

SYSTEM RESTART ANCILLARY SERVICES – FINAL REPORT

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1 Executive Summary

This report finalises AEMO's recommendations resulting from a review of system restart ancillary services (SRAS) in the National Electricity Market (NEM).

AEMO recommends:

1. A review by the AEMC Reliability Panel of the SRS, to clarify the extent to which SRAS is to minimise the economic impact of a 'major supply disruption' in various risk scenarios.

AEMO proposes an SRS review should focus on the varying degrees of major supply disruption, ranging from part of an electrical sub-network through to all electrical sub-networks. Each disruption has a different probability of occurrence, and each would have different economic consequences. Network restoration costs would also potentially differ. AEMO considers that an SRS review should clarify the divergence of views among AEMO and stakeholders about the extent of network risk (major supply disruption) for which SRAS is currently being procured. Any SRS changes resulting from such a review may require an adjustment to the level of system restart capability that AEMO procures.
2. Replacing the definition of primary and secondary restart service in the National Electricity Rules (NER) with a single definition of system restart ancillary service.
3. Amending the NER to allow AEMO to manage non-competitive outcomes in the SRAS tender process, similar to the network support and control ancillary services (NSCAS) process included in clauses 3.11.5(h) and (i) of the NER.
4. Amending the NER to provide for recovery of SRAS costs on a regional basis.
5. Consulting, in accordance with the NER, on proposed amendments to AEMO's SRAS guidelines and related documents, to determine the most effective SRAS to be procured to efficiently meet the present SRS for the 2015 tender process. AEMO's current views on electrical sub-network boundaries and quantities are detailed in this report. AEMO's consultation with industry on the SRAS guidelines will commence in March 2014.
6. Seeking dynamic data from generators and transmission network service providers (TNSP) sufficient to allow AEMO to perform dynamic or transient modelling to assess SRAS proposals in the 2015 tender process.

AEMO submitted a proposed rule change to the Australian Energy Market Commission (AEMC) on 20 December 2013 in relation to recommendations 2 to 4. AEMO proposes to commence consultation with industry in March 2014 on amendments to its SRAS guidelines (recommendation 5). During that consultation process AEMO also intends to work with TNSPs and generators to define the parameters required for modelling under recommendation 6.

SRAS may be used to assist in power system recovery following a major supply disruption. AEMO procures SRAS from generating units able to restart in agreed timeframes from a power source independent of the grid. This is the initial step in energising other generators and restoring power supply to customers following a major supply disruption. The procurement of SRAS is intended to meet the SRAS objective, defined in the NER as:

"...to minimise the expected economic costs to the market in the long term and in the short term, of a major supply disruption, taking into account the cost of supplying system restart ancillary services, consistent with the national electricity objective."

A major supply disruption is defined in the NER as: *"The unplanned absence of voltage on a part of the transmission system affecting one or more power stations."* A major supply disruption on all or a significant part of the transmission system (either as a whole or within a region) affecting a significant number of customers is defined as a 'black system', although that term is not expressly used in relation to SRAS procurement.

To date, contracted SRAS has not been dispatched in response to a major supply disruption anywhere in the NEM.

AEMO's SRAS review was triggered by the increase in the total cost of procuring these services from approximately \$15 million in 2007 to \$51 million in 2013 (a 340% increase over six years). During this period AEMO did not see any material increase in the overall value of SRAS procured, in terms of meeting the SRS.

AEMO's review highlighted other aspects of SRAS scoping and procurement that warranted further investigation. These related to deficiencies in the procurement process and the ability of the services procured to deliver on requirements. It became apparent during the review that there is no common view held by government, AEMO, and industry regarding what risk the NER and the SRS actually require SRAS to address.

AEMO and generators disagree on the nature and level of risk that SRAS is intended to mitigate. In particular this relates to the likelihood, extent, and economic impact of a major supply disruption, and the likely contribution of SRAS to restoring supply in relevant circumstances. AEMO believes that a review of the SRS by the AEMC Reliability Panel would best resolve these issues.

Pending any review of the SRS, AEMO - as the independent operator responsible for system reliability and security - is required to develop and maintain guidelines and methodologies defining how the current standard should be applied, how the electrical sub-networks should be defined, and the number and level of services to be determined and procured. The development and amendment of these guidelines must be carried out in consultation with stakeholders and be consistent with the SRAS procurement objectives expressed in clause 3.11.4A(c) of the NER.

AEMO considers a black system condition across the NEM to be a highly unlikely event; a view supported by independent consultants DNV KEMA, global specialists in energy and risk management services. Their report is provided in Appendix 1.

Subject to some minor adjustments with which AEMO agrees, DNV KEMA considers that AEMO's proposed revisions to the location of electrical sub-network boundaries and SRAS quantities within each sub-network will continue to meet the technical requirements of the current SRS and the SRAS procurement objectives. AEMO will therefore commence consultation on those proposals under the NER. During this process AEMO will consider any alternative solutions proposed by stakeholders and seek to determine the outcomes that will enable the SRS and the SRAS procurement objectives to be met in the most efficient manner.

AEMO has extended existing SRAS contracts so that they now expire on 30 June 2015, and expects to complete consultation on the proposed amendments prior to commencing the 2015 tender process.

2 Introduction

2.1 Purpose of SRAS Review

This final report summarises the outcomes of a review of system restart ancillary services (SRAS) performed by AEMO, in consultation with industry, to identify efficiency gains in the procurement of SRAS to meet the SRAS objective and system restart standard (SRS), should those services be required to restart generation and supply following a major supply disruption.

This final report has been produced following two stages of consultation, on AEMO's Issues and Options Paper¹ and Draft Report² respectively. These documents, together with stakeholder submissions, can be found on the Consultations page of AEMO's website.

2.2 Scope of SRAS Review

The scope of the SRAS review included:

- Assessing the appropriateness of the SRAS objective and the SRS.
- Identifying the most efficient number of SRAS and electrical sub-networks to meet the SRS.
- Assessing the appropriate SRAS procurement methodology.
- Identifying improvements to the SRAS procurement arrangements.
- Considering all submissions received during the consultation process.

AEMO is aware that any recommendations from this review that would require changes to the SRAS objective or other provisions of the National Electricity Rules (NER), or to the SRS, must be made by the AEMC and the AEMC Reliability Panel respectively.

2.3 What is SRAS?

SRAS is a service procured by AEMO from generators to provide the capability to restart nominated generating units, if required, in agreed timeframes following a major supply disruption.

A major supply disruption is defined in the NER Glossary (Chapter 10) as: "*The unplanned absence of voltage on a part of the transmission system affecting one or more power stations.*"

A major supply disruption on all or a significant part of the transmission system (either in the NEM as a whole or within a region) affecting a significant number of customers is defined as a 'black system'. AEMO notes, however, that this term is not expressly used in the NER in relation to the SRAS arrangements.

The timeframes and levels to which supply must be restored following a major supply disruption are set by the AEMC Reliability Panel in the SRS. The SRS must be consistent with the SRAS objective in clause 3.11.4A(a) of the NER. AEMO must then endeavour to acquire SRAS in accordance with guidelines and an SRAS description developed by AEMO to meet the SRAS objective and the SRS.

Generating facilities with black start capability can either restart or remain in service following disconnection from the power grid. They must be capable of delivering electricity to a connection point within timeframes derived to meet the SRAS objective and be able to control frequency and voltage. SRAS is commonly provided by:

¹ http://www.aemo.com.au/Consultations/National-Electricity-Market/Open/System-Restart-Ancillary-Services-2013-Consultation/~media/Files/Other/consultations/nem/SRAS_Review_Issues_and_Options.ashx

² <http://www.aemo.com.au/Consultations/National-Electricity-Market/Open/~media/Files/Other/consultations/nem/System%20Restart%20and%20Ancillary%20Services%20-%20Draft%20Report.ashx>

- Generating units that can restart without being connected to the power grid. For example, hydro or gas turbine generating units.
- Trip to house load (TTHL) schemes, which include large generating units that can automatically disconnect from the power grid and continue to supply their own auxiliaries.
- Larger generating units that can be started from a nearby small power station, such as a thermal power station with an adjacent black start gas turbine generating unit.

SRAS is one method that may be used to restore the power grid following a major supply disruption. Once connected, electricity supplied from an SRAS facility is used to start-up other generation units as required. This process would be managed by AEMO and relevant transmission network service providers (TNSPs). AEMO is responsible for coordinating power grid restoration to balance supply with demand and ensure the power system is secure.

2.4 What is the SRAS objective?

The NER state that the SRAS objective is:

“...to minimise the expected economic costs to the market in the long term and in the short term, of a major supply disruption, taking into account the cost of supplying system restart ancillary services, consistent with the national electricity objective.”³

The SRAS objective guides the development of the SRS and related guidelines by the AEMC Reliability Panel, as well as AEMO’s SRAS guidelines and SRAS description.

2.5 What is the system restart standard?

A major, extended loss of power can have a detrimental impact on public safety and wellbeing, and the economy. The SRS effectively provides guidance and sets a benchmark for AEMO to procure SRAS in order to meet the SRAS objective. By implication, the SRS should represent an assessment of the appropriate parameters for minimising the cost of a major supply disruption, consistent with the SRAS objective.

Aspects which are critical to SRAS outlined in the SRS are:

- The timeframes and load restoration level prescribed in the SRS for recovery from a major supply disruption.
- The reliability of SRAS services.
- The determination of the sub-networks undertaken by AEMO in consultation with stakeholders consistent with guidelines provided in the SRS.
- The application of the SRS in each electrical sub-network and the extent to which each electrical sub-network can accommodate diversity and strategic location of SRAS services.

The SRS sets a “target timeframe” of four hours, within which generation and transmission must be able to supply 40% of peak demand in each sub-network.⁴ AEMO views this target as an indication of the extent of economic costs that could be tolerated in the event of a major supply disruption. In other words, the restoration of supply capability within the SRS parameters would effectively restrict the long-term economic costs to an extent implied by those parameters.

AEMO has not performed any quantitative studies on the long-term economic costs to the market of a major supply disruption. Rather, this review has considered the nature and quantity of SRAS required to restore the level of load prescribed in the SRS within the target timeframe.

³ NER clause 3.11.4A(a).

⁴ A 90 minute target applies to the energisation of power station auxiliaries to provide sufficient capacity to meet 40 per cent of peak demand in the sub-network.

To determine whether the SRS meets community, customer, and market requirements of the limitation of potential loss, an SRS review that clarifies or modifies the parameters within which AEMO should procure SRAS would be required.

2.6 SRAS governance

The framework for establishing SRAS requirements and procuring these services is set out in the NER.

