SRAS 2024 Procurement

Market engagement

March 2023

We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

We pay respect to their Elders past, present and emerging.

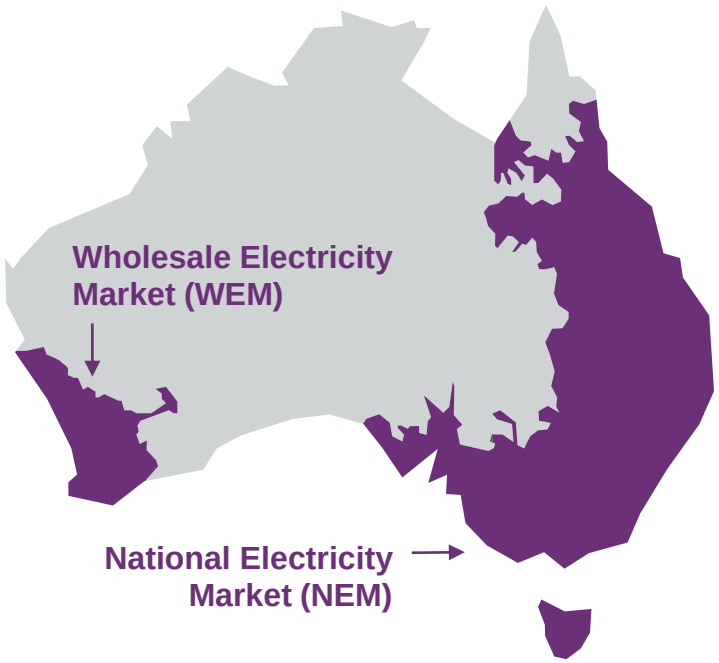
About AEMO

- AEMO is a member-based, not-for-profit organisation.
- We are the independent energy market and system operator and system planner for the National Electricity Market (NEM) and the WA Wholesale Electricity Market (WEM).
- We also operate retail and wholesale gas markets across south-eastern Australia and Victoria's gas pipeline grid.

AEMO SERVICES

AEMO Services is an independent subsidiary of AEMO, established in 2021 to enable the transparent provision of advisory and energy services to National Electricity Market jurisdictions.

Electricity



Gas

Declared Wholesale Gas Market (DWGM)

Short Term Trading Market (STTM)

and

Gas Supply Hub (GSH)

What is SRAS

System restart ancillary services (SRAS) can be a

- **Restart source** from a black start capable plant, or
- **Restart support service** from a plant capable for providing services to sustain the stable energisation of the network during the restart process (for example, frequency control, stabilising load, or voltage control services).

During a system black event AEMO can use the restart source providers to restart other generators and bring load back online.

AEMO must use reasonable endeavours to acquire SRASs to meet the **system restart standard** at the lowest long-term cost (this is the **SRAS Procurement Objective**).

The system restart standard is determined by the reliability panel and can be found here.

- https://www.aemc.gov.au/regulation/electricity-guidelines-and-standards#reliability

AEMO has produced an **SRAS guideline** which describes the principles and processes of this procurement which can be found here.

- https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/system-operations/ancillary-services/system-restart-ancillary-services-guideline

SRAS locations

There are currently 11 system **restart sources** in total across the NEM, relatively distributed between the electrical sub-networks.

The system restart standard (SRS) requires independent restart north of Bundaberg in Queensland and north of Sydney in New South Wales.

SRAS providers can be located anywhere so long as the plant and network allow the SRS requirements to be met.

There are no current **restart support services** contracted.

Table 1 SRS requirements for each electrical sub-network

Electrical sub-network	Restoration Supply Level (MW)	Restoration Time (hours)	Required Aggregate Reliability
Queensland *North of Bundaberg	1650 (*825)	4 (*4)	90% (*80%)
New South Wales **North of Sydney	1500 (**500)	2.0 (**4.0)	90% (**75%)
Victoria	1100	3.0	90%
South Australia	330	2.5	90%
Tasmania	300	2.5	95%

* For Queensland AEMO shall procure SRAS north of Bundaberg, sufficient to also independently restart, without drawing power from the *power system*, at least 825 MW of *generation capacity* north of Bundaberg within four hours of a *major supply disruption* with an aggregate reliability of at least 80%.

** For New South Wales AEMO shall procure SRAS north of Sydney, sufficient to also independently restart, without drawing power from the *power system*, at least 500 MW of *generation capacity* north of Sydney within four hours of a *major supply disruption* with an aggregate reliability of at least 75%.

