

Mr Con Carellas  
Essential Services Commission  
GPO Box 2605  
Adelaide SA 5001



By email: [escosa@escosa.sa.gov.au](mailto:escosa@escosa.sa.gov.au)

1 June 2017

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ABN 93 197 662 296

Dear Mr Carellas,

**RE: Draft Report for the Inquiry into the Licensing Arrangements for Generators in South Australia**

As the peak body for the health and community services sector in South Australia, the South Australian Council of Social Service (SACOSS) has an established history of interest, engagement and provision of proposed advice on the necessary market mechanisms and policy for essential services including electricity. We thank the Commission for the opportunity to make a submission on the Draft Report for the Inquiry into the Licensing Arrangements for Generators in South Australia. SACOSS also thanks the Commission for the opportunity for extended consultation provided through the stakeholder workshop which SACOSS attended, and also through a meeting with Commission staff.

SACOSS research shows that the cost and supply of basic necessities like electricity have significant and disproportionately greater impacts on vulnerable people. SACOSS advocacy is informed by our members and direct consultations with consumers and other consumer organisations: organisations and individuals who witness and experience these impacts in our community. We encourage continued involvement from stakeholders who are willing to set aside self-interested commercial or ideological perspectives and develop practical and positive solutions to address the rapid energy market transitional issues South Australian consumers are facing and the economic and social interests of all South Australians.

SACOSS has been investing considerable time, effort and resources in the issues in the South Australian wholesale electricity market, commissioning consultant assessments on wholesale market design, configuration, physical characteristics and risks associated with the South Australian elements of the NEM since November 2015. We have produced a significant number of reports and submissions on the SA wholesale market, and attach a number of these as appendices to this submission.

SACOSS supports AEMO's recommendations for the technical standards to apply to generators seeking to connect to the South Australian power system as contained in AEMO's Final Advice to ESCOSA on recommended technical standards for generator licensing in South Australia. SACOSS welcomes the recommendations especially those relating to generator performance during and after contingency events, system strength and active power control capability. SACOSS concurs with AEMO that the Commission does not introduce any generator licence conditions associated with the provision of inertia. SACOSS is a member of the AEMC Technical Working Group currently examining this issue.

SACOSS notes that several submissions to ESCOSA's Issues Paper expressed concern regarding the Commission applying changes, or additional licensing conditions, to existing generators. However, SACOSS supports the application of changes to existing generators as far as is practicable, in order to improve system security and resilience outcomes in the shorter term.

We thank you in advance for consideration of our comments. If you have any questions relating to this submission, please contact Jo De Silva on [jo@sacoss.org.au](mailto:jo@sacoss.org.au) or 08 8305 4211.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'R Womersley', enclosed in a thin black rectangular border.

Ross Womersley  
Chief Executive Officer

## **Appendices**

### Appendix A

SACOSS (2016) Looking Around the Corner: A Discussion on Current South Australian Power System Risks

### Appendix B

SACOSS (2017) Emergency Frequency Control Submission to AEMC

### Appendix C

SACOSS (2017) System Security Market Frameworks Review Submission to AEMC

### Appendix D

SACOSS (2017) Energy Security Target Submission to DSD



**SACOSS**

*South Australian Council  
of Social Service*

# Looking Around the Corner

**A discussion on Current South Australian Power System Risks**

**SACOSS Report  
February 2016**

*Looking Around the Corner - A Discussion on Current South Australian Power System Risks*  
SACOSS Report February 2016

First published in February 2016 by the  
South Australian Council of Social Service

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Written by South Australian Council of Social Service.

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## Executive Summary

The South Australian Council of Social Service (SACOSS) has been active in South Australian energy market matters for some time, especially in relation to consumer protection, retail pricing and network determinations, but has not generally commented on issues associated with NEM (National Energy Market) wholesale markets ... until now.

SACOSS commissioned an initial work piece to provide analysis and comment on the impact of recent wholesale market activities and decisions by NEM participants on future power station operating regimes, and to discuss the likely impact on the South Australian power system.

The objectives of the project were to:

- Develop SACOSS' understanding of the fundamental wholesale market design, configuration, physical characteristics and risks associated with the South Australian elements of the NEM;
- Explain the reasons behind recent market pricing outcomes; and
- Comment on the likely impacts of the impending shutdown of Alinta's Northern Power Station.