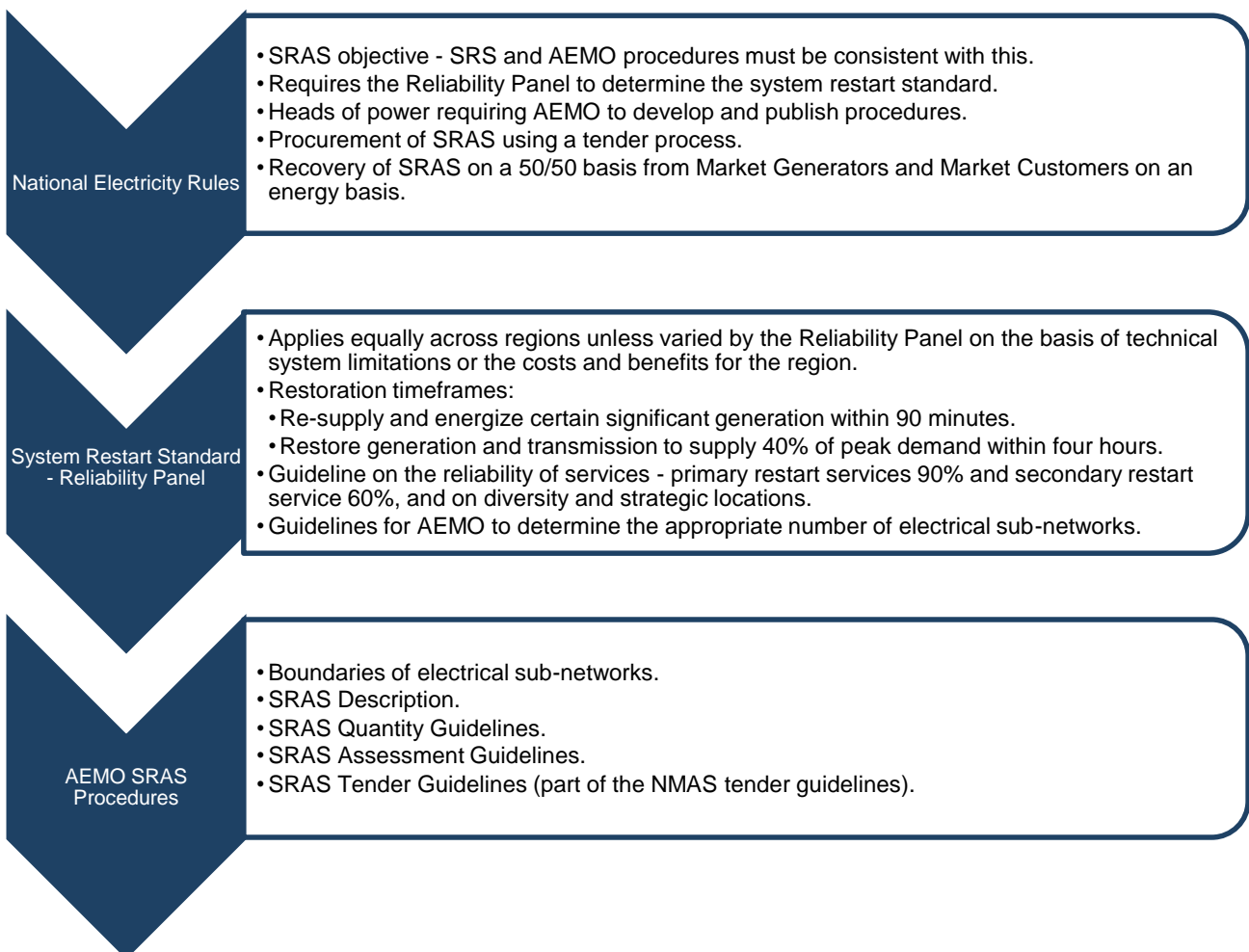
On AEMO’s advice, the Reliability Panel determines the SRS under clause 8.8.1(a)(1a) and reviews its performance annually under clause 8.8.3(b) of the NER.

AEMO, as the independent market operator with responsibility for power system security and reliability, is responsible under the NER for:

- Determining (after consultation) the SRAS guidelines and technical requirements to meet the SRS and the SRAS objective, including the electrical sub-network boundaries and SRAS quantities to be procured within each sub-network.
- Procuring SRAS through a competitive tender in accordance with SRAS guidelines.
- Settling SRAS payments and costs from Market Customers and Market Generators on a weekly basis.

The diagram below explains the governance and roles for SRAS and differentiates the responsibilities under the NER, SRS and AEMO.

Figure 1: SRAS governance roles and responsibilities.



2.7 Major supply disruptions

A major supply disruption is defined in the NER as unplanned absence of voltage on a part of the transmission system affecting one or more power stations. A major supply disruption is not a total supply disruption, either across the NEM or even in a single electrical sub-network.

In determining SRAS procurement requirements to address a possible major supply disruption, it is important to consider the extent and likelihood of outages for which SRAS could be required to restore supply. AEMO's review considered possible causes of NEM power system outages. In addition, DNV KEMA performed an independent analysis of the likelihood of events and consequences on the power system (see Appendix 1).

Possible causes of a widespread outage include:

- Protection failures.
- Natural disasters, for example, a cyclone, flood, solar storm, or earthquake.
- Deliberate, coordinated damage to infrastructure or systems.

National and international experience suggests that even in these conditions, the probability of a complete loss of supply occurring across the NEM is remote. Studies, modelling, and similar events to date indicate that any outage condition would be contained within break points on the power system.

The NEM has experienced a number of natural disasters, including the 2012 Victorian earthquakes, the Queensland floods and Cyclone Yasi in 2011, and the 2009 Victorian bushfires. During each of these incidents, protection systems operated effectively and the NEM did not experience a loss of supply across multiple regions.

In the NEM's history there has been only one black system condition; this occurred on 22 January 2009 in Far North Queensland and was confined to one sub-network. In this instance, a multiple contingency event occurred on the 275 kV network between Ross and Strathmore substations resulting in a power system shutdown north of Ross. More than 60% of North Queensland demand was interrupted and the black system condition in North Queensland continued for almost 2.5 hours. In consultation with Powerlink, AEMO restored North Queensland from the Strathmore and Clare substations and did not dispatch contracted SRAS in North Queensland.

3 The SRAS Review

AEMO's SRAS review was triggered by increases in the total cost of procuring these services from approximately \$15 million in 2007 to \$51 million in 2013 (a 340% increase over six years). Analysis has also shown that SRAS costs are notably higher than international benchmarks.

AEMO supports the SRAS objective on the basis that it is consistent with the National Electricity Objective (NEO) and logically seeks to weigh the cost of services with the benefits of minimising the economic disruption caused by a major supply disruption. However, finding the appropriate balance in practice is challenging given the variables involved.

The probability of a total supply disruption is extremely low, but the economic cost would be high (and potentially immeasurable). This gives rise to a difficult economic trade-off between the cost to insure against the remote possibility of such an event and the economic costs should that event occur. The NER provides no guidance on an acceptable level of economic cost, adding to the challenge of finding an appropriate balance.

In reviewing its procurement of SRAS, AEMO has assessed the current SRS and considered how those SRS requirements could be met by acquiring services more efficiently.

AEMO's review also highlighted concerns about the following aspects of SRAS scoping and procurement:

- Deficiencies in the procurement process, in particular the inability to refer matters of pricing to dispute resolution where tender outcomes are not competitive.
- The ability of the services procured to deliver on requirements, particularly the four-hour target restoration timeframe prescribed in the SRS.
- There is no common view held by government, AEMO, and industry regarding the risk the NER and the SRS actually require SRAS to address. SRAS procurement is likely to remain contentious until those requirements are clarified.
- AEMO's SRAS review invited comment on the threshold issue of whether the SRAS market can be considered competitive and questions of cost and value.⁵ AEMO also presented a number of options for improving the SRAS arrangements for consultation.⁶ These included:
 - Whether the SRAS objective is appropriate.
 - The assumptions to be made about the extent of a major supply disruption in procuring SRAS.
 - Alternatives to the current tender and contract procurement process.
 - The appropriate basis for recovering the costs of procuring SRAS.
 - A single definition of SRAS.

4 Stakeholder Consultation

On 17 December 2012, AEMO held a public forum to commence the SRAS Review. On 25 January 2013 an Issues and Options Paper was released. Fourteen submissions were received in this first stage of consultation.

On 10 May 2013, AEMO published its Draft Report. Ten submissions were received in this second stage of consultation. Table 1 shows the respondents for each stage of the consultation.

Table 1: Respondents to the Draft Report

RESPONDENT AND STAGE	PARTICIPANT TYPE OR OTHER ROLE	REGION(S) PARTICIPATING
AGL Energy Ltd (AGL) Stage 1 & 2	SRAS provider Generator – market scheduled, non-scheduled, semi-scheduled, and non-market non-scheduled Market Customer	Victoria Queensland, South Australia, Victoria, New South Wales
Alinta Energy (Alinta) Stage 1 & 2	SRAS provider Generator – market scheduled Market Customer	South Australia Queensland, South Australia, Victoria
CS Energy Stage 1	SRAS provider Generator – market scheduled and non-scheduled	Queensland
Delta Electricity (Delta) Stage 1	SRAS provider Generator – market scheduled and non-scheduled Market Customer	New South Wales
Energy Australia Stage 1	Generator – market scheduled, non-scheduled, and semi-scheduled Market Customer	South Australia, Victoria, New South Wales
GDF Suez Australian Energy (GDFSAE) Stage 1 & 2	SRAS provider Generator – market scheduled	Victoria South Australia, Victoria

⁵ SRAS Review Issues and Options Paper, 25 January 2013, section 5.

⁶ SRAS Review Issues and Options Paper, 25 January 2013, section 6.

RESPONDENT AND STAGE	PARTICIPANT TYPE OR OTHER ROLE	REGION(S) PARTICIPATING
Hydro Tasmania Stage 1 & 2	SRAS provider Generator – market scheduled and non-scheduled Market Customer	Tasmania
Macquarie Generation (Macquarie) Stage 1 & 2	SRAS provider Market Generator	New South Wales
Major Energy Users Inc (MEU) Stage 1	Represents large end users	n/a
National Generators Forum (NGF) Stage 1 & 2	Represents generators	n/a
Origin Energy Ltd (Origin) Stage 1 & 2	SRAS provider Generator – market scheduled and non-scheduled Market Customer	New South Wales, South Australia Queensland, South Australia, Victoria, New South Wales
Snowy Hydro Ltd (Snowy) Stage 1	SRAS provider Generator – market scheduled and non-scheduled	New South Wales
St Vincent de Paul Society Victoria Stage 1	Represents small end users	n/a
Stanwell Corporation Ltd (Stanwell) Stage 1 & 2	SRAS provider Generator – market scheduled and non-scheduled Market Customer	Queensland
Tomago Stage 2	Market Customer	New South Wales
TransGrid Stage 2	Transmission Network Service Provider	New South Wales

In June 2013, AEMO hosted public forums in each NEM region to explain and discuss the technical analysis supporting the draft recommendations.

Submissions received in response to the Draft Report are available on AEMO's website⁷, together with AEMO's responses. AEMO's consideration of the matters raised in consultation is set out in Sections 5 and 6 below. Section 6 includes AEMO's final recommendations for change, the majority of which would require changes to the NER and relevant SRAS procedures and guidelines. In addition, AEMO supports a review of the SRS by the Reliability Panel.

