



Non-market ancillary services (NMAS) cost and quantity report 2018-19

September 2019

An Annual Report required by the National
Electricity Rules for the National Electricity Market

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 2018-19.
- Process AEMO followed in 2018-19 to acquire SRAS for subsequent financial years.

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

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ABBREVIATIONS

Abbreviation	Expanded name
AEMO	Australian Energy Market Operator
NEM	National Electricity Market
NLAS	Network Loading Ancillary Service
NMAS	Non-Market Ancillary Services
NSCAS	Network Support and Control Ancillary Services
NER or Rules	National Electricity Rules
SRAS	System Restart Ancillary Services
SRS	System Restart Standard
TNSP	Transmission Network Service Provider
TOSAS	Transient and Oscillatory Stability Ancillary Service
VCAS	Voltage Control Ancillary Service

Contents

1.	Introduction	4
1.1	System Restart Ancillary Services (SRAS)	4
1.2	Network Support and Control Ancillary Services (NSCAS)	4
1.3	Non-market ancillary services (NMAS) reporting	4
2.	System Restart Ancillary Services	6
2.1	SRAS Procurement	6
2.2	Costs of SRAS	7
3.	Network Support and Control Ancillary Services	10
3.1	Types, quantity, and cost of Network Support and Control Ancillary Services (NSCAS)	10

Tables

Table 1	Number of SRAS acquired per region and electrical subnetwork – current 2019-20	6
Table 2	Comparison of 2018-19 estimated and actual SRAS costs	7
Table 3	Estimated cost of SRAS for 2019-20	8
Table 4	Comparison of SRAS costs from 2013-14 through to estimated costs for 2019-20	9
Table 5	Quantities and cost of NSCAS over the period 2012-13 to 2018-19	11

1. Introduction

Ancillary services are essential to the management of power system security in the National Electricity Market (NEM), to facilitate orderly trading in electricity, and to ensure the supply is of acceptable quality.

AEMO acquires both market and non-market ancillary services.

- 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 NMAS.

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 Panel¹ 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 2018-19, and estimates for 2019-20, the relevant version of the SRS is the SRS that was determined in December 2016² and applicable from 1 July 2018 (current).

For historical data in this report – generally provided for reference – the relevant version of the SRS is the SRS that was determined in August 2013 and remained in effect until 30 June 2018³.

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 benefits⁴. Such TNSP-procured NSCAS is not the subject of this report.

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(b) & (c) of the National Electricity Rules (NER), to report annually on specified matters relating to the NMAS it has acquired.

¹ 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.

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

³ Available at <https://www.aemc.gov.au/sites/default/files/content/System-Restart-Standard-Reliability-Panel.PDF>.

⁴ 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>.

This report includes:

- The number of SRAS acquired per NEM region and electrical sub-network in 2018-19 and for 2019-20.
- The total actual annual cost for provision of SRAS in 2018-19, 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 2019-20, 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 to acquire SRAS.
- 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 non-market ancillary services, see the AEMO website⁵.

⁵ See the 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 currently has 12 SRAS contracts. Table 1 shows the number of SRAS by region and electrical sub-network.

Table 1 Number of SRAS acquired per region and electrical subnetwork – current 2019-20

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
Total		12

2.1.1 Meeting the SRS for the period 2018-21

Of the 12 SRAS, 11 are procured for the period 2018-21⁶ and determined by AEMO in accordance with the December 2016 SRS and the SRAS Guidelines⁷ published by AEMO in December 2017. The other (of these 12 SRAS) is contracted under an extension of a previous contract.

2.1.2 The process for acquiring SRAS

AEMO did not acquire any additional SRAS in 2018-19. The SRAS contracts in place from 1 July 2018 were procured (or in one case extended), in the 2017-18 year.

2.1.3 Meeting the SRS in 2018-19

For the 2018-19 year, AEMO acquired sufficient 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 as established by the terms of the relevant contract⁸. Although every SRAS has a contractual availability requirement of 90% or more, in 2018-19 that level was not achieved for one SRAS acquired for South Australia.

⁶ Under contracts with a term from July 2018 to June 2021, with options for two 1-year extensions.

⁷ See SRAS Guideline at http://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Ancillary_Services/SRAS-Guideline-2017.pdf.

⁸ 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.

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 two separate requirements for SRAS tests which means that there may be more than one test per SRAS per year:
 - Post-maintenance test⁹: within 20 business days after a period of maintenance of seven days or more.
 - Short-notice test¹⁰: 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.

2.2.2 2018-19 SRAS costs

Table 2 shows a comparison of the estimated and actual costs for 2018-19.

The difference between the estimated and actual SRAS costs for 2018-19 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 as expected, as not all services required a post-maintenance test (one post-maintenance test per service was assumed).
- No usage payments were made.

Table 2 Comparison of 2018-19 estimated and actual SRAS costs

Sub-network	Number of SRAS	Last year's estimated total cost (\$)	Actual Availability cost (\$)	Actual Testing Cost (\$)	Actual Usage Cost (\$)	Actual total cost (\$)
QLD North	2	1,862,489	845,421	483,000	0	1,328,421
QLD South	2	5,452,200	3,823,349	1,283,000.00	0	5,106,349
NSW	2	10,726,660	10,161,600	349,580	0	10,511,180
VIC	2	7,087,250	6,832,280	112,500	0	6,944,780
SA	2	6,001,466	5,658,146	114,258	0	5,772,405
TAS	2	6,030,789	5,596,589	433,200	0	6,029,789
Total	12	37,160,854	32,917,385	2,775,538	0	35,692,923

⁹ For more detail see 4.3.2 (b) (i) in the SRAS Guideline: http://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Ancillary_Services/SRAS-Guideline-2017.pdf.