SACOSS note there are still a number of key issues that require further work:

- Northern Power Station will be shutting down around the end of March 2016 and although the SA power system has 'survived' in the past with both Northern units out of service for up to 3 months, the more enduring and consequential effects of this are not clear.
- Potential changes in operating regimes have been announced for two significant SA power stations:
  - AGL's Torrens A Power Station will potentially be mothballed by mid-2017;
  - Engie (formerly GDF Suez) have declared to the Australian Energy Market Operator potential changes in its running regime at Pelican Point across winter 2016.
- Even with Northern Power Station operating in recent months, there continues to be a high degree of ramp-rate limited and constrained plant in SA, thereby allowing the strategic rebids of any participant to be extremely sensitive to increasing wholesale market prices, for as little as 5 minutes, in South Australia.

Of particular concern, we note that South Australian volume weighted average spot prices for 2015/2016 year-to-date, is currently tracking to levels seen when the carbon price was in place for the 2 year period from July 2012 to June 2014, as highlighted below in the Table 1.

Period	\$/MWh
2011-12	32
2012-13	74
2013-14	68
2014-15	42
2015-16 (YTD to 1-Jan-2016)	64

**Table 1: SA Annual volume weighted average spot prices**

Source: AER data

Similarly, we noted recent increases in the SA contract price for Calendar Year 2016, a fact many business and industrial users have made clear to us. SACOSS will continue to monitor wholesale market pricing outcomes in conjunction with the regular analysis by AEMO and especially the AER.

The load shedding arrangements noted in this report to manage power system frequency have an immediate and consequential impact on SA consumers. In the event more load shedding events are required (or the size of events increases) in the future, SACOSS wanted to understand the impacts of more significant load shedding events – state-wide blackouts.

If the likelihood of an event was say 1 in 30 years, the economic impacts of a state-wide blackout would be somewhere between \$6m and \$28m annually using the data detailed in this report (see table 2 and 3). The Australian Energy Market Operator is currently procuring System Restart Ancillary Services (SRAS) in SA worth \$2.3m annually (which still includes Northern Power Station), which effectively implies a probability of an approx. 1 in 90 year event using Table 2’s SA Res/Bus Value of Customer Reliability impact assessment: SACOSS strongly believes that this appears to be far too low a probability.

**Recommendation:**

*SACOSS requests an independent investigation by the SA government into the events on 1 Nov 2015 when SA separated from the eastern states, including load flow ‘what-if’ analysis had Torrens A4 and Northern 2 not returned to service earlier in the day.*

SACOSS will monitor events over summer 2015/16 and assess its response and actions in April 2016, as the impacts of the Northern Power Station shut down take effect, in order to respond constructively on behalf of South Australian consumers who are arguably at the forefront of a paradigm shift in power system operation; certainly within Australia, if not the world.

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## About SACOSS

The South Australian Council of Social Service is the peak non-government representative body for health and community services in South Australia, and has a vision of Justice, Opportunity and Shared Wealth for all South Australians.

SACOSS does not accept poverty, inequity or injustice. Our mission is to be a powerful and representative voice that leads and supports our community to take actions that achieve our vision, and to hold to account governments, business, and communities for actions that disadvantage vulnerable South Australians.

SACOSS has a long-standing interest in the delivery of essential services. Our research shows that the cost of basic necessities like electricity impacts greatly and disproportionately on vulnerable and disadvantaged people.

SACOSS' purpose is to influence public policy in a way that promotes fair and just access to the goods and services required to live a decent life. We undertake policy and advocacy work in areas that specifically affect disadvantaged and low income consumers in South Australia.

SACOSS has a strong membership base of around 300 people and organisations from a broad cross-section of the social services arena. Members of our organisation span both small and large agencies, peak bodies, service providers, individuals, and some government departments.

SACOSS is part of a national network, consisting of ACOSS and other State and Territory Councils of Social Service.

## Project Overview

The South Australian Council of Social Service (SACOSS) has been active in South Australian energy market matters for some time, especially in relation to consumer protection, retail pricing and distribution tariff reviews, but has not generally commented on issues associated with NEM (National Energy Market) wholesale markets ... until now.

SACOSS commissioned an initial work piece to provide analysis and comment on the impact of recent wholesale market activities and decisions by NEM participants on future power station operating regimes, and to discuss the likely impact on the South Australian power system.

The objectives of the project were to:

- Develop SACOSS' understanding of the fundamental wholesale market design, configuration, physical characteristics and risks associated with the South Australian elements of the NEM;
- Explain the reasons behind recent market pricing outcomes; and
- Comment on the likely impacts of the impending shutdown of Alinta's Northern Power Station.