AEMO submitted a rule change request to the AEMC in December 2013 and plans to commence consultation on procedure and guideline amendments in March 2014.

AEMO appreciates the engagement of stakeholders in the SRAS Review and thanks all respondents for their participation.

5 Submissions on the Basis for the SRAS Review

In the Issues and Options Paper, AEMO invited comment on issues regarding the competitiveness of the current SRAS procurement arrangements. In addition to those matters, some respondents questioned whether AEMO is the appropriate body to carry out a review of SRAS. This Section 5 summarises the submissions on both issues and AEMO's responses to them.

⁷ <http://www.aemo.com.au/Consultations/National-Electricity-Market/Open/System-Restart-Ancillary-Services-2013-Consultation>

5.1 AEMO's responsibilities

5.1.1 Stakeholder submissions

Submissions from Origin and the National Generators Forum (NGF) suggested that the changes proposed by AEMO are policy-based decisions and are outside AEMO's remit.

Origin stated that "*operational changes affecting the SRS should not be made without confirmation of the policy objectives, and where operational changes affect the SRS these should be robustly analysed and considered by the Reliability Panel.*"⁸

Further, Origin considered that the Reliability Panel is better positioned than AEMO to consider trade-offs between conflicting objectives.⁹

5.1.2 AEMO's considerations

AEMO considers the SRAS policy objectives to be clear in the SRAS objective. The SRS is set by the AEMC Reliability Panel, and the NER allow AEMO the discretion to assess the amount of SRAS technically required to meet the SRS. The SRS states that AEMO must procure sufficient SRAS to restart individual electrical sub-networks within specified timeframes.

AEMO understands that the relevant operational changes Origin refers to include the Draft Report's recommended changes to the electrical sub-networks and SRAS quantities, including an assumption that SRAS can be procured to meet a region-wide (rather than NEM-wide) black system condition. These operational changes would not affect the ability to meet the current SRS. AEMO would continue to use reasonable endeavours to procure SRAS to achieve the SRS, consistent with the SRAS objective.

The proposed operational changes are based on a technical assessment which is supported by DNV KEMA's independent analysis, and are discussed further in Section 6.2.1.

AEMO is seeking NER and SRS changes that clarify the SRAS definition; this will be progressed with the AEMC and the Reliability Panel. AEMO has explained its recommendations to the Reliability Panel and provided a copy of DNV KEMA's report for consideration.

AEMO recognises, however, that there is a divergence of views about the extent of network risk (major supply disruption) for which SRAS should be procured, and considers that this may best be resolved through a review and clarification of the SRS, as outlined in section 6.1.3 of this Final Report.

5.2 SRAS market competitiveness

5.2.1 Issue

In the Issues and Options Paper, AEMO expressed the view that the current SRAS market does not exhibit the characteristics of a competitive market. AEMO's view was based on changes it identified across successive tender processes, including:

- Increases in SRAS costs.
- Changes to SRAS quantities procured.
- The limited number of SRAS providers in each electrical sub-network.

The information available to AEMO indicated significant changes in SRAS prices and only minor changes in SRAS quantities across the NEM. It also highlighted that there is little to no competition in some electrical sub-networks.

⁸ Origin. *Submission to the SRAS Review Draft Report*. 11 June 2013, p. 4.

⁹ Origin. *Submission to the SRAS Review Draft Report*. 11 June 2013, p. 4.

In the Issues and Options Paper, AEMO provided data showing the changes in SRAS costs and quantities procured and the degree of competitiveness in electrical sub-networks. AEMO also presented the findings of its international comparison of the costs of procuring equivalent services.

Responses to this issue were mixed: most generators disagreed with AEMO's view while consumer groups supported it. Generators argued that cost increases did not demonstrate a market failure, that benchmarking against international costs is flawed, that cost increases were required to incentivise new entrants, and that costs were below new entrant pricing.

The Draft Report investigated this issue further, qualitatively assessing the market against criteria for a competitive market and recommending changes to the tender process to manage non-competitive outcomes.

5.2.2 Stakeholder submissions

No submissions to the Draft Report directly argued that the SRAS market was competitive. However, Alinta and Origin stated that AEMO had not demonstrated a market failure sufficient to justify changes to the SRAS arrangements.^{10,11}

In response to AEMO's comment that "*some offers may be priced marginally below new entrant pricing to maximise the return on generator assets, resulting in SRAS costs increasing, not reducing, over the long term ...*", Origin stated that, "*..Price increases are an essential component of efficient market operations [and act] as an important signal for new investment*".¹² Origin suggested that AEMO's position was not supported because the 2012 tender process resulted in a new entrant to the SRAS market.

Alinta, GDF Suez Australian Energy (GDFSAE), and Stanwell commented that AEMO compared the SRAS market against criteria for a "*perfectly competitive market rather than a real world competitive market*".^{13,14,15} They argued that most markets do not exhibit all the criteria of a perfectly competitive market and that AEMO's assessment of competitiveness is invalid. GDFSAE suggested that AEMO undertake further analysis of the degree of market concentration in the SRAS market.

AGL noted that a change in the definition of primary and secondary restart services would reduce the number of generators able to submit tenders, reducing competition in the SRAS market.¹⁶

5.2.3 AEMO's considerations

While there are regional differences, AEMO does not consider that the current SRAS market overall exhibits the characteristics of a competitive market. This is based on AEMO's observations of the limited number of tenderers for suitable SRAS in most electrical sub-networks, combined with significant increases in tender prices.

None of the submissions to the Draft Report sought to argue that the SRAS market was competitive overall and a number acknowledged issues in specific regions. AEMO considers that the significant increases in SRAS costs over last three tender processes indicate that it is not being offered competitive tenders, and is consequently paying inefficient SRAS costs. If this is the case, the economic loss associated with this transfer is borne by consumers.

¹⁰ Alinta. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 6.

¹¹ Origin. *Submission to the SRAS Review Draft Report*. 11 June 2013, p. 3.

¹² Origin. *Submission to the SRAS Review Draft Report*. 11 June 2013, p. 3.

¹³ Alinta. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 2 - 3.

¹⁴ GDFSAE. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 2.

¹⁵ Stanwell. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 2.

¹⁶ AGL. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 1.

Some generator respondents suggested that SRAS price increases are explained by changes in SRAS quantities, the carbon tax, and a change in risk assessment practices over the last two years.

AEMO's information about the quantity of SRAS offered does not explain the SRAS cost increases.¹⁷ Further, it seems unlikely that the carbon price has been a significant contributing factor. For example, AEMO expects that the carbon price would have increased the opportunity cost associated with generators being tested once a year and, for some, the added cost associated with fuel storage.

Prospective SRAS providers are well informed about the SRAS quantities being sought by AEMO and the potential number of tenderers in each electrical sub-network. Where it is known that limited options exist for suitable SRAS in an electrical sub-networks, the lack of competitive pressure provides an opportunity for SRAS providers to tender prices that are above the long-run marginal cost of providing the service. As AEMO is not empowered to request marginal cost information from generators as part of the procurement process, it can only identify recommended actions to address the observed outcomes.

AEMO notes that only one secondary restart service was acquired in 2012, and on that basis it seems unlikely that AEMO's proposed single definition of SRAS would have any material impact on competition in the provision of SRAS.

Generators stated that AEMO has not demonstrated a market failure and it is inappropriate to pursue changes without doing so. What constitutes a market failure is the subject of much debate, and demonstrating market failure is not a prerequisite for AEMO to review arrangements that do not seem to be providing optimal market outcomes. AEMO considers there to be sufficient evidence suggesting that the current SRAS arrangements do not result in competitive outcomes and may not be consistent with the NEO. This is discussed further in Section 5.2.3 of the Draft Report.

Origin cited the entry of a new tenderer responding to the price signal in the 2012 tenders to refute AEMO's view that some SRAS offers might be priced marginally below new entrant pricing to maximise the return on generator assets.

AEMO agrees that price signals and a stable regulatory environment are important for prospective service providers, but notes that this example relates to an electrical sub-network where the number of SRAS required by AEMO had not been met.¹⁸ Under this condition, pricing strategies that seek to deter new investment would be ineffective.

AEMO agrees with Alinta, GDFSAE, and Stanwell that perfectly competitive markets rarely exist in the real world. Nonetheless, this comparative point is commonly used to identify the level of divergence from competitive outcomes. The SRAS market has a single procurer (AEMO) and currently between one and three unique SRAS providers in each electrical sub-network.

As outlined in the Draft Report, there are high costs and barriers to entry, information asymmetry, and transaction costs required to participate in the SRAS market.

Firecone Economics' analysis of the SRAS market's competitiveness was completed in December 2005, but two subsequent tender processes have occurred since then. In its report Firecone noted that the "...competitive models would generally be preferred where they should result in reasonable prices", and in 2005 it assessed that the SRAS market "...is limited, but may not be as limited as indicated by recent experience".¹⁹

¹⁷ Even though the number of SRAS procured increased by two as a result of the 2012 tender, there were insufficient tenderers offering SRAS in some electrical sub-networks and competitive pressure between SRAS providers is minimal.

¹⁸ SRAS Quantity Guidelines state that a minimum of two SRAS should be procured in each electrical sub-network.

¹⁹ Firecone Economics. *Review for the AEMC of the Proposed NEMMCO Rule for System Restart Ancillary Services Final Report*. December 2005, p. 15.

Firecone Economics was aware that there were few SRAS providers and that “*prices which emerge from a competitive procurement will include some degree of economic rent*”. It suggested that, at \$13 million, the transfer to consumers seemed to be a few million dollars. SRAS costs have increased to \$51 million (2012-13), representing a more than four-fold increase in real terms. At these costs, the magnitude of transfer between generators and consumers is no longer immaterial.

AEMO submitted a rule change request to the AEMC in December 2013 seeking to allow access to NER dispute resolution processes where a negotiated outcome cannot be reached on any aspect of an SRAS tender, including price where tenders are not competitive. The AEMC will examine and consult on this proposed change.

6 Submissions and Recommendations on SRAS Improvement Options

6.1 The SRAS objective

6.1.1 Potential improvement

The NER state that the SRAS objective “...*is to minimise the expected economic costs to the market in the long term and in the short term, of a major supply disruption, taking into account the cost of supplying system restart ancillary services, consistent with the national electricity objective.*”²⁰

Given the importance of the SRAS objective in determining SRAS procedures and procurement, AEMO considered it relevant to examine whether the current methods of assessing and procuring SRAS remain appropriate.

AEMO considers that the value of SRAS accrues to Market Customers, Market Generators, and end-use consumers. AEMO acknowledges that procuring SRAS provides a degree of certainty that main generating facilities would be restarted and, in turn, load would be restored in the timeframes specified in the SRS. If a black system condition occurred, the benefit of this restoration process would be reduced economic and social consequences associated with a black system condition. The longer a black system condition prevails, the greater the economic and social consequences.

