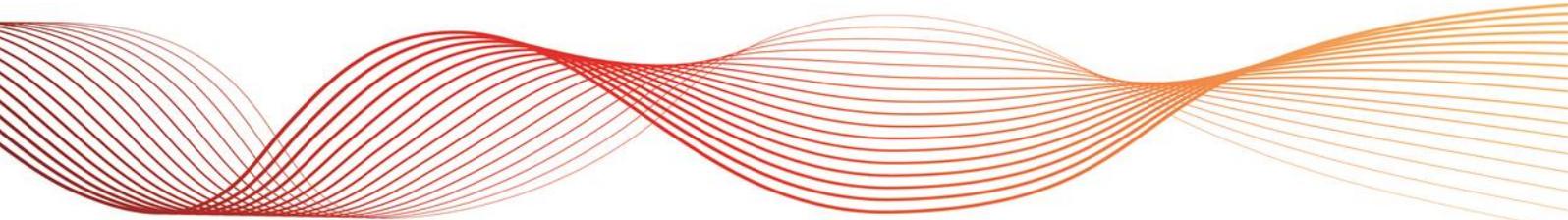




# NON-MARKET ANCILLARY SERVICES COST AND QUANTITY REPORT 2016–17

AN ANNUAL REPORT REQUIRED BY THE NATIONAL ELECTRICITY RULES FOR THE NATIONAL ELECTRICITY MARKET

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# IMPORTANT NOTICE

## Purpose

The purpose of this publication is to provide information about Non-Market Ancillary Services acquired by the Australian Energy Market Operator (AEMO) in the National Electricity Market for the financial year 2016–17.

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

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# ABBREVIATIONS

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



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# 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 are acquired by contracts. There are two types of non-market ancillary services that AEMO may acquire:
  - System Restart Ancillary Services (SRAS), and
  - Network Support and Control Ancillary Services (NSCAS).

SRAS can help to restore electricity supply following a large-scale blackout of part or all of the power system.<sup>1</sup> The Reliability Panel<sup>2</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 then buys an appropriate quantity of restart services for defined electrical sub-networks to meet the requirements of the SRS. The current SRS was determined in August 2013, and remains in effect until 30 June 2018.

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>3</sup> AEMO can procure NSCAS as a last resort to prevent an adverse impact on power system security and reliability.

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 its current contracts for non-market ancillary services.

This report includes details of:

- The number of SRAS acquired for each NEM region and electrical sub-network.
- The total actual annual cost for provision of SRAS in 2016–17, broken down to charges for availability and use, for each electrical sub-network and each NEM region.
- The total estimated annual cost for provision of SRAS in 2017–18, broken down to charges for availability and use, 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 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 website.<sup>4</sup>

<sup>1</sup> SRAS is about restoring supplies to other generators, which in turn then restore load. SRAS is not about restoring load directly.

<sup>2</sup> The Reliability Panel is a specialist body within the Australian Energy Market Commission (AEMC) and comprises industry and consumer representatives. It is responsible for monitoring, reviewing, and reporting on the reliability, security, and safety of the national electricity system and advising the AEMC in respect of such matters. The Panel's responsibilities are specified in section 38 of the National Electricity Law and clause 8.8.1 of the NER.

<sup>3</sup> For more information about NSCAS, 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>.

<sup>4</sup> 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 Meeting the system restart standard in 2016–17

The quantity of SRAS procured for the current term of SRAS agreements<sup>5</sup> was determined by AEMO in accordance with the September 2014 version of its SRAS Guidelines, following consultation in accordance with the NER.

Table 1 shows the number of SRAS for each electrical sub-network contracted as at 30 June 2017.

**Table 1 Number of SRAS acquired per region and electrical sub-network**

Region	Electrical sub-network	Number of SRAS
Queensland (QLD)	QLD North	2
	QLD South	1
New South Wales (NSW)	NSW	2
Victoria (VIC)	VIC	2
South Australia (SA)	SA	2
Tasmania (TAS)	TAS	1
<b>Total</b>		<b>10</b>

For the 2016–17 year, AEMO acquired sufficient SRAS to meet the system restart standard for all electrical sub-networks.

However, for completeness, AEMO notes that the actual availability of two services, as established by the terms of the relevant contracts, was less than 90%.<sup>6</sup> Although every SRAS has a contractual availability requirement of 90% or more, in 2016–17 that level was not achieved for one SRAS service acquired for South Australia, and one for New South Wales. At the time of publishing this report, AEMO expects the availability of those services to return to levels consistent with the system restart standard going forward.

### 2.2 Costs of SRAS

The annual cost of SRAS is based on an availability cost (\$ per 30-minute trading interval) and an annual test cost. A usage cost is also paid to an SRAS provider if the service is used in the event of a blackout.

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 for maintenance, or when the SRAS fails a test under the contract.

The test cost is fixed, as each SRAS is tested annually at pre-determined cost.

The following tables show:

- Table 2: A comparison of the estimated and actual costs for 2016–17.
- Table 3: An estimated cost breakdown for the forthcoming year 2017–18.
- Table 4: A historical comparison of costs for the past four years.

<sup>5</sup> July 2015 to June 2018. There is an option in each contract that allows for 2 x 1 year extensions of these contracts, the second by mutual agreement.

<sup>6</sup> The SRS requires primary restart services to have a reliability of 90%.