The project explored the current and future landscape of South Australia from a wholesale market perspective in order for SACOSS to better understand potential impacts to residential, commercial and industrial consumers in SA for the coming years.

The project analysed some of the excellent work undertaken by the Australian Energy Market Operator (AEMO), ElectraNet (the South Australian Transmission Network Service Provider) and Australian Energy Market Commission (AEMC). We commend these organisations on their work to date and agree that there is a considerable amount yet to be completed. SACOSS commits to being involved as much as practicable.

SACOSS note there are still a number of key issues that require further work:

- Northern Power Station will be shutting down around the end of March 2016 and although the SA power system has 'survived' in the past with both Northern units out of service for up to 3 months, the more enduring and consequential effects of this are not clear.
- Potential changes in operating regimes have been announced for two significant SA power stations:
  - AGL's Torrens A Power Station will potentially be mothballed by mid-2017;
  - Engie (formerly GDF Suez) have declared to AEMO potential changes in its running regime at Pelican Point across winter 2016.
- Even with Northern Power Station operating in recent months, there continues to be a high degree of ramp-rate limited and constrained plant in SA, thereby allowing the strategic rebids of any participant to be extremely sensitive to increasing wholesale market prices, for as little as 5 minutes, in South Australia.

Of particular concern, we note that South Australian volume weighted average spot prices for 2015/2016 year-to-date, is currently tracking to levels seen when the carbon price was in place for the 2 year period from July 2012 to June 2014, as highlighted below in the Table 1.

<b>Period</b>	<b>\$/MWh</b>
2011-12	32
2012-13	74
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**Table 2: SA Annual volume weighted average spot prices**

Source: AER data

Similarly, we noted recent increases in the SA contract price for Calendar Year 2016, a fact many business and industrial users have made clear to us. SACOSS will continue to monitor wholesale market pricing outcomes in conjunction with the regular analysis by AEMO and especially the AER.

## Continued Focus

SACOSS agree with a number of statements made by AEMO in recent time regarding SA power system challenges, and while SACOSS accepts that under normal conditions, system inertia is not an issue, we do regard a number of critical issues still require further risk mitigation:

- The lack of underlying inertia in the SA power system and frequency response capability when separated from Victoria, resulting in increased reliance on the Vic-SA interconnector, and the dependence of SA on frequency emergency management schemes.
- A number of additional market and system changes are likely to be required (and paid for by someone, possibly consumers!) in the foreseeable future to accommodate the rapidly changing wholesale market environment.

## Inertia

Inertia refers to the rotational momentum of the synchronous generators connected to the power system and defines the degree to which the generating unit will resist the frequency change. The ‘heavier’ the physical generating unit, the larger the momentum it will have when in operation, and the more difficult it is to slow down.

