Ref. A5744956

30 January 2025

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

Dear Mr Jordan,

Reference: REL0091
Review of the System Restart Standard

Powerlink Queensland (Powerlink) appreciates the opportunity to provide feedback on the Reliability Panel's System Restart Standard Review. We consider the review is very timely given the challenges for the Australian Energy Market Operator (AEMO) in securing system restart services, noting AEMO were unable to fully meet the requirements of the System Restart Standard for the Queensland sub-region.

Powerlink agrees with the challenges highlighted in the Reliability Panel's Issues Paper, notably that:

- the decreasing availability and participation of existing system restart capable units are affecting AEMO's ability to meet the System Restart Standard;
- high concentrations of distributed photovoltaic (DPV) generation in the distribution network may impact the ability to stabilise restart islands during daytime; and
- as the power grid transitions, there is a need for more resilient and flexible restart pathways, with a drive toward operational simplicity.

System Restart Ancillary Services (SRAS) have traditionally been provided by large coal-fired synchronous generators. Even with a small number of generators, restarting the system is complex and can take many hours. Throughout the restart sequence, it is essential to maintain a balance between demand and generation. Where demand and generation become unbalanced, the system is likely to rapidly destabilise and may be followed by customers being disconnected and the process having to start again.

The complexity of system restart will be further compounded by the retirement, or mothballing, of coal generation as, in addition to maintaining the demand and generation balance, **all necessary ancillary services must be managed and available within the electrical sub-network**. This will include system strength, inertia, voltage support, and Frequency Control Ancillary Services (FCAS).

As system restart processes become more complex due to the dynamic nature of the power system, the ability to maintain operational simplicity will be crucial for ensuring safe and efficient system restarts. To help manage this complexity, it is advisable in the interim to **employ larger system restart solutions which can be quickly and effectively coordinated**. As systems become more automated and technology continues to develop, system restarts from multiple, smaller generators in distinct sub-networks will become more feasible.

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Similarly, **optimising the number of restart plans for each electrical sub-network** is essential. Consideration of planning, maintenance, testing, and training costs is important for Network Service Providers (NSPs), AEMO, and Market Participants. For example, it is essential that the SRAS operate as expected when required and that items such as telecommunication systems are robust and periodically tested. We would welcome further discussion on developing the restart plans per sub-network, to ensure reliable and cost-effective outcomes for consumers.

We consider that future restart plans must **balance the use of dispatchable generation, such as gas turbines, with grid-forming batteries**. Batteries will be important to assist in balancing demand and generation, especially when connecting distribution networks with DPV. However, their capacity to contribute will be contingent upon their state of charge at the time of the system restart event. Given the requirement to charge or discharge may continue for an extended period of several hours during the restart process, batteries will need to be complemented with dispatchable generation.

Where interconnectors and their associated restart paths exist, **restart plans should be established to support restoration from neighboring regions**. However, **SRAS should be procured to ensure each electrical sub-network is capable of system restart** if it becomes isolated from surrounding networks. This is also the case for Renewable Energy Zones (REZs) should one become an electrical sub-network in the future.

Powerlink welcomes the opportunity to continue working collaboratively with the AEMC and other stakeholders on system restart challenges and opportunities and identifying how new technologies and new operating practices can be leveraged to deliver an efficient restart approach for the benefit of consumers.

If you have any questions regarding this submission or would like to meet with Powerlink to discuss this matter further, please contact Jenny Harris.

Yours sincerely,

Gary Edwards
CHIEF OPERATING OFFICER

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