**Table 2 Comparison of 2016–17 estimated and actual SRAS costs**

Sub-network	Number of SRAS	Estimated total cost (\$)	Actual total cost (\$)
QLD North	2	3,308,101	3,240,209
QLD South	1	912,514	667,162
NSW	2	7,811,447	6,737,874*
VIC	2	5,433,011	5,392,461
SA	2	1,886,781	1,595,165*
TAS	1	3,371,373	3,370,867
<b>Total</b>	<b>10</b>	<b>22,723,228</b>	<b>21,003,738</b>

\* Contract availability periods during 2016–17 have not yet been finalised. This may result in rebates to AEMO in 2017–18.

The difference between the estimated and actual SRAS costs for 2016–17 is attributable to:

- Standard annual price indexation increases.
- Four SRAS tests payments being unpaid as of Aug 2017 (these cost will accrue in 2017–18).
- Availability costs being lower than forecasts, due to outages and failure penalties.
- No usage payments being made.<sup>7</sup>

**Table 3 Estimated cost of SRAS for 2017–18 (current contracts)\***

Sub-network	Number of SRAS	Estimated availability cost** (\$)	Estimated testing cost (\$)	Estimated usage cost*** (\$)	Total estimated cost (\$)
QLD North	2	2,530,414	804,807.25	42,672	3,377,893
QLD South	1	681,353	235,752.98	14,611	931,717
NSW	2	7,762,937	160,369.82	53,571	7,976,878
VIC	2	5,006,690	502,319.78	38,979	5,547,990
SA	2	1,812,970	105,626.83	8,286	1,926,882
TAS	1	3,371,724	70,873.13	510	3,443,107
<b>Total</b>	<b>10</b>	<b>21,166,087</b>	<b>1,879,750</b>	<b>158,629</b>	<b>23,204,466</b>

\* Assumes no additional or substitute services procured. Any changes to 2016–17 contract availability may reduce the amount payable in 2017–18.

\*\* Assumes 100% availability for each service (this is conservative – likely to be less due to outages).

\*\*\* Usage charges are only incurred if the SRAS is actually required to provide black start capability following a major supply disruption. This estimated usage is based on the assumption of one event every 20 years (1/20<sup>th</sup> of the contracted usage charges).

**Table 4 Comparison of SRAS costs from 2013–14 through to estimated cost for 2017–18**

Sub-network	Actual costs 2013–14 (\$)	Actual costs 2014–15 (\$)	Actual costs 2015–16 (\$)	Actual costs 2016–17 (\$)	Estimated costs 2017–18 (\$)
QLD North	1,353,428	0	3,054,940	3,240,209	3,377,893
QLD Central	2,670,050	2,505,494	Qld North and Central regions merged		
QLD South	2,417,756	2,508,566	888,240	667,162	931,717
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	6,737,874	7,976,878
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	5,547,990
SA	3,233,916	3,470,570	2,173,957	1,595,165	1,926,882
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	3,443,107
<b>Totals</b>	<b>53,534,351</b>	<b>53,600,778</b>	<b>22,077,936</b>	<b>21,003,738</b>	<b>23,204,466</b>

<sup>7</sup> A regional black system event occurred during 2016–17, however no usage payments were made.



## 2.3 The process for acquiring SRAS

Over the 2016–17 year, no additional SRAS were procured.

Generally, during a contract term, additional SRAS procurement is only required to replace a current SRAS due to withdrawal or long term technical failure.

The process of seeking a replacement is as follows:

- AEMO identifies potential replacements by network modelling studies.
  - Such potential SRAS must be technically capable of providing SRAS for the electrical sub-network.
- AEMO invites technically capable replacements to offer to provide SRAS.
- AEMO selects the best value option of any offers received.
- AEMO and the selected provider enter into an agreement.

## 3. NETWORK SUPPORT AND CONTROL ANCILLARY SERVICES

### 3.1 Types, quantity and cost of NSCAS

AEMO’s NSCAS Description<sup>8</sup> 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 procured two VCAS for the financial year 2016–17. Table 5 summarises the quantities and costs of the services over the past five financial years.

The VCAS at Murray and Yass substations is based on a fixed quantity and cost per month.

The VCAS from Murray and Tumut Power Stations is based on an enabling charge per generating unit, which is payable for each trading interval when the service is enabled.

**Table 5 Quantities and costs of NSCAS over the past two years**

Facility	Benefit region	NSCAS service	Quantity	Cost 2012–13 (\$)	Cost 2013–14 (\$)	Cost 2014–15 (\$)	Cost 2015–16 (\$)	Cost 2016–17 (\$)
Combined Murray and Yass substations	NSW	VCAS	800 Mvar*	Not procured	3,195,62	9,896,698	10,055,572	10,159,498
Combined Murray and Tumut power stations	NSW	VCAS	1650 Mvar**	23,772,200	41,301,706	134,494	171,797	147,088
<b>Totals</b>				<b>23,772,200</b>	<b>44,497,327</b>	<b>10,031,191</b>	<b>10,227,368</b>	<b>10,306,586</b>

\* The maximum capacity available from this service.

\*\* The maximum capacity used at any one time over the five years shown – over the most recent year 2016-17 the maximum was 105 Mvar.

AEMO did not procure any NLAS or TOSAS for the 2016–17 financial year.

<sup>8</sup> AEMO. *NSCAS Description*, December 2011. Available at: <http://www.aemo.com.au/-/media/Files/PDF/0160-0102-pdf.pdf>.