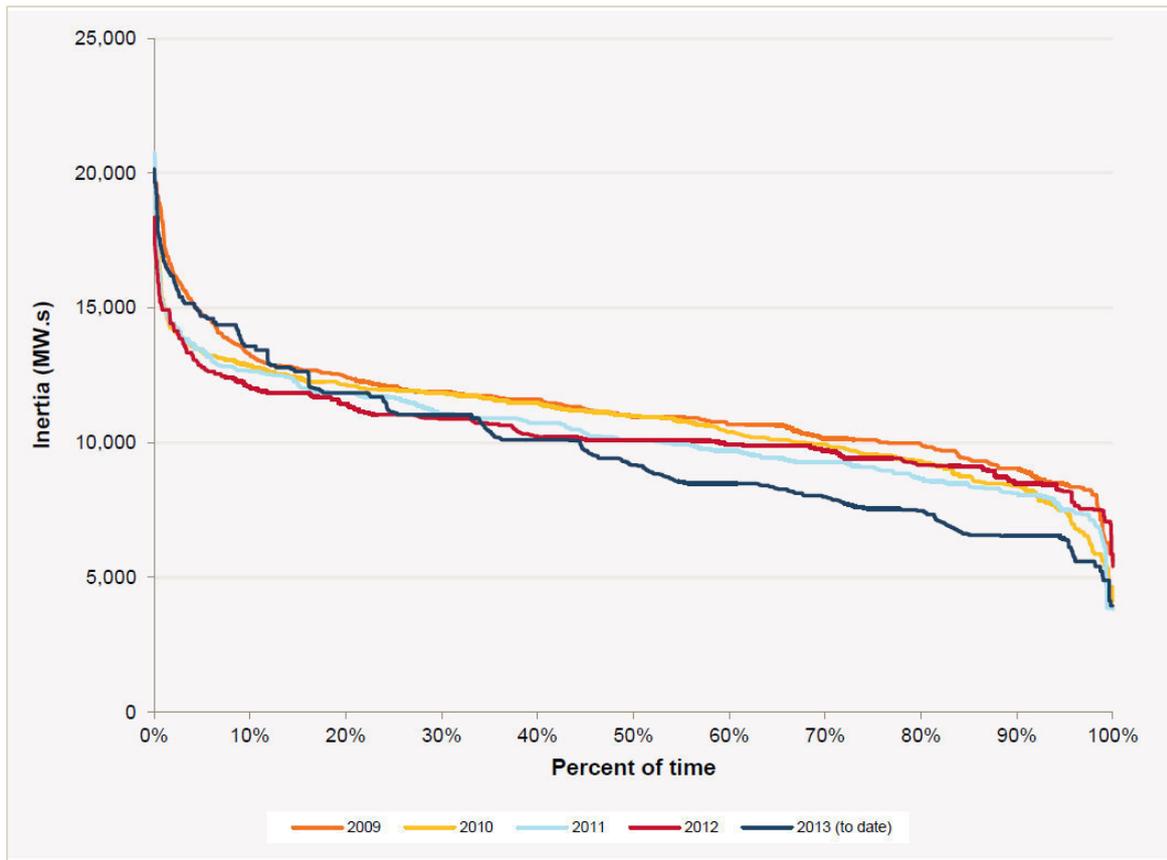
Under normal conditions, when SA is connected to the NEM via Vic-SA, the frequency in SA will be the same as the frequency in the other eastern states and NEM inertia will slow down the frequency decay that may occur from a plant trip in the SA region. However, if SA is disconnected from Victoria (Murraylink can inject power but not presently regulate frequency), it is the inertia of the SA generators and network elements alone that will support frequency in SA.

Of particular interest has been SACOSS’s own analysis on Inertia<sup>1</sup>. Although not an expert in this field, it is clear to us that the initial investigations conducted by AEMO in 2013<sup>2</sup> (Figure 2) and recently re-examined in AEMO’s Electricity Statement of Opportunities in October 2015, highlight a fundamental challenge with power system inertia in SA if/when the interconnector to Victoria is undergoing maintenance, partially available or trips.

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<sup>1</sup> Inertia refers to the rotational momentum of the generators connected to the power system and defines the degree to which the generating unit will resist any power system frequency changes

<sup>2</sup> AEMO, Integrating Renewable Energy – Wind Integration Studies Report 2013, Figure 3.4