SRAS procurement

- AEMO is seeking tenders from providers who are currently capable or wish to become capable to be a **restart source**.
- AEMO can contract with a provider who will need to modifying an existing plant or who will be building a new facility.
- New system **restart source** contracts may be progressively needed in all NEM regions, from **1 July 2024**.
- AEMO is considering SRAS contract lengths of 3 years or longer, however this is subject to change based on market feedback and making cost effective procurement decisions. Please provide feedback on your earliest commencement date and your minimum required length of contract if greater than 3 years.
- The need for the **restart support services (if any)** will be based on the final restart sources and the power system studies. Parties can submit an expression of interest for **restart support services** as a part of the SRAS tender.
- It is possible for AEMO to contract with multiple facilities for one SRAS source, and responding to or participating in this market sounding does not guarantee inclusion in any future procurement or tender process.

SRAS opportunity

- **Availability Fee** – $ per 30-minute interval. The availability cost may vary, as it is paid only when the service is available. For example, it is not paid when plant used by the SRAS is out of service, or when the SRAS fails a test under the contract. Contracted restart sources are expected to have very high availability (close to 100%).
- **Testing Fee** – fixed amount per successful test. Testing will be discussed further.
- **Usage Fee** – fixed amount which is only paid if the service is used in the event of a black event.

- Note: if fees do not apply to your solution, advise N/A.

SRAS procurement (timing to be confirmed)

- The public tender will be published on AEMOs website here https://aemo.com.au/consultations/tenders/sras-procurement
- AEMO will publish a standard SRAS service contract as a part of the tender.
- Respondents are encouraged to advise what other services they can provide in addition to the SRAS services.

March 2023	• Market engagement
April/May 2023	• Open SRAS tender for 6 weeks
June/July 2023	• Tender evaluations and power system studies
August 2023	• Negotiate contracts
Sept/Oct 2023	• Testing and contract execution

SRAS offer modelling technical requirements

- The voltage and frequency should be confined to obligated limits during load restoration and line or transformer energisation.
- During system restoration, the island frequency should meet the relevant Frequency Operating Standards (FOS)
- System voltages maintained within 0.85-1.15 pu.
- The relevant protection systems should not pick up during the restoration.
- Detailed data will be required – for more information refer to the Power System Design and Setting Data Sheets on AEMO's website here https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/system-operations/ancillary-services/system-restart-ancillary-services-guideline.

AEMO will perform power system EMT modelling to ensure all above criteria are met for both new and existing facilities.

SRAS offer reliability requirements

- SRAS participant to provide:
  - Energy limitations.
    - The energy required for restoration will be dependant on the restart standard requirements and restart path and conditions on the day. For example, a restart source is required to energise other generators on the network while controlling frequency until the network is stable.
    - Variable renewable and battery storage can be considered in isolation or combined over the network, however the predictability and reliability will need to be considered in detail.
  - Historical and expected reliability and availability.
  - Generator restart plan, including relevant timeframes.
  - Communications protocol.
- AEMO will consider an individual generator's reliability, the combined reliability of different SRAS generators, and diversity of generation, fuel sources and transmission paths.
- Refer to SRAS guideline for more information here https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/ancillary-services/system-restart-ancillary-services-guideline.

SRAS tests and associated requirements

- SRAS Test must reflect as close as possible how SRAS will be used on a real event.
- The purpose of a SRAS test is to demonstrate Black Start service capability and must demonstrate the parameters listed in Appendix A of the guideline.
- AEMO will not enter into an SRAS Agreement unless satisfied that the capability to provide the SRAS has been successfully demonstrated by an SRAS Test.
- SRAS Test Procedures must be accepted by AEMO and endorsed by the relevant TNSP.
- AEMO will witness SRAS tests.

SRAS tests timing and frequency

Post maintenance test:

- Within 20 business days after a period of maintenance or alteration of SRAS Equipment or SRAS Network Components.

Annual short notice test:

- At a date and time nominated by AEMO on no less than 5 business days' notice to the SRAS Provider

SRAS tests reporting

- An SRAS provider must submit a test report to AEMO after each SRAS test.
- The test report must be provided within 15 business days after a SRAS test and must state whether the contracted levels of performance and minimum technical requirements were achieved.

