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# Non-market ancillary services (NMAS) report 2020-21

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**September 2021**

An Annual Report for the National Electricity Market

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# Important notice

## PURPOSE

The purpose of this publication is to provide information about the:

- Quantities and costs of system restart ancillary services (SRAS) and network support and control ancillary services (NSCAS) acquired by AEMO in the National Electricity Market (NEM) for the financial year 2020-21.
- Acquisition of SRAS to meet the system restart standard for each electrical sub-network in the NEM, and system restart test activities if conducted.

This document has been prepared by AEMO in accordance with National Electricity Rules clauses 3.11.10 and 3.13.5 and has effect only for the purposes set out in those provisions.

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## ABBREVIATIONS

Abbreviation	Expanded name
AEMO	Australian Energy Market Operator
NEM	National Electricity Market
MBAS	Market Benefits Ancillary Services
MT PASA	Medium Term Projected Assessment of System Adequacy
NMAS	Non-Market Ancillary Services
NSCAS	Network Support and Control Ancillary Services
NER or Rules	National Electricity Rules
RBAS	Reliability and Security Ancillary Services
SRAS	System Restart Ancillary Services
SRS	System Restart Standard
TNSP	Transmission Network Service Provider

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# 1. Introduction

Ancillary services are essential to the management of power system security in the National Electricity Market (NEM).

AEMO acquires both market and non-market ancillary services under the National Electricity Rules (NER):

- Market ancillary services are acquired through central dispatch and the prices are determined using the dispatch algorithm.
- Non-market ancillary services (NMAS) are acquired under bilateral contracts. There are two types of NMAS that AEMO may acquire in its capacity as market and system operator:
  - System Restart Ancillary Services (SRAS), and
  - Network Support and Control Ancillary Services (NSCAS).

The remainder of this report provides information about the NMAS acquired by AEMO for the 2020-21 financial year, and SRAS procurement activities undertaken for subsequent years.

## 1.1 System Restart Ancillary Services (SRAS)

SRAS can help restore electricity supply following a large-scale blackout of part or all of the power system. The Reliability Panel<sup>1</sup> is responsible for determining the system restart standard (SRS), which specifies the level of supply restoration for which AEMO is to procure system restart services.

AEMO must use its reasonable endeavours to acquire sufficient SRAS for each defined electrical sub-network to meet the requirements of the SRS.

For the purposes of the matters covered by this report for 2020-21, the relevant version of the SRS is the SRS that was determined in December 2016<sup>2</sup> and was applicable from 1 July 2018. For 2021-22 estimates covered in this report, the relevant version of the SRS is the SRS that was determined in January 2021<sup>3</sup> and was applicable for SRAS acquired from 28 January 2021.

For historical data in this report up to and including the 2017-18 financial year – provided for comparative purposes – the relevant version of the SRS is the SRS that was determined in August 2013 and remained in effect until 30 June 2018<sup>4</sup>.

## 1.2 Network Support and Control Ancillary Services (NSCAS)

NSCAS may be procured by Transmission Network Service Providers (TNSPs) to maintain power system security and reliability, and to maintain or increase the power transfer capability of the transmission network to maximise net economic benefits<sup>5</sup>. Such TNSP-procured NSCAS is not the subject of this report.

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<sup>1</sup> The Reliability Panel is established under the National Electricity Law by the Australian Energy Market Commission (AEMC), and comprises representatives from the AEMC, AEMO, registered participants, and consumers. The Panel's responsibilities are specified in section 38 of the National Electricity Law and clause 8.8.1 of the NER.

<sup>2</sup> Available at <https://www.aemc.gov.au/sites/default/files/2018-08/REL0057%20-%20Review%20of%20the%20System%20Restart%20Standard%20-%20Final%20Standard.pdf>.

<sup>3</sup> Available at [https://www.aemc.gov.au/sites/default/files/2021-08/SRS%20Review%20-%20System%20Restart%20Standard%20-%20FOR%20PUBLICATION\\_0\\_0.pdf](https://www.aemc.gov.au/sites/default/files/2021-08/SRS%20Review%20-%20System%20Restart%20Standard%20-%20FOR%20PUBLICATION_0_0.pdf).

<sup>4</sup> Available at <https://www.aemc.gov.au/sites/default/files/content/System-Restart-Standard-Reliability-Panel.PDF>.

<sup>5</sup> For more information, see <http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Ancillary-services/Network-support-and-control-ancillary-services-procedures-and-guidelines>.

AEMO, in its role as Market Operator, can also procure NSCAS as a last resort to prevent an adverse impact on power system security and reliability. NSCAS procured by AEMO as Market Operator is reported in Section 3 of this report.

### 1.3 Non-market ancillary services (NMAS) reporting

AEMO is required, under clauses 3.11.10 and 3.13.5 of the NER, to report annually on specified matters relating to SRAS and NSCAS respectively.