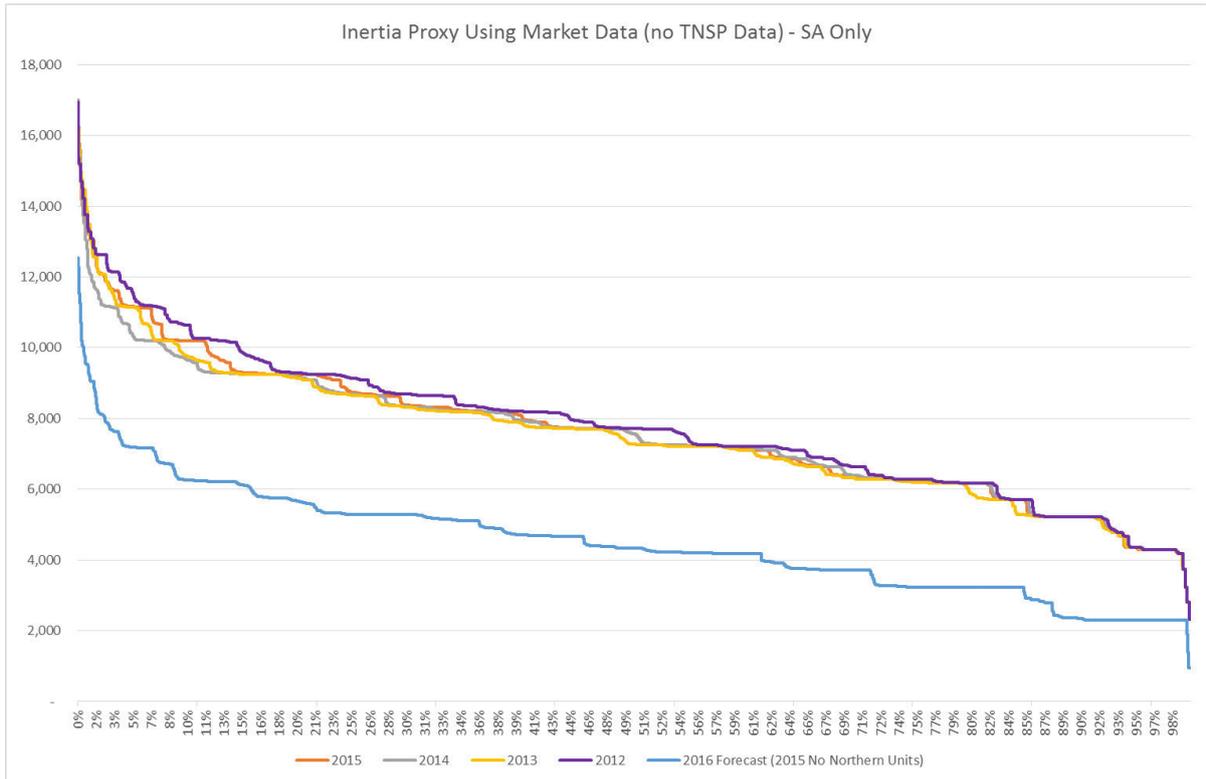


**Figure 2: AEMO Chart (Figure 3.4) of SA System Inertia, 2013**

Source: AEMO

SACOSS' consultants were able to create a proxy for AEMO's inertial calculations for SA using publicly available 5-minute generation data and static inertia figures from constraint equations<sup>3</sup>. The proxy, although extremely simplistic and not indicative of TNSP plant in service, showed generally similar trends for historical periods. When the 2015 actual data was modified to show the potential effects of both Northern units shutting down for 2016, from a percentage change point of view, the inertia impacts of Northern Power Station shutting down were clear (Figure 3).

<sup>3</sup> It is only a proxy for inertia as it is missing key inertia data for ElectraNet assets that are not publically available.



**Figure 3: Inertia Proxy using Market Data (no TNSP Data) – SA Only**

It should be noted that the shutdown of the Northern units is likely to see a response from other market participants and possibly network assets, which should see inertia levels increase for an SA islanded system, although this would only occur if the responding generators contribute inertia to the system (which does not currently occur with most wind and solar assets). SACOSS will work with relevant groups to improve the accuracy of this Inertia proxy in 2016 to ensure adequate public transparency on this complex, but very important issue for SA.

The consequence of low inertia for a separated SA power system is the heavy reliance on under-frequency load shedding (or generation tripping in the case of over over-frequency events), an outcome that is detrimental to SA consumers in many ways. The experiences of Victoria in 2007 when 2200MW of load shedding occurred, costing the Victorian economy an estimated \$600m (in 2015 dollars) have been used as a point-of-reference to understand the importance of solving some of these challenges correctly<sup>4</sup>. The events of 1 November 2015 in South Australia serve as a similar warning to ensure appropriate risk controls are in place for the benefit of SA consumers.

<sup>4</sup> Victorian Government, Major Incident Report 16 Jan 2007  
<http://www.energyandresources.vic.gov.au/energy/safety-and-emergencies/energy-supply-emergencies/january-supply-interruptions-executive-summary> [Accessed 20 November 2015].

## Economic Impacts of State-wide Blackout

The load shedding arrangements noted above to manage power system frequency have an immediate and consequential impact on SA consumers. In the event more load shedding events are required (or the size of events increases) in the future, SACOSS wanted to understand the impacts of more significant load shedding events – state-wide blackouts.

SACOSS has considered two methods for assessment: Value of Customer Reliability (VCR) and a recent example from Victoria that resulted in load shedding levels that were approximately the same size as typical SA demand profiles.

VCR represents, in dollar terms, the willingness of customers to pay for the reliable supply of electricity. The values produced are used as a proxy and can be applied for use in revenue regulation, planning and operational purposes in the NEM. SACOSS has been an active supporter of this method. It is important the VCR figures accurately reflect the value of reliability across a range of customers, with the assessment below capturing the benefit for both business and residential customers<sup>5</sup>.

The next method for assessment came from assessment made in Victoria from a January 2007<sup>6</sup> major electricity supply interruption. In that case, consultants were able to assess the direct AND indirect economic impacts at a value of \$600m in today's dollars for a partial impact to the Victorian system (herein referred to as the 'Vic Event').