In the Draft Report, AEMO agreed with the view of some stakeholders that the SRAS objective is fit-for-purpose. AEMO stated that there is a balance to be struck between the potential short-term and long-term economic costs of a major supply disruption and the cost of providing SRAS as a means of restarting the power system. However, AEMO expressed the view that the objective does not imply that the value and cost of SRAS should be equal, or even that they are directly comparable.

Further, the requirement for consistency with the NEO reflects the significance of efficiency criteria in meeting the SRAS objective for the long-term benefit of electricity consumers.

6.1.2 Stakeholder submissions

In its submission to the Draft Report, the National Generators Forum (NGF) stated: “*The NGF believes that to satisfy the SRAS objective ...there must be a balance between the economic costs of major supply disruption and the cost of procuring SRAS*”.²¹ In the NGF’s view, AEMO was too focussed on SRAS costs and had not adequately considered the value to consumers of minimising the economic costs of a supply disruption.

²⁰ NER clause 3.11.4A(a).

²¹ NGF. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 3.

GDFSAE stated that AEMO's proposals "...appear to change the emphasis of the SRAS objective. The AEMO proposal suggest that the primary purpose of the SRAS objective is to minimise the cost of SRAS service".²²

6.1.3 AEMO's considerations

It is not AEMO's view that minimising SRAS costs is the primary purpose of the SRAS objective.

On the contrary, the SRAS objective is directed specifically at minimising the likely cost impact of a major supply disruption. However, in determining how and to what extent SRAS should be procured to mitigate the impacts of that risk, the SRAS objective directs AEMO to take into account the cost of supplying the service.

AEMO emphasises that the Reliability Panel is also required to determine the SRS in accordance with the SRAS objective. The SRS reflects the concept of a risk tolerance level, below which it may simply not be worth acquiring additional services to further reduce the potential impact.

Although the SRAS objective implies a balance, AEMO does not agree with the NGF that the objective suggests SRAS costs could equal the value of SRAS, or even that they are directly comparable. This assumes the value of SRAS is readily measurable, and in AEMO's view it is not.

AEMO considers that the starting point for assessing the value of SRAS is the likely cost-saving achieved by restarting the power system and restoring supply in a shorter time than could have been achieved without SRAS. However, other factors need to be weighed against that potential cost-saving when determining the value of SRAS both individually and in aggregate. In particular:

- The likelihood of a black system occurring in either single or multiple NEM regions.
- In the event of an occurrence, the likelihood that the service would be required and able to respond in all conditions, including whether load could be resupplied.
- The range of potential costs that could result from the event.

For SRAS, AEMO considers that willingness-to-pay measures may be used to indicate value, but not to determine price. This is not an unusual concept for goods or services deemed "public goods". For example, generators, Market Customers and, ultimately, end-use consumers do not pay the value that network assets provide; instead, a regulated return is paid for these assets.

AEMO is of the view that interpreting how the SRS is applied in each electrical sub-network, including the extent to which each sub-network can depend on generation available from adjacent sub-networks, is essentially a consideration of the type of major supply disruption for which SRAS could be called.

AEMO understands that the SRS reflects the degree of risk the community is prepared to accept in terms of the duration of a major supply disruption, and considers that the improvement options recommended in this Final Report are consistent with the SRS. This will be a key issue for consideration when AEMO consults on proposed changes to its SRAS procedures and guidelines.

In addition, however, AEMO considers there to be merit in the Reliability Panel reviewing the SRS to clarify the application of the standard to different disruption risks. Any SRS review should focus on the varying degrees of major supply disruption, which could range from part of an electrical sub-network through to all electrical sub-networks. It seems unlikely that the SRAS objective would be satisfied by requiring all major supply disruption events to recover within the same time period. Each disruption has a different probability of occurrence, and each would have different economic consequences. Network restoration costs and options (including both SRAS and other available resources) would also potentially differ. AEMO notes that any SRS changes resulting from such a review may require an adjustment to the level of system restart capability that AEMO procures in future.

²² GDFSAE. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 1.

Recommendation 1

The SRAS objective is fit-for-purpose and no change is recommended.

AEMO recommends the SRS be reviewed to:

- 1) Clarify the different major supply disruption events the standard is required to meet.
- 2) Clarify the corresponding recovery level and timeframes for different major supply events.

6.2 SRAS quantities

AEMO has objectively re-evaluated the SRAS quantities it must procure to meet the current SRS and the SRAS objective. This included reviewing the validity of key assumptions underlying the quantities procured, outlined in this chapter. Some of the recommendations in this chapter vary from the Draft Report because AEMO has taken into account suggestions made by DNV KEMA.

6.2.1 NEM-wide versus regional black system

6.2.1.1 Potential improvement

In determining the SRAS quantities to procure, AEMO currently assumes it may be necessary to restore supply starting from a major supply disruption that is NEM-wide, although neither the NER nor the SRS require this assumption. On the contrary, AEMO's view is that a NEM-wide black system condition is too conservative as it is highly unlikely.

AEMO is of the view that the national transmission grid (power system) is very likely to separate at the weak points, and proposes that these potential break points should be the regional boundaries. To date, there has been no major supply disruption on the power system resulting in a NEM-wide black system condition. Examples of major supply disruptions include the major loss of generation in New South Wales in 2009, bushfire events in New South Wales and Victoria, and the 2012 earthquake in Victoria. However, in the history of the NEM only one black system event has occurred; this was at a sub-network level in Far North Queensland (see Section 2.7 of this Report for further detail of this event). Contracted SRAS has never been dispatched in the NEM.

6.2.1.2 Submissions

Most submissions to the Draft Report preferred the current assumption of a NEM-wide black system condition. Those respondents were concerned that changing this assumption (and other suggested changes affecting quantities procured) relaxed the existing standards being delivered by the SRAS arrangements and would reduce the power system's restart capability.

Some generator submissions indicated that AEMO's proposal to change the assumptions about black system conditions was inappropriate and the current arrangements significantly benefit consumers. Tomago also identified the substantial value to its business of ensuring electricity supply is restored as quickly as possible.

GDFSAE stated that the Draft Report argued that a NEM-wide black system condition assumption cannot be economically justified, so AEMO should assess the overall costs and benefits of any change.²³

6.2.1.3 AEMO's considerations

AEMO's considers it appropriate to assume that a major supply disruption will not extend beyond a regional level because the power system is very likely to separate at the weak points; at or near the regional boundaries. Examination of the power system topology, supplemented by dynamic analysis of the power system's performance under major supply disruptions, would identify weak

²³ GDFSAE. *Submission to the SRAS Review Draft Report*. 7 June 2013.

points in the grid; these should constitute the boundaries of electrical sub-networks. DNV KEMA's independent assessment supports AEMO's assessment.

DNV KEMA stated that "...NEM transmission breakpoints would prevent a spreading blackout and that this assumption made by AEMO is reasonable and justified", and, "...there is no credible possibility of an event that could cause a NEM-wide blackout".²⁴

Prior to NEM commencement, system restart coverage was regional. However, AEMO has assumed a NEM-wide black system condition since implementation of the SRAS arrangements. AEMO notes that this assumption was made with minimal experience of NEM operations and has not been reviewed since. The assumption is critical in determining the technically efficient level of SRAS to meet the SRS. Effectively, the assessments carried out by AEMO and DNV KEMA in this SRAS Review indicate that the current NEM-wide assumption has led to the procurement of SRAS coverage beyond the requirements of the SRS, significantly exceeding the level that AEMO considers to be technically efficient.

GDFSAE suggested that AEMO has argued that a NEM-wide risk consideration is not economically justified. While AEMO is concerned about the SRAS cost increases and the value delivered to consumers, the recommendation to change the assumption results from a technical evaluation of whether the assumption is appropriate.

No submissions suggested that the likelihood of a NEM-wide black system condition is anything other than highly unlikely, although GDFSAE noted that the non-occurrence of an event in the past does not make it less likely to occur in future. AEMO acknowledges this, but emphasises that the technical and operating conditions and configuration of the power system make the likelihood of a NEM-wide black system event so remote as to be negligible.

In the unlikely event of a NEM-wide black system condition, the revised level of SRAS proposed by AEMO would still enable the entire power system to be restarted. It is also important to note that procuring more SRAS does not necessarily correlate to quicker restoration times.

6.2.2 The number of SRAS and electrical sub-networks

6.2.2.1 Potential improvement

In determining SRAS quantities on the basis of a NEM-wide black system condition, AEMO's current methodology assumes no support is available between adjoining electrical sub-networks.

By revising this key procurement assumption (see Section 6.2.1), restart support would be available from an adjoining electrical sub-network. AEMO's Draft Report therefore recommended that only one SRAS should be procured from each electrical sub-network, with the exception of Tasmania where two would be procured.

AEMO also reviewed whether all the current electrical sub-networks are still appropriate to meet the SRS and SRAS objective requirements.

The NER require that AEMO determine electrical sub-networks boundaries in accordance with certain guidelines specified in the SRS. AEMO considered these requirements in assessing proposed changes to the number of electrical sub-networks necessary to determine and implement the system restart plan. The Draft Report recommended combining the following electrical sub-networks:

- North and Central Queensland.
- North and West Victoria and Latrobe Valley.
- North and South Tasmania.

AEMO conducted several technical studies to understand the impact of changes to the size of electrical sub-networks on the timeframes set out by the SRS. Using one SRAS and assuming the

²⁴ DNV KEMA Report. 30 December 2013, p. 73.

adjoining electrical sub-network is available, these studies showed that the SRS timeframes could be met. Further details of these technical studies are set out in Appendix 2 of the Issues and Options Paper.

6.2.2.2 Submissions

Most respondents expressed similar views with regard to re-determining the number of electrical sub-networks and changes to the number of SRAS procured in each electrical sub-network.

Generally, they were concerned that AEMO had released insufficient information to assess whether the SRS and SRAS objective would be met. The NGF stated that if AEMO released further modelling information it would need to be independently assessed to be assured the results are objective.²⁵ Alinta supported mechanisms to increase competitive tension, including changes to electrical sub-network size, but could not support this change without AEMO providing further evidence of the changes including “...*real-time physical engineering testing to assess timeframes*”.²⁶

Hydro Tasmania did not support AEMO’s recommended change to treat Tasmania as a single electrical sub-network. It stated that AEMO had not explained why Hydro Tasmania’s reasoning, included in its submission to the SRAS Issues and Options Paper, for maintaining two electrical sub-networks had not been accepted.²⁷

Hydro Tasmania also questioned why AEMO had changed its view after completing a consultation on the Boundaries of Electrical Sub-networks in December 2011.²⁸

Origin stated that AEMO had not demonstrated that its proposed changes to SRAS quantities and the number of electrical sub-networks could achieve the SRS timeframes. In the absence of AEMO demonstrating how the SRS timeframes would be met, Origin considered these changes unlikely to promote the SRAS objective, and that they would reduce competition and strand black start assets.²⁹

Most respondents expressed concern that the SRS would not be met with a single SRAS procured in each electrical sub-network. Primarily, they were concerned about the level of redundancy in the network and the impact on customers if a single SRAS was unavailable during a black system condition. As for recommended changes in the number of electrical sub-networks, many generators indicated that AEMO had not provided sufficient information to make a decision on whether the SRS could be met.