This report includes:

- The number of SRAS acquired per NEM region and electrical sub-network in 2019-20 and for 2020-21.
- The total actual annual cost for provision of SRAS in 2020-21, broken down to charges for availability, testing and usage, for each electrical sub-network and each NEM region.
- The total estimated annual cost for provision of SRAS in 2021-22, broken down to charges for availability, testing, and usage, for each electrical sub-network and each NEM region.
- Whether SRAS were acquired to a level that meets the SRS for each electrical sub-network.
- The process followed by AEMO in 2020-21 to acquire SRAS for 2021-22 onwards.
- Whether any system restart test activities were undertaken.
- The quantities and types of NSCAS covered under existing ancillary services agreements.
- The actual costs and quantities of each facility contracted to provide NSCAS under ancillary services agreements.

For more recent actual (weekly) cost data for NMAS, see the AEMO website<sup>6</sup>.

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<sup>6</sup> See the Ancillary Services (AS) Payments Summary file at <http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Data/Ancillary-Services/Ancillary-Services-Payments-and-Recovery>.

# 2. System Restart Ancillary Services

## 2.1 SRAS Procurement

AEMO had 12 SRAS services during the 2020-21 year, shown in Table 1 by region and electrical sub-network.

**Table 1 Number of SRAS acquired per region and electrical sub-network – July 2018 to June 2021**

Region	Electrical sub-network	Number of SRAS
Queensland (QLD)	QLD North	2
	QLD South	2
New South Wales (NSW)	NSW	2
Victoria (VIC)	VIC	2
South Australia (SA)	SA	2
Tasmania (TAS)	TAS	2
<b>Total</b>		<b>12</b>

### 2.1.1 Meeting the SRS for the period 2020-21

For the 2020-21 year, there was sufficient contracted SRAS to meet the SRS for all electrical sub-networks.

For completeness, AEMO notes that the actual availability of one service was less than the required availability for that service, for most of the year, as established by the terms of the relevant contract<sup>7</sup>. Although every SRAS has a contractual availability requirement of 90% or more, in 2020-21 that level was not achieved for one SRAS acquired for South Australia.

### 2.1.2 The process for acquiring SRAS

#### Reporting year 2020-21

AEMO did not acquire any additional SRAS for the year 2020-21. The SRAS contracts procured in 2017-18 (as extended in one case) remained in place until 30 June 2021.

#### Years 2021-24

During the 2020-21 year, AEMO undertook a procurement process to acquire SRAS from 1 July 2021. The term of all SRAS contracts current in 2020-21 expired on 30 June 2021.

AEMO procured SRAS for the period commencing 1 July 2021 in accordance with the revised SRS effective from 28 January 2021 and the SRAS Guideline published in February 2021<sup>8</sup>.

<sup>7</sup> SRAS are procured to meet a minimum availability, which in turn contribute to meeting the required aggregate reliability for each electrical sub-network as specified by the SRS

<sup>8</sup> In this version of the SRAS Guideline, Queensland is now one electrical sub-network. In the previous version, Queensland was divided into two electrical sub-networks: Queensland North and Queensland South

A competitive tender process was followed for all electrical sub-networks other than Tasmania. As there is only one possible SRAS provider for Tasmania, AEMO directly requested offers from that provider. The following is a summary of the procurement process undertaken:

- On 15 December 2020, AEMO issued invitations to tender (ITT) for the provision of SRAS for 18 generation facilities with established or potential black start capability. These included all known facilities in the mainland NEM that AEMO considered could contribute to meeting the SRS, and preferred facilities in Tasmania.
- Details of the tender were also published on AEMO's website<sup>9</sup>.
- In response, AEMO received offers prior to the ITT closing date of 12 February 2021 for 16 services.
- AEMO undertook detailed power system modelling and supplementary capability assessments of the offered services together with related transmission and distribution network elements, in accordance with the SRAS Guideline.
- The modelling and capability assessments enabled AEMO to identify the most appropriate combinations of offered services that it determined would be capable of meeting the SRS for each electrical sub-network.
- From those identified combinations, AEMO used the tendered SRAS prices to select the services that would meet the SRS at the lowest cost (consistent with the SRAS Procurement Objective in NER clause 3.11.7) and notified relevant providers on 12 May 2021.
- Following contract negotiations, four contracts (five SRAS services) were executed by 30 June 2021 and a further three contracts (six SRAS services) by 30 July 2021<sup>10</sup>. Ten of the new SRAS services have an initial contract period that expires on 30 June 2024, and one service on 30 June 2022. All SRAS services have options to extend by up to one year at AEMO's discretion, and up to a further year by agreement.