For the purposes of this assessment, we have used the following assumptions:

- Median SA Operational demand<sup>7</sup> for the last 4 years is approx. 1500MW;
- Northern Power Station is not available for generation or SRAS (as will be the case from April 2016);
- Torrens Island has 3 B units and 1 A unit that are warm enough for immediate generation;
- Pelican Point is only capable of half-load as indicated through recent running profiles and in recent AEMO announcements<sup>8</sup>;
- System Restart Ancillary Services (SRAS) sources (Dry Creek and Quarantine<sup>9</sup>) work as expected and all SA synchronous generation (except Snuggery, Port Lincoln and

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<sup>5</sup> AEMO VCR Review, Nov 2015, [Accessed 10 December 2014]

<http://www.aemo.com.au/Electricity/Planning/Value-of-Customer-Reliability-review>

<sup>6</sup> In this event, 2300MW was shed (2200 initially and 100MW of smelter load shortly thereafter) and was not fully restored until over 4 hours later (unserved energy was 7100MWh), with the economic effect estimated at approx. \$500m (\$600m in today's terms) with indirect costs as much as the direct costs <http://www.energyandresources.vic.gov.au/energy/safety-and-emergencies/energy-supply-emergencies/january-supply-interruptions-executive-summary>

<sup>7</sup> Operational Demand is used (as opposed to total demand) as AEMO has stated it will not allow wind generation to be used until the system rebuild is greater than approx. 40% or the Heywood interconnector is available.

<sup>8</sup> AEMO ESSO Update, October 2015.

<sup>9</sup> The 2015 Independent Review of SRAS Process Improvements by DGA Consulting identified Quarantine and Northern Power Station as the 2015/16 SRAS sources (p 27). It is assumed when Northern Power Station shuts down in April 2016, Dry Creek units will be enabled for SRAS but this is yet to be confirmed.

Ladbroke Grove – all due to remote location) are supplied power for safe shut-down, auxiliary loads (approx. 100MW) and commenced export of energy within 4 hours with 600MW of load restored; and,

- All demand is restored within 8 hours<sup>10</sup> at an eventual rate of 200MW/hr given the load blocks that would be able to be handled by the smaller sized generating units in SA.

Table 2 shows the possible economic impacts using both methodologies with the length of the event shown at various points.

Time (in hrs)	Demand (MW)	Unserviced Energy (MWh)	Accumulated Impact to SA Economy (\$m)	
			SA Residential/ Business VCR: \$35.8k/MWh	Vic Event: \$84.5k/MWh
Just prior to event	1500	0	0	0
End 1 <sup>st</sup> Hour	0	1,500	53.7	126.8
End 2 <sup>nd</sup> Hour	250	2,750	98.5	232.4
End 4 <sup>th</sup> Hour	700	4,550	162.9	384.5
End 6 <sup>th</sup> Hour	1100	5,550	198.7	469.0
End 8 <sup>th</sup> Hour	1500	5,750	205.9	485.9

**Table 2: Economic Impact to SA using a Desired Scenario**

If the above scenario is delayed by just 4 hours with a slower than expected restoration rate, the impacts are even more significant.

Time (in hrs)	Demand (MW)	Unserviced Energy (MWh)	Accumulated Impact to SA Economy (\$m)	
			SA Residential/ Business VCR: \$35.8k/MWh	Vic Event: \$84.5k/MWh
Just prior to event	1500	0	0	0
End 1 <sup>st</sup> Hour	0	1,500	53.7	126.8
End 2 <sup>nd</sup> Hour	50	2,950	105.6	249.3
End 4 <sup>th</sup> Hour	250	5,550	198.7	469.0
End 6 <sup>th</sup> Hour	450	7,750	277.5	654.9
End 8 <sup>th</sup> Hour	850	9,250	331.2	781.6
End 10 <sup>th</sup> Hour	1250	9,950	356.2	840.8
End 12 <sup>th</sup> Hour	1500	10,000	358.0	845.0

**Table 3: Economic Impact to SA using a 4-hour Delay Scenario**

If the likelihood of an event was say 1 in 30 years, the economic impacts of a state-wide blackout would be somewhere between \$6m and \$28m annually using the above two table's outcomes. AEMO is currently procuring SRAS in SA worth \$2.3m annually (which still includes Northern Power Station), which effectively implies a probability of an approx. 1 in 90 year event using Table 2's SA Res/Bus VCR impact assessment: this appears too low a probability!

<sup>10</sup> Most demand in the March 2015 blackout in Turkey was able to be restored within 8-10 hours although Turkey have a high level of hydro generation capability (which had effectively pushed thermal-gas generation offline) during high running periods.