A number of respondents also expressed concern that SRAS costs are driving AEMO’s proposed reduction in SRAS quantities and electrical sub-networks, without due consideration of the value SRAS provides.

6.2.2.3 AEMO’s considerations

Currently, the SRAS Quantity Guidelines require a minimum of two SRAS per electrical sub-network because they assume all regions must restart independently.

AEMO considers it appropriate to assume supply is available from an adjoining region to restart an affected region, subject to technical limitations (notably in Tasmania). AEMO’s technical analysis indicates that the SRS timeframes can be achieved under these arrangements and that AEMO would need to carefully assess the capability of the SRAS procured to meet those timeframes. On that basis AEMO recommended in the Draft Report that a minimum of one SRAS should be procured as contingency in each electrical sub-network, except Tasmania.

²⁵ NGF. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 4.

²⁶ Alinta. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 5.

²⁷ Hydro Tasmania recommended that two electrical sub-networks remain in Tasmania given the length of the transmission corridors and, if one SRAS is procured, the potential isolation between the north and south areas of Tasmania has the potential for prolonged outage periods.

²⁸ Hydro Tasmania. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 4.

²⁹ Origin. *Submission to the SRAS Review Draft Report*. 11 June 2013, p. 2.

AEMO's findings were independently reviewed by DNV KEMA. This assessment agreed with the Draft Report recommendations, but suggested that two SRAS should also be procured in the combined South Queensland and North New South Wales electrical sub-network.³⁰ AEMO agrees with this recommendation.

In response to stakeholder requests, AEMO presented information on its technical analysis in each electrical sub-network to demonstrate that the SRS can be met under the recommended SRAS quantities and number of electrical sub-networks. Table 2 sets out how this report's recommendation would meet the SRS.

³⁰ Refer to Section 6.2.2.3 of this report.

Table 2: Final Report recommendations and meeting the SRS

SRS REQUIREMENT	HOW WOULD THE EXISTING SRS BE MET?	WHAT IS THE CHANGE?
The standard to apply equally across regions.	In assessing SRAS to be procured, AEMO would continue to apply this standard equally, specifically in assessing minimum SRAS to meet SRS timeframes.	No change.
Restoration timeframes.	AEMO would procure a minimum of one SRAS capable of re-supplying and energising the auxiliaries of major power stations within 1.5 hours. The SRAS and supply from an adjoining electrical sub-network(s) would help ensure generation and transmission is restored to meet 40% of peak demand in an electrical sub-network. Supply across interconnectors (except Basslink) is assumed to be available on the basis that a regional black system condition is an appropriate assumption.	No change in the restoration timeframes for each electrical sub-network. AEMO currently procures a minimum of two SRAS (which, individually, do not need to meet the restoration timeframes). This will reduce to a minimum of one SRAS within each electrical sub-network, although AEMO will endeavour to procure as many appropriate services as required to meet the SRS.
Reliability of Service, two types of SRAS including: Primary, with a 90% reliability. Secondary, with a 60% reliability.	AEMO will ensure the SRAS procured has at least 90% reliability and has the ability to re-supply and energise the auxiliaries of a power station other than the generator's own, so that the required levels of power supply can be restored within SRS timeframes. Availability of supply through interconnectors is higher than 90%.	Change the SRAS Description to ensure AEMO is only procuring SRAS that provides market benefits in meeting the SRS.
Boundaries of electrical sub-networks. AEMO must take the following factors into account in determining electrical sub-networks: The number of transmission corridors. The electrical distance between generation centres. The quantity of generation, greater than 1000 MW. The quantity of load, greater than 1000 MW.	AEMO will use reasonable endeavours to procure sufficient SRAS within each electrical sub-network to meet the requirements of the SRS.	Changes required to the boundaries of electrical sub-networks. While AEMO is not proposing any change to the methodology for determining electrical sub-networks, it has assessed that the following changes should be made to the boundaries of electrical sub-networks. <ul style="list-style-type: none"> • North and Central Queensland combined as a single sub-network. • The southern boundary of the new north Queensland sub-network be moved further south. • The boundary between South Queensland and North NSW electrical sub-networks should be moved south into northern NSW. • The remainder of NSW be a single sub-network. • North and West Victoria and the Latrobe Valley combined as a single sub-network. • North and South Tasmania combined as a single sub-network.
Diversity and strategic location of services.	All SRAS would be procured for individual electrical sub-networks, meeting the diversity criteria. Additionally, supply is recognised as being available from adjoining electrical sub-networks, providing further diversity. For Tasmania, similar to the current arrangements, AEMO would seek to procure SRAS in strategic locations and this would be covered by AEMO procedures. These arrangements are considered to: <ul style="list-style-type: none"> • Allow no single point of electrical or physical failure. • Provide technology diversification as electricity would be supplied through an interconnector, except for Tasmania. • Provide geographic diversity as electricity would be supplied through an interconnector. • Provide fuel diversity as there is not specific reliance on a fuel source. 	No change.

DNV KEMA also confirmed that AEMO can meet the existing SRS under its proposed recommendations in relation to the number and boundaries of electrical sub-networks, subject to a further recommended change to the North New South Wales and South Queensland electrical sub-networks. AEMO agrees with this recommendation. Details are set out in DNV KEMA's report attached as Appendix 1. AEMO's recommended electrical sub-network boundaries are set out in Appendix 1 of this document.

The following sections address specific issues for Tasmania, New South Wales, Queensland, and Victoria.

Tasmania

AEMO recommends procuring a minimum of two SRAS to ensure sufficient contingency and diversity due to the technical characteristics of Basslink that prevent it from assisting a Tasmanian region restart.

AEMO would apply the geographic and electrical diversity requirements in the SRAS Quantity Guidelines to ensure SRAS is sourced from different parts of the Tasmanian electrical sub-network and the SRS is met.

AEMO considers that Tasmania should be treated as one electrical sub-network given the transmission network size and considerable strengthening since AEMO's original determination of electrical sub-networks in Tasmania. This view is supported by DNV KEMA.

Hydro Tasmania expressed concern that AEMO's Draft Report did not explain why it had changed its view on the appropriate number of electrical sub-networks since 2011. This was addressed in Section 6.2.2.3 of the Draft Report:

"Since the implementation of its original SRAS Procedures, AEMO has not specifically reassessed these boundaries and the impact of changes in network, generation and load. AEMO has now conducted a reassessment and considers that it is reasonable to determine seven electrical sub-networks for the purpose of procuring SRAS and determining and implementing the system restart plan."

Queensland and New South Wales

AEMO will consult with industry regarding a reassessment of the SRAS guidelines, including the electrical sub-network boundaries. AEMO recommends the North and Central Queensland electrical sub-networks be treated as one electrical sub-network.

AEMO notes that Queensland is characterised by large generation and load centres in both the south and central areas. While there is a smaller load centre and a small amount of generation in the north, this part of the network is strongly connected to the central area by a number of transmission lines.

Recent additions to the transmission network have strengthened the links from the central area to the north. Recent changes to the lower-voltage transmission network in the north have also reduced the potential for cascade failures in this network.

While AEMO recognises that the northern part of Queensland has historically experienced more frequent severe weather events than other parts of the NEM, these events tend to be localised. Coupled with the small amount of generation in the area, they pose little risk of line overload or system stability issues that would be reflected further south in the network.

Any major supply disruption in the north is highly likely to be isolated and consequently able to be restored from the central electrical sub-network. While AEMO acknowledges that an incident in the central electrical sub-network might also disrupt supply in the north, the entire area can be restarted from the south or suitable SRAS in the central area. The limiting factor is the ability of generating units to restart within the four-hour requirement as determined by the SRS. Procuring additional SRAS will not address this issue.

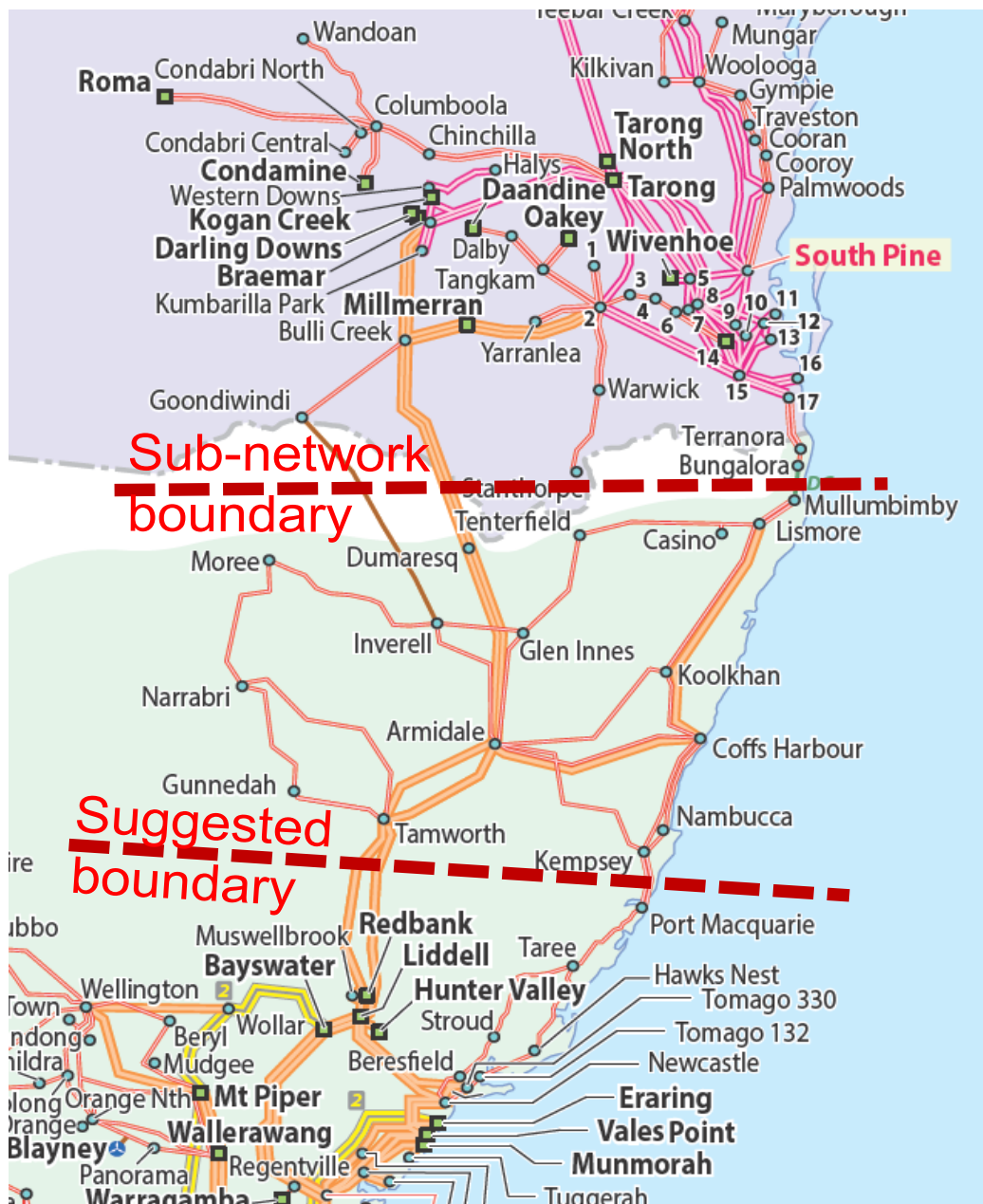
In the south, AEMO agrees with DNV KEMA that there is a more likely transmission break point at the suggested boundary identified in Figure 2 rather than at the New South Wales – Queensland regional border.³¹

DNV KEMA believes that “the system is very unlikely to split along the existing sub-network boundary as it is so electrically strong. Therefore, this is not a likely transmission break point as we have defined it in this review.”³²

Instead DNV KEMA identified that the electrical break point is located around the Tamworth and Armidale area as depicted in Figure 2. Given this, AEMO recommends a change to the south Queensland and north New South Wales electrical sub-networks.

