



30 January 2025

Reliability Panel
c/- Australian Energy Market Commission
PO Box A2449
SYDNEY NSW 1235

Submitted online via AEMC website

For the attention of the Reliability Panel

Re: Stanwell Corporation Limited response to the Review of the System Restart Standard

Stanwell Corporation Limited (Stanwell) welcomes the opportunity to respond to the Reliability Panel's Review of the System Restart Standard.

As a major provider of electricity to Queensland, the National Electricity Market (NEM) and large industry users throughout Australia, Stanwell is committed to providing reliable and affordable energy and supporting the changes in the energy market to achieve State and Commonwealth emissions reductions targets.

Stanwell appreciates the important role the Reliability Panel (the Panel) plays in monitoring, reviewing and reporting on the safety security and reliability of the NEM.

This response contains the views of Stanwell only and should not be construed as being indicative or representative of the views or policy of the Queensland Government.

Background

In a black system event, System Restart Ancillary Services (SRAS) are used to restart power stations, re-energise the system and restore supply to customers.

The Australian Energy Market Operator (AEMO) is obligated to ensure it procures sufficient SRAS to meet the requirements of the NEM.¹

Introduction

Historically, SRAS have been provided by synchronous generating units like thermal, pumped hydro, and gas, which offer consistent active power and inertia for stability.

However, future needs are evolving towards Inverter-Based Resources (IBR) and storage technologies that will be essential to replace the system restart capabilities currently provided by retiring thermal sources.

The current System Restart Standard (the Standard) was developed to suit a NEM asset mix of predominantly thermal generation. The increased penetration of Variable Renewable Energy (VRE) and retirement of thermal generation from the NEM will require the Standard to reflect how to accommodate newer technologies to help deliver the required outcomes.

¹ The Australian Energy Market Commission System Restart Standard p 1.

Current roles and responsibilities for SRAS

Stanwell is not concerned with the current allocation of forecasting and procurement roles for SRAS. In our view, it remains appropriate for SRAS to be kept as a contracted service. However, clarity of roles between AEMO, Transmission Network Service Providers (TNSP), and other parties are crucial to ensure there are communication processes during major supply disruptions. This clarity would contribute to enhancing the overall effectiveness of system restoration.

Challenges faced by SRAS providers

In a system black event, an SRAS provider must operate its generator in a coordinated manner with the networks to find load centers where the megawatts (MW) being generated from the SRAS power station are matched with an equivalent demand in MW to gradually restart the system.

Current Consumer Energy Resources (CER) installed i.e. roof top solar, generally have inverters which are grid-following rather than grid-forming. Grid-following assets require a source of voltage reference to export electricity into the NEM. During a system black event, grid-following CER cannot export electricity into the NEM. Furthermore, during such an event, grid-following CER operation can exacerbate grid instability by exporting electricity immediately on detecting a reference voltage i.e. provided by the SRAS generator.

Due to the large presence of CER in the NEM, the challenge faced by SRAS providers and networks, is how to manage the restart process when certain parts of the grid can no longer be relied upon to be a load centre that will accept the electricity supply being generated by the power station during a system re-start. While there is an opportunity to utilise CER for SRAS services in future, the immediate need is to consider the measures required to prevent CER from becoming an impediment to an efficient system restart process.

One of the criteria in the Standard is the restoration time which currently ranges from two hours in New South Wales to four hours for Queensland. When reviewing the capability of, and timing for, new technology to improve the performance of SRAS services, one of the operational aspects of SRAS which AEMO and the Panel should consider, is whether the SRAS asset will require staffing or other resources to initiate a system restart. Ensuring operators can be on site in a timely manner during a system black can be challenging, especially when many of the new generation assets in remote locations are no longer attended 'around the clock' by a crew of permanent operators.

The Standard should also consider the impact of coordination with transmission operators and the strategic placement of technologies such as batteries and other resources at key points in the grid. This should be coupled with advanced communication protocols to help ensure real-time coordination and smoother restoration efforts when a system restart is required.

The Standard should expand the definition of SRAS to encompass new parties and technologies enabling AEMO to source SRAS from a variety of available and capable sources.

There is new technology capable of supporting AEMO to meet the Standard such as batteries and long duration energy storage (LDES). The type and distribution of assets in the NEM will evolve as thermal generation retires. Consequently, the locations and modes of failure which could result in a system black event within the NEM will change. AEMO needs to identify geographical and electrical locations where SRAS may be required in the future NEM, and consider what, and how, this mix of technologies in a given geographical or electrical location, could be coordinated in a system black event to restart the power system.

Further research and investment are needed to understand how renewables can be better integrated into the SRAS model effectively. For example, batteries can play a valuable role by providing fast ramping and sustained power during critical periods. However, to fully leverage their potential, investments in advanced capabilities such as grid-forming inverters and longer duration batteries are needed

SRAS participation incentives and procurement process

As mentioned above, there is new technology capable of supporting AEMO to meet the Standard. In most cases, from an operational and commercial perspective, it is best for any existing or additional features (for example inverters or frequency settings), to have been added at the point of equipment specification so that warranties and maintenance schedules can be considered at the onset, and asset owners have investment certainty.

While we maintain that a contract remains an appropriate method for AEMO to procure SRAS, the contract procurement process itself could be made more open and transparent so that potential providers have a better understanding of what is needed to secure such contracts. Further, being an SRAS provider is a highly involved process, and it is not clear if a deficiency in financial payments is inhibiting participation, given an SRAS contract may be an opportunity cost for participation in other markets. Longer-term contracts may also incentivise investment in new SRAS capabilities, helping to contribute to a more robust and reliable system restart process.

Creating competitive markets for SRAS where providers are able to bid for contracts can drive innovation and efficiency. This approach ensures that the most cost-effective and reliable solutions are selected for SRAS participation. In this scenario, all pricing would be competitively determined for example by auction, enabling transparency to the market, and set up so that any SRAS market would not distort the electricity spot market.

A two-stage payment regime may also incentivise investment and may include for example:

1. A payment for availability where the generator is available to provide the SRAS paid on a settlement period basis. This would provide a level of comfort to AEMO that sufficient capacity is available and provides steady benefits to SRAS providing assets.
2. An exercise price could be paid in circumstances where the generator provides SRAS, that is, the costs are incurred when low probability, high magnitude events occur.

Conclusion

The current Standard was developed to suit a NEM mix consisting predominantly of thermal generation. As thermal generation exits the NEM and more VRE comes online, the locations and modes of failure which could lead to a system black event will change.

There is new technology capable of supporting AEMO to meet the Standard. However, AEMO needs to identify the geographical and electrical locations where SRAS is needed for the future NEM, in conjunction with the range of technologies capable of providing SRAS, and then how they could be deployed for system restart. This includes consideration of the challenges and opportunities presented by increased presence of CER in the NEM, and operational aspects such as whether an operator needs to be at the power station to activate system restart.

Further incentives for participants along with greater visibility and transparency of the SRAS contract procurement process may be needed to drive increased participation in SRAS.

Stanwell welcomes the opportunity to discuss further any of the points raised in this response. Please refer any enquires to Lya McTaggart via email at lya.mctaggart@stanwell.com

Yours sincerely



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