## Moving Forward

SACOSS has taken on board a number of matters for further consideration and involvement with the relevant State and National bodies, including:

1. Maintaining a 'Watching Brief' on a number key items over the next 2-6 months.
2. Ensure SACOSS' involvement in the following key market issues, reviews and consultations:
  - The imminent release by AEMO/ ElectraNet Report on SA Power System issues, ensuring involvement in possible working groups and forums to better represent the needs of SA consumers;
  - Formation of a working party to bring AEMO/ElectraNet/SA State Government and interested participants together on SA power system implications BEFORE potential system incidents occur.
  - Follow the potential developments of an inertia market through 2016 given recent AEMO comments and internal SACOSS analysis.
3. SACOSS requests an independent investigation by the SA government into the events on 1 Nov 2015 when SA separated from the eastern states, including load flow 'what-if' analysis had Torrens A4 and Northern 2 not returned to service earlier in the day.

Given the amount of focus and interest on the South Australian power system, as well as the expert advice indicating particular challenges in SA, this project has highlighted the need for SACOSS to continue to be involved in wholesale market matters. SACOSS will monitor events over summer 2015/16 and assess its response and actions in April 2016, as the impacts of the Northern Power Station shut down take effect, in order to respond constructively on behalf of South Australian consumers who are arguably at the forefront of a paradigm shift in power system operation; certainly within Australia, if not the world.

Mr John Pierce  
Chairman  
Australian Energy Market Commission  
PO Box A2449  
Sydney South NSW 1235



Lodged online

8 February 2017

Dear Mr Pierce,

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ABN 93 197 662 296

**RE: ERC0212 - Draft Rule Determination - National Electricity Amendment (Emergency Frequency Control Schemes) Rule 2017**

Thank you for the opportunity to comment on the *Draft National Electricity Amendment (Emergency frequency control schemes) Rule 2017*. As the peak body for the health and community services sector in South Australia, the South Australian Council of Social Service (SACOSS) has an established history of interest, engagement and provision of proposed advice on the necessary market mechanisms and policy for essential services. Our research shows that the cost of basic necessities like electricity impacts greatly and disproportionately on vulnerable people. Our advocacy is informed by our members and direct consultations with consumers and other consumer organisations: organisations and individuals who witness and experience these impacts in our community.

SACOSS supports the Australian Energy Market Commission's Draft Rule to enhance the framework for emergency frequency control in the National Electricity Market. SACOSS warmly welcomes the intent of the Draft Rule, to deliver emergency frequency control efficiently and keeping costs as low as possible. SACOSS also welcomes the Draft Rule's provision for clear governance arrangements, including robust cost benefit processes. Considering the system security issues in the South Australian context, SACOSS is firmly of the belief that strong governance is essential to the efficient operation of the market in the long term interests of consumers. SACOSS considers that given the issues emerging in the NEM as a result of the continual process of aligning climate and energy policy, the strengthening of the existing energy market governance framework is a paramount issue. In this context, SACOSS believes that the AEMC Draft Rule is in line with the 2015 Vertigan, Yarrow and Morton Review of Governance Arrangements for Australian Energy Markets and notes that SACOSS continues to remain hopeful that the recommendations of the Vertigan, Yarrow and Morton Review will be fully implemented as a matter of high priority.

SACOSS wishes to draw the Commission's attention to SACOSS' extensive consideration of the provision of a new category of contingency event, the protected contingency event. SACOSS believes that provision of a protected contingency event is an essential measure to address the system security issues we are experiencing in South Australia as a result of the issues surrounding alignment of climate and energy policy. Through the SACOSS participation in the AEMC's System Security Technical Working Group and as a result of more extensive consultations and research, SACOSS believes the proposed governance measures are correct, namely (to quote from the Commission):

- AEMO will decide when an event should be classified as a protected event;
- The Reliability Panel will determine a post-contingency operating state for the protected event. This may include specific bands for frequency following the event, times for frequency restoration, or maximum amounts of load that can be shed, and

- AEMO will then operate the power system so that it will be in a configuration that matches the post-contingency operating state, if the protected event were to occur.<sup>1</sup>

In particular, SACOSS notes that the Reliability Panel is the appropriate body to determine a post-contingency operating state for the protected event, given the scale of the costs involved and the long term interests of consumers. SACOSS considers that it is appropriate for this decision to be outside of the market operators decision making parameters, as per the intent of the recommendations of the Vertigan, Yarrow and Morton Review.