The remainder of New South Wales would be a single electrical sub-network with the southern boundary at the New South Wales – Victoria border.

Figure 2: Suggested electrical sub-network boundary for South Queensland and North New South Wales



Source: DNV KEMA Report, p. 29.

³¹ DNV KEMA Report 30 December 2013. p. 5–6.

³² DNV KEMA Report 30 December 2013. p. 5–6.

Victoria

AEMO considers that Victoria should be one electrical sub-network because it is characterised by a large generation centre in the Latrobe Valley and a large load centre in the Melbourne area, with strong interconnections to both South Australia and New South Wales. DNV KEMA supports this.³³

SRAS located in either the north or the Latrobe Valley is capable of providing start-up supply to the majority of Victorian generating units within the 90-minute timeframe.

The limiting factor is the ability of generating units to restart within the four-hour requirement as determined by the SRS. Procuring additional SRAS will not address this issue.

Recommendation 2

AEMO recommends a consultation with industry on proposed amendments to its Boundaries of Electrical Sub-Networks and SRAS Quantity Guidelines, to be completed prior to the 2015 tender process. The consultation will allow AEMO and stakeholders to further consider whether the changes below, or any alternative options, will allow the SRS to be met most efficiently.

AEMO proposes a minimum of one SRAS be procured in each electrical sub-network, except Tasmania and the combined South Queensland and North New South Wales sub-network, where a minimum of two SRAS be procured. AEMO also recommends that the following current electrical sub-networks be combined:

- North and Central Queensland.
- South Queensland and North New South Wales, with the boundary south of Tamworth.
- North and West Victoria and Latrobe Valley.
- North and South Tasmania.

AEMO will progress these recommendations by undertaking a Rules consultation on the Boundaries of Electrical Sub-networks and the SRAS Quantity Guidelines. In relation to the proposed Queensland – New South Wales boundary, AEMO will continue to engage directly with the relevant TNSPs, to determine the most appropriate location for the boundary.

6.2.3 Primary and secondary restart services definition

6.2.3.1 Potential improvement

In accordance with the NER and SRS requirements, the SRAS Description describes two types of SRAS: primary and secondary. Under the SRS, primary restart services must have a reliability level of at least 90%, and secondary services must meet a 60% reliability level. A primary restart service provides black start capability to restart a specified generating unit of at least 100 MW capacity.

Restart can be achieved in a number of ways, including from:

- Trip to house load (TTHL) from thermal generating units.
- Single or multiple hydro or gas turbine units.
- A small gas turbine or diesel to restart a generating unit of greater than 100 MW capacity.

A secondary SRAS is only required to provide a black start capability and supply energy to the local transmission busbar. Currently, AEMO only contracts one secondary restart service, the remainder being primary restart services. For SRAS procurement, AEMO prioritises primary above secondary restart services, in accordance with the NER.

³³ DNV KEMA Report 30 December 2013 p. 52.

In the Issues and Options Paper, AEMO stated that the distinction between primary and secondary restart services has led to some perverse outcomes for contracting and testing purposes and provided examples where that had occurred.³⁴

For example, AEMO has contracted a number of gas turbine generating units that are used as start-up supply for larger generating units in the same power station. These SRAS meet the criteria because they can provide auxiliary supply within the 90-minute timeframe set out in the SRS and meet the SRAS Description. In some cases, these generating units are unable to restart the larger thermal generating unit in less than four hours and would not contribute towards restoring 40% of load within four hours as required by the SRS. Contracting these generating units provides little to no benefit in terms of meeting the SRS.

In AEMO's view, a single SRAS definition is appropriate to ensure the SRS timeframes are met, and to simplify procurement and testing requirements. AEMO suggested the following definition:

“An SRAS is the ability to restart generating units without external supply from the national grid, re-energise the local busbar and supply at least 100 MW of capacity within 60 minutes.”

6.2.3.2 Submissions

Submissions on the recommended SRAS definition were divided. Alinta and the NGF supported the change subject to:

- The SRS continuing to be met.³⁵
- The SRAS meeting a minimum 98% reliability criteria.³⁶

The NGF agreed that it was perverse for AEMO to contract SRAS providers who do not contribute to restoring generation and transmission in an electrical sub-network within four hours.³⁷

Macquarie and Origin did not support the recommended change to the SRAS definitions. Origin's concern is that the recommended SRAS definition *“...could reduce the capability to restore power system supply following a system black event, which is counter to the SRAS objective,”* and, *“...the changes to the definition could exclude gas turbines located within major power stations from providing restart services”*.³⁸

GDFSAE, Origin, and Macquarie were concerned that changing the SRAS definition might result in reduced competition in certain electrical sub-networks, which might result in higher SRAS costs.

Some generators were also concerned that assets might be stranded as a result of the recommended change, presenting a form of sovereign risk. GDFSAE stated that AEMO should *“...take into account that some existing SRAS providers may have incurred costs in establishing and maintaining the ability to provide a secondary service. If these participants are subsequently unable to offer this service, they will be left with a stranded asset”*.³⁹

6.2.3.3 AEMO considerations

To better ensure the SRS timeframes are met and to simplify procurement and testing requirements, AEMO considers that the description of SRAS should be simplified by removing the primary and secondary definitions and should meet a minimum 90% reliability level. The primary driver for this change is to ensure the SRAS arrangements allow AEMO to contract SRAS with the capability to help meet the SRS timeframes.

³⁴ Available at: <http://www.aemo.com.au/Electricity/Market-Operations/Ancillary-Services/Process-Documentation/System-Restart-Ancillary-Services-SRAS>.

³⁵ Alinta. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 4.

³⁶ NGF. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 4.

³⁷ NGF. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 4.

³⁸ Origin. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 2.

³⁹ GDFSAE. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 3.

After considering DNV KEMA's report, AEMO recommends modifying the Draft Report's recommended SRAS definition. DNV KEMA suggested that the Draft Report's definition might be too conservative and restrictive, noting that the 100 MW of capacity was a relatively arbitrary value.⁴⁰

DNV KEMA also noted that "...many ISO's/RTO's do not establish a minimum capacity for black start tender processes".⁴¹ AEMO agrees that it may be technically possible for an SRAS with less than 100 MW capacity to energise the local transmission busbar and provide the auxiliary supply for other power stations. It agrees that this could be assessed as a part of the tender process. The SRAS tenderer would need to provide the necessary technical models to ensure this was possible.

DNV KEMA also recommended that AEMO consider setting the timeframe for the SRAS to energise the local transmission busbar below the 60 minutes proposed in the Draft Report. It stated that "...this would allow more time for energising the rest of the cranking path over the transmission system to the next larger generation plant auxiliary load supply bus and significantly improving the likelihood of meeting the SRA 90-minute target".⁴²

AEMO agrees with DNV KEMA that an SRAS that can energise the local transmission busbar faster is of greater value, and a greater weighting should be applied in the SRAS tender process.⁴³ The SRAS tenderer would need to provide the necessary test results or technical modelling to demonstrate the tendered timeframes.

Given this, AEMO recommends that SRAS be described as the ability to re-energise the local transmission busbar and supply capacity within a defined timeframe and that this should continue to be included in the SRAS Description. AEMO will consult on the appropriate value of capacity and timeframe. The procedure would need to build sufficient flexibility to allow AEMO to choose the most appropriate SRAS to meet the SRS.

The recommended change is expected to allow AEMO to better meet the SRS timeframes for each electrical sub-network, namely:

- Re-supply and energise certain significant generation within 90 minutes.
- Restore generation and transmission with the aim of supplying 40% of peak demand within four hours.

The current primary and secondary restart definitions assume that AEMO can contract for SRAS that only re-supply and energise the SRAS provider's generating facility. AEMO does not consider it appropriate to contract SRAS that does not contribute to the restoration of generation and transmission in that electrical sub-network within four hours, or assist re-supplying and energising the auxiliaries of major power stations within 90 minutes. Procuring SRAS that cannot contribute to the SRS timeframes provides little to no market benefit.⁴⁴

For this reason AEMO does not agree with Origin that changing the SRAS definition results in AEMO being unlikely to meet the SRS restoration timeframes, or lowers the capability to restore power system supply following a system black event. AEMO considers that its recommended changes will promote the SRAS objective and the NEO by ensuring that AEMO acquires only those services capable of helping to restore generation and transmission within the SRS timeframes.

AEMO's recommended SRAS definition should alleviate some of GDFSAE and Origin's concern over generator assets being "stranded" as it would remove the 100 MW capacity threshold.

⁴⁰ DNV KEMA Report. 30 December 2013, p. 57.

⁴¹ DNV KEMA Report. 30 December 2013, p. 57.

⁴² DNV KEMA Report 30 December 2013, p. 55.

⁴³ DNV KEMA Report 30 December 2013, p. 55.

⁴⁴ AEMO understands that a number of affected SRAS are incapable of re-supplying and energising the auxiliaries of major power stations within 1.5 hours without further capital investment. It is critical to meet this requirement to achieve restoration of load.

Under the recommended SRAS definition, generator assets would not be excluded from tendering; however, the change is likely to affect the ranking of these tenders as they would have a lower value. Further, AEMO agrees with DNV KEMA that its recommended definition might encourage SRAS providers in certain electrical sub-networks and, in theory, promote competition between SRAS providers rather than reduce competition as suggested by GDFSAE, Origin, and Macquarie.

In AEMO's view, none of the issues raised by stakeholders about the SRAS definition presents a valid reason to continue procuring SRAS that does not contribute to restoring other power stations, and that only benefit the generator who is being paid to provide the SRAS.

