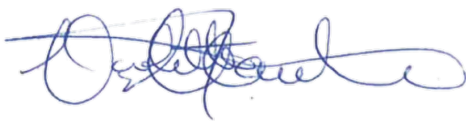
Thank you for the opportunity to make a submission to the issues paper (Paper) on the Panel's review of the System Restart Standard (Standard).

AEMO welcomes the Panel's review of the System Restart Ancillary Service (SRAS) Standard and notes that the Panel has represented AEMO's issues¹ with the current standard faithfully, whilst also adding some context of its own. AEMO looks forward to resolving these issues with the Panel during this review.

An important task for AEMO is to prepare the advice² requested under clause 8.8.1(a)(1A) of the Rules. Because AEMO is preparing this advice this submission is limited to providing AEMO's current opinion on the scope of the review and the issues set out in the Paper.

Should you wish to discuss any aspect of our submission, please contact Hannah Heath, Group Manager, Strategic Market Reform (Hannah.Heath@aemo.com.au).

Yours sincerely,



Violette Mouchaileh
Executive General Manager, Reform Delivery

¹ Summary p16 page iii, Section 5.3.3, AEMC, Review of the System Restart Standard, Issues Paper, 12 December 2024

² Section 3.3, AEMC, Review of the System Restart Standard, Issues Paper, 12 December 2024



ATTACHMENT – Detailed submission

1. Scope of the review and process

Under clauses 8.8.1(a)(1A) and 8.8.3(aa) of the Rules, the Panel is responsible for determining the Standard. The Standard sets out parameters for system restoration, including speed, supply quantity to be restored and the level of reliability of SRAS – these guide AEMO’s procurement of SRAS. AEMO notes the Panel has decided on a wider, two stage review – the first reviewing the regulatory frameworks and the second being resetting the Standard itself.

The underlying problem is restarting a power system increasingly dominated by inverter-based resources, including variable renewables. At a minimum this requires updating the parameters of the Standard to reflect the changing power system. AEMO also considers it sensible to consider the appropriateness of the system restart regulatory framework in the context of the future power system scenarios envisaged in the Integrated System Plan.

AEMO supports the Panel’s separation of these different requirements into the two stages of the review. This is because AEMO will shortly need updated parameters for the next SRAS procurement round, while further changes to the regulatory framework will assist with longer term system restart requirements.

2. Confirming the issues set out in the Paper

The Panel has divided issues in the regulatory framework into three areas: restart preparedness and governance, SRAS sufficiency, and transparency and reporting.

AEMO considers the Panel has appropriately identified the issues with respect to preparedness and governance, and sufficiency, particularly in relation to how the Standard is set. However, AEMO does not yet consider the transparency and reporting requirements of the Rules are presently an issue.

Restart preparedness and governance

The Rules set out economic responsibility to the Panel, with procurement and implementation to AEMO. All participants, generators and networks have obligations to submit participant restart plans that AEMO then relies on in a centralised restart plan. The Standard results from an economic trade-off between time to restore supply versus cost. The structure of the Standard is on restoring supply and so commercial arrangements cover restart of generation and transmission, and not the period until load is fully restored. So far, the centralised restart plan makes use of only a few batteries along the system restoration path, and no other inverter-based resources are included. In procuring SRAS, AEMO uses power system modelling and will test services procured.

As the power system changes, the premises behind the existing arrangements may be challenged. The Panel is correct to identify that as power stations reduce operating hours in traditional generation centres, new centres, including Renewable Energy Zones (REZs), will instead need to be energised. As identified, resources are also increasingly connected to the distribution system, so it may be important to think about how these distributed resources may be useful for restart.

More generally it is important the Panel consider whether the changing power system challenges the premises behind the current restart approach. AEMO is open to the Panel considering the Standard being expressed in a different way or recommending a change in the roles and responsibilities of participants on the power system. The status quo assumes AEMO can buy a couple of reliable services in each subnetwork under SRAS agreements to meet the Standard, and

then rely on the latent capability³ of other generation that the SRAS can then energise to restore load. It is unclear whether the Rules obligation⁴ to provide AEMO with a local black start procedure is sufficient to maintain this latent capability in the power system.

SRAS sufficiency

SRAS have historically been provided by large synchronous generating units, since these can provide active power consistently and maintain stability. Sources are hydro plant, small backup generators restarting gas fired plant, and trip to house load (TTHL) coal fired units forming an electrical island. The Standard is set⁵ for each subnetwork and is based on existing restart pathways and generators available on them (to either supply SRAS or simply be energised). AEMO procures through open tender to achieve the objective of lowest long-term cost but is allowed to negotiate agreements separately under the Rules. Procurement reflects the Standard, with each service modelled on meeting the Standard. Usually a few high-quality services are procured, and each modelled and tested to meet similar restart pathways to those originally modelled in setting the Standard.

AEMO's 2024 General Power System Risk Review considered that the pool of existing system restoration units will decrease with plant retirements⁶. It outlines problems of limited competition and few incentives for new restart plant; the practical limitations of integrating IBR into SRAS due to insufficient battery energy storage system (BESS) energy headroom or system strength for grid following BESS; and problems with DPV displacing stabilising load during restoration.

The difficulty procuring to the existing Standard is caused by:

- SRAS plant exiting the electricity market, or reducing operating hours,
- the prescriptive technical nature of the standard,
- buying of few services, and
- a reduction in plant available to energise on the restart path.

The result was insufficient SRAS suppliers tendered in the last round with the Standard not being met in all sub-networks, and uncertainty as to how a system with more IBR generation can be restarted.

The Panel is correct in requesting stakeholder views on technical and commercial challenges for new sources (such as batteries including grid-forming (GFM) BESS), investment signals, and whether the Standard itself affects procurement. Stakeholders may be better placed than AEMO to comment on some of the technical and commercial challenges for their plant to provide SRAS. However, an initial response to these questions may be to suggest it is not the Standard that is at fault, but procurement. It would be sensible to accept that arguments for better procurement and revising the Standard are not mutually exclusive.

On whether the way the Standard is currently set affects procurement, AEMO notes the Standard relies on both SRAS sources and generation being available to be energised on the restart path. As mentioned above, and in some regions in particular, the pool of suppliers to restart the system that were then included in originally modelling the current Standard are now operating fewer units, for fewer hours, or are planned for closure. But, even if AEMO successfully procures the same service

³ As should be detailed in the Local Black Start Procedure

⁴ National Electricity Rules clause 4.8.12(d)

⁵ This exercise was last performed in detail for all networks nearly ten years ago

⁶ Section 6.14.3 – AEMO, General Power System Risk Review, July 2024

as in the tender round before, it may not meet the Standard if other synchronous plant on the restart path operate for fewer hours than had been assumed⁷ when setting the Standard for that subnetwork.

Transparency and reporting

The Rules require AEMO to report on system restart preparedness and sufficiency through the non-market ancillary services (NMAS) annual report, which includes the process to acquire SRAS, costs, and whether the Standard is met. The Panel is interested in stakeholder views on whether further information and reporting is required, including through the Transition Plan for System Security.

AEMO considers the reporting requirements to be second order but necessary to support the development of system restart services. With respect to the Transition Plan for System Security, AEMO notes this framework may identify how new technologies may contribute to security. AEMO is considering transitional services arrangements that test the application of new technologies to support system security, which may include testing for applications of system restart – this is because the power system needs to be stable, both in normal operation and during restart.

⁷ Or the replacement generation being inverter-based renewables that is unstable and cannot be energised.