## 2.2 Costs of SRAS

### 2.2.1 General

The annual cost of SRAS is based on an aggregation of three types of payments to contracted providers:

1. Availability – \$ per 30-minute trading 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. For cost estimation purposes, however, AEMO takes a conservative approach, assuming the plant has full availability for the whole year.
2. Testing – fixed amount per successful test.
  - The testing charge, per test, is fixed in SRAS contracts. There are currently two separate requirements for SRAS tests, which means that there may be more than one test per SRAS per year:
    - Post-maintenance test<sup>11</sup>: within 20 business days after a period of maintenance.
    - Short-notice test<sup>12</sup>: at a date and time nominated by AEMO with no less than five business days' notice.
3. Usage – fixed amount.
  - Paid only if the service is used in the event of a blackout.

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<sup>9</sup> AEMO. Invitation to Tender for System Restart Ancillary Services (SRAS) 2021: <https://www.aemo.com.au/consultations/tenders/sras-procurement>.

<sup>10</sup> These three contracts were not finalised in time for the target date of 30 June 2021. As a result, existing contracts were extended by one month to cover the period 1 July to 30 July 2021.

<sup>11</sup> For more detail see 4.3.2 (b) (i) in the SRAS Guideline, available at [https://www.aemo.com.au/-/media/files/electricity/nem/security\\_and\\_reliability/ancillary\\_services/sras/sras-guideline-2021.pdf?la=en](https://www.aemo.com.au/-/media/files/electricity/nem/security_and_reliability/ancillary_services/sras/sras-guideline-2021.pdf?la=en).

<sup>12</sup> For more detail see 4.3.2 (b) (ii) of the SRAS Guideline.

## 2.2.2 2020-21 SRAS costs

Table 2 shows a comparison of the estimated and actual costs for 2020-21.

The difference between the estimated and actual SRAS costs for 2020-21 is attributable to the following:

- Availability costs were less than estimated, due to outages (100% availability is assumed in estimates).
- Testing costs were less than expected, as outage programs were amended during the year; some planned outages were cancelled, other forced outages were added.
- No usage payments were made.

**Table 2 Comparison of 2020-21 estimated and actual SRAS costs**

Sub-network	Number of SRAS	Estimated availability (\$)	Actual availability (\$)	Estimated testing (\$)	Actual testing (\$)	Estimated usage (\$)	Actual usage (\$)	Estimated total (\$)	Actual total (\$)
QLD North	2	899,833	897,374	500,158	500,158	31,014	0	1,431,005	1,397,532
QLD South	2	4,001,990	3,893,574	914,368	1,328,577	326,164	0	5,242,522	5,222,151
NSW	2	10,544,382	10,502,071	568,668	284,334	16,465	0	11,129,515	10,786,405
VIC	2	7,094,661	7,075,102	232,993	155,329	30,859	0	7,358,513	7,230,430
SA	2	6,047,081	5,976,024	171,129	85,565	13,006	0	6,231,217	6,061,588
TAS	2	5,811,143	5,795,266	560,736	448,589	1,036	0	6,372,915	6,243,855
<b>Total</b>	<b>12</b>	<b>34,399,091</b>	<b>34,139,411</b>	<b>2,948,052</b>	<b>2,802,552</b>	<b>418,543</b>	<b>0</b>	<b>37,765,687</b>	<b>36,941,962</b>

## 2.2.3 2021-22 estimates

Table 3 shows an estimated cost breakdown for the forthcoming year 2021-22.

**Table 3 Estimated SRAS costs for 2021-22**

Sub-network	Number of SRAS	Estimated availability (\$)	Estimated testing (\$)	Estimated usage (\$)	Total estimated (\$)
QLD	3	2,232,474	1,203,500	44,925	3,480,899
NSW	2	10,844,107	294,500	17,500	11,156,107
VIC	2	7,351,718	207,000	30,500	7,589,218
SA	2	3,575,482	251,000	20,060	3,846,542
TAS	2	5,851,330	852,908	1,000	6,705,238
<b>Total</b>	<b>11</b>	<b>29,855,110</b>	<b>2,808,908</b>	<b>113,985</b>	<b>32,778,003</b>

For the availability cost, the forecast assumed 100% availability for each service. This is conservative, as some SRAS sources will have SRAS outages of some duration during a year.



For the testing cost, the forecast assumed 12 short notice tests<sup>13</sup> and six post-maintenance tests. The post-maintenance test count was based on a combination of outage forecasts provided as part of the tender process, and the Medium Term Projected Assessment of System Adequacy (MT PASA).

For the usage cost, the forecast assumed an event once every 20 years, therefore a cost probability of 5% has been applied, based on contracted usage charges.

## 2.2.4 Historical comparison of SRAS cost

Table 4 shows an historical comparison of SRAS costs over recent years.

The cost differences between the 2013-15 and 2015-18 periods are due to:

- A change in the structure of SRAS regions, effective from 1 July 2015.
- A new set of contracts, effective from 1 July 2015, with a different commercial outcome.