¹⁰ For more detail see 4.3.2 (b) (ii) of the SRAS Guideline.

2.2.3 2019-20 estimates

Table 3 shows an estimated cost breakdown for the forthcoming year 2019-20.

Table 3 Estimated cost of SRAS for 2019-20

Sub-network	Number of SRAS	Estimated availability cost (\$)	Estimated testing cost (\$)	Estimated Usage Cost (\$)	Total estimated cost (\$)
QLD North	2	880,489	244,717	30,349	1,400,272
QLD South	2	3,916,269	894,763	319,171	5,130,203
NSW	2	10,325,179	556,476	16,112	10,897,766
VIC	2	6,942,436	265,997	30,197	7,238,630
SA	2	5,917,395	167,460	12,727	6,097,583
TAS	2	5,686,681	548,714	1,013	6,236,408
Total	12	33,668,449	2,922,843	409,569	37,000,862

For the availability cost, the forecast has assumed 100% availability for each service. This is conservative, as it is likely to be less than 100% due to outages.

For the testing cost, the forecast has assumed 13 short notice tests¹¹ and 11 post-maintenance tests. The post-maintenance test count was based on the Medium Term {Projected Assessment of System Adequacy (MTPASA) as at July 2019.

For the usage cost, the forecast has 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 is due to:

- A change in the structure of SRAS regions.
- A new set of contracts with a different commercial outcome.

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

- A new SRS.
- A new set of contracts with a different commercial outcome.

¹¹ One for each of the 12 SRAS, plus one for an SRAS that includes a back-up power station, which also requires a test.

Table 4 Comparison of SRAS costs from 2013-14 through to estimated costs for 2019-20

Sub-network	Actual costs 2013-14 (\$)	Actual costs 2014-15 (\$)	Actual costs 2015-16 (\$)	Actual costs 2016-17 (\$)	Actual costs 2017-18 (\$)	Actual costs 2018-19 (\$)	Estimated costs 2019-20 (\$)
QLD North	1,353,428	0	3,054,940	3,240,209	3,330,788	1,328,421	1,400,272
QLD Central	2,670,050	2,505,494	Qld North and Central regions merged				
QLD South	2,417,756	2,508,566	888,240	898,008	917,106	5,106,349	5,130,203
NSW North	12,019,875	11,848,415	New South Wales regions merged				
NSW South	7,364,417	7,580,205					
NSW			7,303,799	6,894,906	6,353,899	10,511,180	10,897,766
VIC North	7,489,905	8,215,237	Victorian regions merged				
VIC Latrobe Valley	6,600,562	6,771,223					
VIC			5,320,851	5,392,461	5,509,010	6,944,780	7,238,630
SA	3,233,916	3,470,570	2,173,957	1,589,134	1,764,049	5,772,405	6,097,583
TAS North	7,025,706	7,232,666	Tasmanian regions merged				
TAS South	3,358,736	3,468,402					
TAS			3,336,148	3,370,867	3,442,597	6,029,789	6,236,408
Totals	53,534,351	53,600,778	22,077,936	21,385,585	21,317,449^A	35,692,923	37,000,862

A. Updated from previous annual report to include final payments (total was \$20,939,339).

3. Network Support and Control Ancillary Services

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

AEMO's NSCAS Description¹² contemplates three types of NSCAS:

1. Network Loading Ancillary Services (NLAS).
2. Transient and Oscillatory Stability Ancillary Services (TOSAS).
3. Voltage Control Ancillary Services (VCAS).

AEMO acquired VCAS under one existing contract for the financial year 2018-19. This VCAS at Murray and Yass substations is based on a fixed quantity and cost per month. This contract terminated on 30 June 2019. No further service for this VCAS from July 2019 has been acquired.

Table 5 summarises the quantities and costs of the services over recent years.

AEMO did not acquire any NLAS or TOSAS in 2018-19.

¹² Available at <http://www.aemo.com.au/-/media/Files/PDF/0160-0102-pdf.pdf>.

Table 5 Quantities and cost of NSCAS over the period 2012-13 to 2018-19

Facility	Region	NSCAS	Quantity	Cost 2012-13 (\$)	Cost 2013-14 (\$)	Cost 2014-15 (\$)	Cost 2015-16 (\$)	Cost 2016-17 (\$)	Cost 2017-18 (\$)	Cost 2018-19 (\$)	Estimate 2019-20 (\$)
Combined Murray and Yass substations	NSW	VCAS	800 MVar ^A	Not procured	3,195,62	9,896,698	10,055,572	10,159,498	10,375,519	10,572,619	Not procured
Combined Murray & Tumut power stations	NSW	VCAS	1,650 MVar ^B	23,772,200	41,301,706	134,494	171,797	147,088	3,842,236	Not procured	Not procured
Totals				23,772,200	44,497,327	10,031,191	10,227,368	10,306,586	14,217,755	10,572,619	Not procured

A. The maximum capacity available from this service.

B. The maximum capacity used at any one time over the years shown.