While AEMO understands that stranding assets with black start capability is a concern for current SRAS providers, AEMO's primary concern as the procurer is efficiently meeting the SRS and SRAS objective.

AEMO has considered the concern raised by the NGF regarding SRAS meeting a minimum 98% reliability. In AEMO's view, it is unnecessary to raise the minimum reliability level to 98% because relying on supply from an adjoining electrical sub-network has a high availability level and would be relied on under the recommended changes. Many current SRAS meet a 98% reliability level and AEMO's tender evaluation process places a higher weighting on SRAS with a higher reliability and availability.

Recommendation 3

AEMO recommends the definition of primary and secondary restart service be replaced by a single SRAS definition as follows:

"The capability to restart generating units without external supply from the national grid and re-energise the local transmission busbar to supply capacity to the network within a maximum of 45 minutes."

AEMO also recommends that SRAS should continue to meet a minimum 90% reliability level.

These changes require amendments to the NER and SRS, which AEMO will progress with the AEMC and the Reliability Panel.

AEMO will also undertake a Rules consultation on the required changes to the SRAS Description and SRAS Assessment Guidelines. AEMO plans to complete this prior to the 2015 tender process.

6.2.4 Further technical modelling

In assessing SRAS requirements, AEMO previously performed steady-state power-flow modelling. DNV KEMA suggested that AEMO consider undertaking dynamic and transient modelling, stating this is industry best practice. The benefit of this modelling is in identifying any technical issues that could occur during a black system condition, including:

- Unacceptable voltage or frequency swings during generator auxiliary motor starting.
- Black start generator pull-out or angular instability.
- Transient or switching over-voltages.
- Short-term system over-voltages or over-frequency conditions as a result of load rejection.
- Transformer energising concerns.⁴⁵

⁴⁵ DNV KEMA Report. 30 December 2013, p. 59.

6.2.5 AEMO's considerations

AEMO agrees with DNV KEMA that dynamic and transient modelling would assist in identifying technical issues that could occur in a black system condition. Further, AEMO considers that undertaking this modelling would assist in satisfying concerns raised by TransGrid.

In discussions with DNV KEMA, AEMO identified that it had previously experienced difficulties obtaining dynamic data from generators and TNSPs.

AEMO considers that undertaking dynamic and transient modelling would strengthen the SRAS arrangements and increase certainty around the technical ability that procured SRAS could perform in a black system condition.

Adopting this approach would require cooperation from TNSPs and generators. Technically feasible SRAS options are likely to be identified if AEMO and TNSPs undertake a more consultative approach on local issues.

Recommendation 4

For the 2015 tender process, AEMO intends to seek dynamic data from generators and TNSPs sufficient to perform dynamic or transient modelling. If this data is unavailable, AEMO would consider using generic or typical data for modelling purposes.

AEMO will progress this recommendation in consultation with industry during 2014, prior to the 2015 tender process.

6.3 Procurement arrangements

6.3.1 Potential improvement

The Issues and Options Paper discussed alternative procurement arrangements that could increase the efficiency of the current SRAS arrangements if it were determined that the SRAS market is not delivering value for the prices paid. These options included:

- No SRAS procurement.
- Mandating provision of black start capability from generating facilities over a certain size.
- A cost-of-service based approach.
- NER amendments to allow AEMO to negotiate terms and conditions with tenderers, or for AEMO to have powers to access SRAS tenderers' costs and enter into binding arbitration.

The Draft Report recommended AEMO develop rule changes to identify and manage non-competitive outcomes in the SRAS tender process, along similar lines to those in effect under clauses 3.11.5(h)-(i) of the NER for the NSCAS tender process. To assist in assessing whether offered SRAS prices are reasonable, AEMO also recommended using independent SRAS benchmarking.

6.3.2 Stakeholder submissions

Most submissions to the Draft Report did not support changes to the SRAS procurement arrangements, while customer submissions to the Issues and Options Paper supported changes.

Alinta and Origin suggested that AEMO had not demonstrated a case for changing the SRAS procurement arrangements and supported retaining the existing competitive procurement arrangements.^{46,47}

⁴⁶ Alinta. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 6.

Hydro Tasmania strongly opposed AEMO using cost benchmarking in any negotiation or subsequent dispute resolution, whether deemed to be non-competitive or otherwise. Hydro Tasmania suggested that any methodology AEMO applied to determine SRAS pricing should be based on SRAS price benchmarking in other NEM regions for the same contract period.⁴⁸

AGL also expressed concern over the use of cost benchmarking and adding regulatory risk to SRAS providers.⁴⁹

Most generators agreed that the following changes would encourage competition in the SRAS market:

- AEMO committing to longer-term SRAS contracts.
- Greater lead times prior to SRAS contract commencement.
- AEMO not changing the SRAS contract term after tenders have been lodged.

6.3.3 AEMO's considerations

AEMO notes that stakeholders expressed divergent views on SRAS procurement arrangements.

At this stage, AEMO considers that the benefits of the identified alternatives to a market procurement process cannot be established sufficiently enough to recommend any material change. In particular:

- Not procuring SRAS could result in insufficient investment in black start capability, leaving the NEM incapable of restarting following a black system condition. In the long term, AEMO understands that generators, end-use consumers and governments want assurance that the NEM can be restarted. AEMO is best placed to procure SRAS.
- Mandating provision of black start capability from generating facilities over a certain size could lead to an oversupply of restart resources and greater costs to end-use consumers.
- Generators have raised concerns that a cost-of-service-based approach might introduce more inefficiencies. AEMO proposes seeking more information, including cost benchmarking for different black start technologies in Australia. This will enable AEMO to further investigate the issues raised and provide a basis for evaluating the relative merits of a cost-of-service approach or some form of arbitrated resolution should commercial negotiations fail.

Most generators support maintaining competitive procurement and initiatives to encourage competition in electrical sub-networks.

As a general principle, AEMO agrees that market processes provide the most efficient outcomes because the interaction of market demand and supply sets the price. However, AEMO remains concerned that tendering for SRAS in some instances might yield inefficient outcomes. More information on this is set out in Section 5.2.3.

Based on the last three tenders, AEMO is concerned that the tendering process might continue to deliver non-competitive outcomes. AEMO considers that, where a tender does not result in competitive offers, it is appropriate for AEMO to negotiate reasonable terms and conditions with the preferred tenderer. International cost benchmarking information that takes into account relevant factors affecting SRAS prices would assist AEMO in identifying whether the SRAS prices being offered are reasonable, and AEMO would also consider whether SRAS contract terms and conditions were driving above-benchmarked costs. AEMO believes the NER Chapter 10 dispute resolution process should be used if a negotiated outcome cannot be reached.

⁴⁷ Origin. *Submission to the SRAS Review Draft Report*. 11 June 2013, p. 3.

⁴⁸ Hydro Tasmania. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 2.

⁴⁹ AGL. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 2.

AEMO has considered the concerns raised by Hydro Tasmania regarding cost benchmarking, in particular the suggestion that cost benchmarking should be based on SRAS pricing in other NEM regions for the same contract period.

While AEMO will explore these further with the cost benchmarking consultant, it appears reasonable to use international black start cost measures. For example, black start costs in New Zealand appear to be a fair comparison to Hydro Tasmania's assets as they are hydro units.

As discussed in the Draft Report, AEMO will undertake initiatives to encourage competition in the SRAS market. One of the key improvements supported by generators is for SRAS contracts to be offered for longer contract periods; this allows increased regulatory certainty and sufficient time to recover associated SRAS costs. Where tender prices are considered reasonable, AEMO is willing to enter into SRAS contracts for longer periods or, where practical, enter into SRAS contracts with longer lead times to allow investment to occur prior to the commencement date.

AEMO understands that longer SRAS contracts provide more certainty for SRAS providers, and may provide sufficient certainty for new entrants to recover the capital expenditure required for new investment, potentially resulting in lower SRAS costs. AEMO is prepared to offer SRAS for longer contract periods for the next tender process, if this results in a service cost reductions.

However, AEMO also notes that in the 2012 tender process SRAS prices offered increased significantly overall, even though AEMO originally invited tenders for a five-year contract period.⁵⁰

Offering a longer contract period also had little impact on the number of tenderers in most electrical sub-networks.⁵¹

In the absence of evidence to fully explain these outcomes, it remains uncertain whether longer-term SRAS contracts would in fact achieve their assumed objectives of providing sufficient certainty for new entrants to invest, increasing competition, or longer periods for cost recovery of capital expenditure.

Recommendation 5

AEMO recommends the NER be amended to allow AEMO to manage non-competitive outcomes in the SRAS tender process, similar to the process for NSCAS included in clauses 3.11.5(h) and (i) of the NER. AEMO would use independent benchmarking information to inform its position on reasonable terms and conditions.

AEMO submitted a rule change request to the AEMC in December 2013 to address this recommendation.

6.4 Incentives to encourage a market-based response

6.4.1 Potential improvements

In the Issues and Options Paper, AEMO suggested that SRAS benefits generators, Market Customers and end-use consumers.

AEMO recognises that the SRS reflects the level of risk to be mitigated on behalf of all potentially affected parties. AEMO also suggested that where Market Customers, generators, or jurisdictions perceived their individual exposure not to be adequately covered by AEMO's procurement of SRAS to that standard, there is potential for them to manage their perceived level of risk through a market-based response.

⁵⁰ Due to these increases, AEMO decided to enter into contracts for two plus one year contract period to allow time to investigate the drivers of these cost increases.

⁵¹ Only one SRAS tenderer in the 2012 tender process did not enter into an SRAS contract for the two plus one year contract period. This tenderer would have needed to invest capital expenditure to provide SRAS.

This could include these parties investing in and maintaining their own black start capability, contracting that capability from suitably located existing facilities, or negotiating contract positions such as *force majeure* clauses.

While AEMO is not required to assess the individual risk profiles of participants and other stakeholders, it did identify that there may be other incentives to encourage a market-based response in the unlikely event of a black system condition. In particular, the Issues and Options Paper suggested that the market suspension price could be increased.

6.4.2 Stakeholder submissions

No further comments were received from stakeholders in response to the Draft Report.

6.4.3 AEMO's considerations

As no comments were received, AEMO's position is unchanged and it has not made any recommendations designed to encourage a market-based response to SRAS.

6.5 SRAS recovery

6.5.1 SRAS recovery from Market Customers and Market Generators

6.5.1.1 Issue identified

Currently, SRAS is recovered on a 50/50 basis from Market Customers and Market Generators based on energy consumed and produced.²¹ SRAS has been treated as a public good, leading to SRAS cost recovery being socialised across Market Generators and Market Customers who ultimately pass these costs through to consumers.

In the Issues and Options Paper, AEMO expressed the view that it is reasonable to recover SRAS costs in this proportion at an agreed minimum SRAS level. However, if a high SRAS level is procured to meet the marginal benefit of individuals or groups of participants, AEMO considers that the proportion they pay should reflect the relative benefits derived.