Feedback

AEMO is happy to take feedback now, or in writing via email to the SRS email address sras.procurement@aemo.com.au, or in follow up one on one meetings subject to availability. **Feedback is due by 30 March 2023.**

Please see the standard set of questions below:

- Do you have any questions on plant capabilities or the requirements of an SRAS contract?
- Is your plant capable of being a restart source?
- Does your plant require construction or augmentation to become a restart source?
- What is your plant type, location, availability expectations and your observations on market conditions?
- What are your expectations for participating in the SRAS procurement?
- If you are expecting to tender, what is your earliest commencement date and your minimum required length of contract if greater than 3 years?
- Is your plant capable of providing restart support service(s)? If so what service(s)?
- Are there any other non-market services that your plant is contracted to provide?
- Is there anything that would prevent participation in the SRAS procurement that might need to change?
- Please provide feedback on the timing of tender open length and the high level schedule?

Note that as a part of the market engagement and procurement, AEMO may publish our responses to questions in a FAQ, subject to confidentially requirements.

For more information visit

aemo.com.au

SRAS Tests Parameters (Appendix A)

APPENDIX A. SRAS TEST REQUIREMENTS

A.1 Black Start Services and self-start capability for Restoration Support Services

Item	Assessment	Capability	Test	Evidence Required
1	Isolate SRAS test unit	SRAS to operate as an electrical island for the duration of test (excluding item 7).	SRAS to be electrically isolated from all sources of supply not associated with the unit	Documentation showing all the isolation points at zero volts by measurement. This includes alternating current supplies to battery chargers etc.
2a	Start (non-TTHL)	Start without external supply.	Start using same procedure or process as would be used for a system restart.	Provide data showing output trends of SRAS unit. As a minimum, continuous recordings of MW, Mvar, voltage (RMS), current (RMS), frequency over the duration of the test. During transients that occur during the test also provide three phase instantaneous waveforms for voltage and current at unit terminals and other points of interest.
2b	Trip to House Load	Trip to house load from at least 80% of its registered capacity (as registered with AEMO).	Demonstrate trip operation of TTHL relay to disconnect SRAS from power system. SRAS to then remain operational at house load.	Provide data output trends of SRAS unit. As a minimum, continuous recordings of MW, Mvar, voltage (RMS), current (RMS), frequency over the course of the test.
3	Zero Export	Operate in a stable manner at zero export load.	Run at zero export load for at least 30 minutes.	Frequency and voltage trends (or other equivalent trends) to demonstrate the SRAS operated in a stable manner at zero export load for at least 30 minutes
4	Voltage Control (Black Start Service, Restoration Support Service only if applicable)	Control SRAS voltage.	Change SRAS output voltage by 5% above and below nominal output voltage and hold each change for 5 minutes (measured at generator terminals or other agreed point). Can be done concurrently with item 3.	Provide output voltage trend for the duration of the test.
5	Frequency Control (Black Start Service, Restoration Support Service only if applicable)	Control SRAS frequency.	Change SRAS output frequency by 0.5 Hz above and below 50 Hz and hold each change for 5 minutes (measured at generator terminals or other agreed point). Can be done concurrently with item 3.	Provide output frequency trend for the duration of the test.

SRAS test parameters (Appendix A) cont.

6	Transformer energisation	Energise transformers up to Delivery Point	Energise the transformer using the same procedure or process as would be used for a system restart.	Provide RMS voltage and current traces for the duration of the test, and high-speed voltage and current waveform data for transient events such as transformer energisation (from pre-disturbance to return to steady-state).
7	Energise De-energised Busbar	Close onto a de-energised busbar.	SRAS to close onto a de-energised busbar (or other de-energised electrical equipment agreed by AEMO).	Provide RMS voltage and current traces for the duration of the test, and high-speed voltage and current waveform data for transient events such as busbar energisation (from pre-disturbance to return to steady-state).
8	Output Capability (Black Start Service, Restoration Support Service only if applicable)	SRAS to supply specified capability.	Synchronise to the network and demonstrate capability to ramp to the specified capability within the specified timeframe.	Provide RMS output trends for the duration of the test, and high-speed voltage and current waveform data for transient events such as the moment of re-synchronisation (from pre-disturbance to return to steady-state).
9	Timeframes	Provide SRAS in specified timeframe	Timeframes demonstrate ability to provide SRAS in accordance with timeframes in SRAS Agreement or offer	Record relevant times over the duration of the SRAS Test. Generally: • Start of the test (item 2 start) • Time at stable operation , energised and at synchronous speed/available (item 2 end), and ready to energise a de-energised busbar. • Time commenced loading for capability test (item 8 start). Only where applicable for a restoration support service. • Time at contracted capability (item 8 end).
10	Maintenance - diesel generator (if part of SRAS Equipment)	Start up and operate for minimum period	Periodic operation of diesel generator independent of full SRAS Test (monthly unless otherwise agreed), with evidence to be provided with Test Report.	Most recent maintenance records and maintenance plan for this item of plant