The cost difference between the 2015-18 to 2018-21 periods is due to:

- A new SRS effective from 1 July 2018.
- A new set of contracts, effective from 1 July 2018, with a different commercial outcome.

The cost difference between the 2018-21 period and the forecast 2021-22 year is due to:

- A change in the structure of SRAS regions, effective from 1 July 2021.
- A new set of contracts, effective from 1 July 2021, with a different commercial outcome.

**Table 4 Comparison of SRAS costs from 2013-14 through to estimated costs for 2021-22**

Sub-network	Actual 2013-14 (\$)	Actual 2014-15 (\$)	Actual 2015-16 (\$)	Actual 2016-17 (\$)	Actual 2017-18 (\$)	Actual 2018-19 (\$)	Actual 2019-20 (\$)	Actual 2020-21 (\$)	Estimated 2021-22 (\$)	
<b>QLD</b>									3,480,899	
<b>QLD North</b>	1,353,428	0	3,054,940	3,240,209	3,330,788	1,328,421	1,369,942	1,397,532	Qld regions merged	
<b>QLD Central</b>	2,670,050	2,505,494			Qld North and Central regions merged					
<b>QLD South</b>	2,417,756	2,508,566	888,240	898,008	917,106	5,106,349	4,566,122	5,222,151		
<b>NSW North</b>	12,019,875	11,848,415			New South Wales regions merged					
<b>NSW South</b>	7,364,417	7,580,205								
<b>NSW</b>			7,303,799	6,894,906	6,353,899	10,511,180	10,589,575	10,786,405	11,156,107	
<b>VIC North</b>	7,489,905	8,215,237			Victorian regions merged					
<b>VIC Latrobe Valley</b>	6,600,562	6,771,223								
<b>VIC</b>			5,320,851	5,392,461	5,509,010	6,944,780	7,125,455	7,230,430	7,546,718	
<b>SA</b>	3,233,916	3,470,570	2,173,957	1,589,134	1,764,049	5,772,405	5,923,901	\$6,061,588	3,846,542	
<b>TAS North</b>	7,025,706	7,232,666			Tasmanian regions merged					
<b>TAS South</b>	3,358,736	3,468,402								
<b>TAS</b>			3,336,148	3,370,867	3,442,597	6,029,789	6,235,475	6,243,855	6,705,238	
<b>Totals</b>	<b>53,534,351</b>	<b>53,600,778</b>	<b>22,077,936</b>	<b>21,385, 585</b>	<b>21,317,449</b>	<b>35,692,923</b>	<b>35,810,471</b>	<b>36,941,962</b>	<b>32,735,503</b>	

<sup>13</sup> One for each of the 11 SRAS, plus one for an SRAS that includes a back-up power station, which also requires a test.

## 2.3 System restart testing

In 2020, the NER were amended<sup>14</sup> to include a framework for testing of system restart paths in certain circumstances, beyond the regular testing of SRAS energisation to their contracted delivery points on the network. The NER require AEMO to report annually on any system restart tests that were conducted or planned in any electrical sub-network.

No system restart tests were planned or conducted in 2020-21 under the new NER framework. One extended network energisation test had been planned for NSW prior to the introduction of this framework, and was successfully conducted in December 2020.

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<sup>14</sup> National Electricity (System restart services, standards and testing) Rule 2020 No. 6, available at <https://www.aemc.gov.au/rule-changes/system-restart-services-standards-and-testing>.

# 3. Network Support and Control Ancillary Services

## 3.1 Types, quantity, and cost of Network Support and Control Ancillary Services (NSCAS)

AEMO's NSCAS Description<sup>15</sup> was amended in September 2020 and the types of NSCAS were revised to two broad categories aligned with the purposes of NSCAS:

1. Reliability and Security Ancillary Service (RSAS); and
2. Market Benefit Ancillary Service (MBAS).

In its 'last resort' procurement role, AEMO can only acquire NSCAS in the reliability and security category.

In the 2020-21 year, and years before, the previous version of the NSCAS Description<sup>16</sup> described three types of NSCAS that could be acquired by AEMO:

1. Network Loading Ancillary Services.
2. Transient and Oscillatory Stability Ancillary Services.
3. Voltage Control Ancillary Services.

AEMO did not acquire any NSCAS for the financial year 2020-21.

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<sup>15</sup> Available at [https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2020/ncas/2020-nscas-description-and-quantity-procedure.pdf?la=en](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2020/ncas/2020-nscas-description-and-quantity-procedure.pdf?la=en).

<sup>16</sup> Available at: [https://aemo.com.au/-/media/files/pdf/nscas\\_quantity\\_procedure.pdf](https://aemo.com.au/-/media/files/pdf/nscas_quantity_procedure.pdf).