6.5.1.2 Submissions

The majority of SRAS providers suggested that SRAS should be recovered from Market Customers or TNSPs, based on considerations of efficiency. Two submissions from consumer representatives to the Issues and Options Paper suggested that generators should pay for SRAS costs, and EnergyAustralia suggested that the current 50/50 arrangement is reasonable.

Submissions to the Draft Report on this issue included the following comments:

- Hydro Tasmania said that full recovery of SRAS costs from market customers is economically efficient and justified as they are the major beneficiaries and ultimately pay.⁵²
- NGF supported 100% recovery from market customers given that all generator submissions supported this, and it could be expected that most retailers would share that view due to the high level of vertical integration. Further, the issue of cost recovery should be grounded on economic efficiency principles.⁵³
- Stanwell supported cost recovery from market customers or TNSPs on market efficiency grounds.⁵⁴

⁵² Hydro Tasmania. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 3.

⁵³ NGF. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 6.

⁵⁴ Stanwell. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 6.

6.5.1.3 AEMO's considerations

AEMO does not recommend any change to the existing 50/50 recovery from Market Generators and Market Customers. This reflects a beneficiary-pays approach where those who benefit from SRAS contribute to the cost of providing it. AEMO agrees with this principle.

Most generators argued that consumers should pay 100% of SRAS costs, while consumer representatives argued that generators should pay 100%. Given these opposing positions, and noting that no specific information was provided to suggest that the current ratio is inappropriate, AEMO considers that Market Generators and Market Customers should continue paying costs to provide a small incentive to manage costs or expectations.

While some major retailers may be indifferent about the SRAS recovery split because of their portfolios, the NGF's perspective does not acknowledge the impact on other Market Customers. AEMO does not agree that it is appropriate to determine this or any other issue based on the majority position of the total submissions received. AEMO notes that Energy Australia expressed the view that: "Market customer [sic] and market generators clearly both benefit from SRAS and the current cost sharing arrangement is reasonable."⁵⁵

6.5.2 SRAS recovery on a NEM-wide or regional basis

6.5.2.1 Issue identified

SRAS payments are currently recovered on a NEM-wide basis. The Issues and Options Paper identified that the current cost-sharing methodology has resulted in SRAS costs being smeared across regions.

Table 3 and Table 4 provide examples of this occurring. In 2011-12, costs recovered from participants for activities in Queensland and Victoria effectively cross-subsidised SRAS payments for the remaining regions. In 2012-13, based on AEMO's forecast of regional energy generation and consumption, Queensland and South Australia cross-subsidised the remaining regions.

Currently, the price a Market Generator or Market Customer pays for SRAS due to market activities undertaken in a region does not necessarily reflect the price or level of service provided in that region. It is a product of overall NEM SRAS costs and their generation or consumption in a given year.

Table 3: 2011-12 Differences between NEM SRAS recovery and payment

REGION	SRAS RECOVERED (\$M, NOMINAL)	SRAS PAYMENT (\$M, NOMINAL)	DIFFERENCE (\$M, NOMINAL)
NSW	13.3	17.1	(3.8)
QLD	9.1	4.4	4.7
SA	2.5	2.8	(0.3)
TAS	2.0	5.9	(3.9)
VIC	8.5	5.3	3.2
Total	35.4	35.4	-

Table 4: 2012-13 Differences between NEM SRAS recovery and payment

REGION	SRAS RECOVERED (\$M, NOMINAL)	SRAS PAYMENT (\$M, NOMINAL)	DIFFERENCE (\$M, NOMINAL)
NSW	17.6	18.2	(0.6)

⁵⁵ EnergyAustralia. *Submission to the SRAS Review Issues and Options Paper*. 8 March 2013, p. 4.

REGION	SRAS RECOVERED (\$M, NOMINAL)	SRAS PAYMENT (\$M, NOMINAL)	DIFFERENCE (\$M, NOMINAL)
QLD	13.8	5.9	7.9
SA	3.5	3.1	0.4
TAS	3.2	10.2	(6.9)
VIC	13.1	13.8	(0.7)
Total*	51.2	51.2	-

* These figures have been updated for actual costs which became available after the costs were produced in the Draft Report.

Where SRAS costs increase in one region and not comparatively in other regions, the extent of cross-subsidisation increases. This is particularly obvious for Tasmania where the difference between SRAS recovery and payment in 2011-12 was about \$3.9 million and forecast to increase to \$6.9 million in 2012-13.

The Issues and Options Paper identified that a regional approach to cost recovery may provide regions with an incentive to accept a minimum level of service (provided by the SRS), with higher levels of SRAS being procured independently by stakeholders in the region if required. Alternatively, if AEMO were to procure higher SRAS for specific regions, a change to the SRS would be required.

In considering the relative benefits and costs of either approach, it is relevant to note that if SRAS is procured on a regional basis with no prospect of SRAS in one region providing a benefit to a neighbouring region, the rationale for recovering SRAS on a NEM-wide basis diminishes. In particular, there is no rationale for smearing SRAS costs between Tasmania and mainland regions, because the Basslink interconnector is a direct current (DC) link and cannot be used to assist in a restart. For this reason SRAS from Tasmania cannot be used to restart Victoria and vice versa.

6.5.2.2 Submissions

Two submissions to the Draft Report commented specifically on this issue:

1. Alinta suggested that the basis for cost recovery depends on the purpose of the service. If SRAS is to be a NEM-wide service then benefits accrue to each Market Customer and the difference in costs between each region is not a distortion but a representation of where services are located and their value against the existing standard. If there was a reversion to a regional arrangement then it would be appropriate for costs to be levied at a regional level. Alinta noted that justification for NEM-wide recovery diminishes if SRAS has no prospect of benefitting a neighbouring region (as in Tasmania). Alinta encouraged AEMO not to make a decision on cost recovery before undertaking actual physical testing to fully understand how the proposed changes contribute to regional or NEM-wide solutions.⁵⁶
2. Hydro Tasmania considered that SRAS should be recovered on a NEM-wide basis because this is consistent with the policy of a national approach to the NEM, with regional differences playing only a minor part.⁵⁷

6.5.2.3 AEMO's considerations

Throughout the review, most respondents supported a change to regional recovery if SRAS is to be procured on a regional basis, consistent with AEMO's recommendations.

⁵⁶ Alinta. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 4.

⁵⁷ Hydro Tasmania. *Submission to the SRAS Review Draft Report*. 7 June 2013, p. 4–5.

AEMO recommends that SRAS costs be recovered on a regional basis. There is no rationale to recover Tasmania's SRAS costs from mainland regions because the Basslink interconnector is a direct current link and cannot be used to assist in a restart.

For mainland regions, AEMO recommends SRAS costs generally be recovered on a regional basis, rather than smeared across mainland regions, because services will be procured to restore supply in the relevant electrical sub-network within the SRS timeframes.

In light of AEMO's recommendation to redefine the electrical sub-network for South Queensland and North New South Wales, and consistent with SRAS recovery on a beneficiary-pays basis, AEMO recommends developing a procedure to ensure that SRAS benefitting adjoining NEM regions would be apportioned regionally to reflect the relative benefit.

AEMO's recommended approach would remove the current cross-subsidisation between regions and improve the price signal to Market Customers and Market Generators within regions.

This recommendation requires a change to the NER, which will be further consulted on by the AEMC. If the AEMC decides to make that change, AEMO would consult on procedures to allow the apportionment of SRAS costs between the New South Wales and Queensland regions.

Recommendation 6

AEMO recommends SRAS costs be recovered on a regional basis. AEMO submitted a rule change request to the AEMC in December 2013 addressing this recommendation.

6.6 Further improvements

6.6.1 Generator liability issue

6.6.1.1 Potential improvement

Some existing SRAS providers have informed AEMO that their offer prices factor in the risk of potential liability if, in a black system condition, they were unable to perform their obligations under the SRAS contract.

AEMO understands that generator evaluation of that risk can lead to:

- Increased offer prices for SRAS.
- Conservative estimates of restart timeframes provided as part of their Local Black System Procedures provided to AEMO, which in turn may result in procuring unnecessary SRAS.

In its Issues and Options Paper, AEMO asked for submissions on the impact of liability concerns on the SRAS costs.

6.6.1.2 Submissions

No further comments were received from stakeholders in response to the Draft Report.

6.6.1.3 AEMO's considerations

As no comments were received, AEMO's position is unchanged: It does not consider there are any generator liability issues to be addressed for the reasons explained in Section 6.6.1.3 of the Draft Report.

6.6.2 AEMO financial liability

The NGF suggested that AEMO "...does not have any direct liability/accountability for the economic/financial impacts for consumers and other stakeholders in the event the SRAS standard

is not met⁵⁸. Further, the NGF considered that there is benefit in exploring the options for AEMO to take on an appropriate level of financial accountability that is transparent to the market; this provides confidence about SRAS management and enhances market governance arrangements.⁵⁹

It is unclear what further liability the NGF is proposing be imposed on AEMO specifically for SRAS obligations, or why it would be appropriate to distinguish these obligations from AEMO's broader power system operation functions from a liability perspective. Under the National Electricity Law (NEL), if AEMO has been negligent and fails to meet any of its obligations, it may be exposed to negligence claims. The NEL provides a liability cap of \$2 million per claim per event with an annual aggregate cap of \$100 million.

AEMO notes that its membership, not-for-profit status, and statutory obligations (including the NEO) are designed to ensure that it is not incentivised to cut costs at the expense of a prudent approach to ensuring system security and reliability of supply.

Increasing AEMO's liability could create an incentive to over-procure, which is potentially inconsistent with the NEO.

6.6.3 Regular review of the SRAS arrangements

In its submission to the Issues Paper, St Vincent de Paul suggested that the SRAS Review should "...establish a timeline for future review to assess the effectiveness and cost of the SRAS, in regards to efficacy of recommendations adopted through this current process".⁶⁰

AEMO notes that the Reliability Panel is responsible for annually reviewing the SRS. In future reviews, AEMO expects to be able to provide further information to the Reliability Panel on SRAS costs and the effectiveness of SRAS arrangements.

Alternatively, AEMO could undertake a further review of SRAS arrangements after key changes arising from the current SRAS Review have been implemented and there has been sufficient time to assess the impacts.

Recommendation 7

AEMO recommends greater transparency of SRAS costs and effectiveness of SRAS arrangements.

AEMO will consider the way in which it reports SRAS information to ensure it is useful, and will discuss with the AEMC whether it is appropriate to include information on SRAS in the Reliability Panel's Annual Market Performance Report.

⁵⁸ NGF. *Submission to the SRAS Review Draft Report*. 29 May 2013, p. 1.

⁵⁹ NGF. *Submission to the SRAS Review Draft Report*. 29 May 2013, p. 1.

⁶⁰ St Vincent de Paul. *Submission to the Issues and Options Paper*. 8 March 2013, p. 3.

7 Attachments

7.1 Appendix 1 – AEMO responsibilities to procure SRAS, DNV KEMA Independent Review

Refer to separate document.