We thank you in advance for consideration of our comments. If you have any questions relating to the above, please contact SACOSS Senior Policy Officer, Jo De Silva on (08) 8305 4211 or via [jo@sacoss.org.au](mailto:jo@sacoss.org.au).

Yours sincerely,

A handwritten signature in black ink, appearing to read 'R Womersley', written over a light grey rectangular background.

Ross Womersley  
Chief Executive Officer

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<sup>1</sup> <http://www.aemc.gov.au/getattachment/039f10d5-39a6-4a6f-9d69-7683b6070582/Information-sheet.aspx>

Mr Sebastien Henry  
Australian Energy Market Commission  
PO Box A2449  
Sydney South NSW 1235



21 April 2017

Lodged online

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ABN 93 197 662 296

Dear Mr Henry,

**RE: EPR0053 - System Security Market Frameworks Review - Directions Paper**

SACOSS is the peak body for the non-government community services and health sectors in South Australia, with a long-standing interest in the efficient delivery of essential services. We thank the AEMC for their Directions Paper on the critical electricity market developments related to the System Security Market Frameworks Review.

SACOSS appreciates the significant work already conducted by the AEMC, the Technical Working Group of which we have been a member, the Interim Report and opportunity to meet with the Review team this week: we greatly value this type of engagement and are very appreciative of the AEMC openness and willingness to engage. SACOSS has been investing considerable time, effort and resources in this area of the market, commissioning consultant assessments on SA inertia since November 2015, to ensure we are across many of the issues raised in this Directions Paper. We encourage continued involvement from the consumer-side of the industry.

Whilst we accept that the widespread deployment of new, non-synchronous generating technologies, such as wind farms and solar panels, is having an impact on the power system, there are several other areas we wish to see explored in parallel with the matters raised in the Directions Paper. It is our contention that the Directions Paper has very quickly focussed in on TNSP's providing many of the required solutions, a position we are not convinced will be the most cost effective in the short or long term.

We thank you in advance for consideration of our comments. If you have any questions relating to the following material, please contact Jo De Silva on [jo@sacoss.org.au](mailto:jo@sacoss.org.au) or 08 8305 4211.

Yours sincerely,

Ross Womersley  
Chief Executive Officer

## SACOSS Comments

### 1. Jumping to TNSP solution provision

SACOSS recognises the identified frequency management options the AEMC has developed, but has some concern with the way these options have been distilled into the 'two staged packages' for further stakeholder feedback. These conclusions, whilst appearing sound and reasonable, concentrate too heavily on TNSP/DNSP provision of the solutions, which at this stage are still technically nebulous and therefore, would appear a poor fit for the current TNSP expenditure models.

Given frequency response is currently the domain of the generation fleet (albeit requiring far more significant tuning and model development as per recent ESCOSA submissions<sup>1</sup>), and FFR by its nature is a form of frequency control, it appears inefficient from the outside to be now suggesting TNSP develop and implement solutions in an area they currently mainly observe. The recent high FCAS price events in SA over the last 18 months (see Figure 1), which should be starting to incentivise FCAS provision in the market which would lower the prices faced by consumers, would be far less effective if the TNSP's were now providing the service. SACOSS acknowledges that cross-utilisation between some network equipment, voltage management and inertia services may occur, but would like to see greater identification of these requirements, in much the same way as NSCAS services are identified before solutions are implemented. As noted in the report, AEMO's NTNDP in December 2016 has only just started to consider NSCAS assessments for some of the system strength issues that were identified in SA.

SACOSS acknowledge and recognise TNSP's will be involved (as should the generation and demand-response communities where possible): all will need to be involved to achieve the most efficient and cost-effective solution for the consumer.

### 2. Non-Synchronous Generation FFR Capability Requirement

The inclusion in the immediate package of requiring only non-synchronous generation to provide FFR capability seems inefficient: it should be all generation or none. Inertia will remain an issue whether there is high or low wind or solar plant in service given the likely displacement of the high inertia, synchronous generation. Without claiming to be proficient in power systems engineering, SACOSS would contend this generator obligation should be extended to all new entrant generation, irrespective of their fuel or dispatch nature. Similarly, mandating a FFR service for the generation fleet but without a means to recover costs, whilst at the same time leaving the development to the TNSP's (who will undoubtedly spend significant capital acquiring and developing inertia/FFR capability for the immediate term, but potentially paid for by customers for the long term), again seems contrary to good electricity practise. If a market signal is desired in the long term (and SACOSS agree this is generally more desirable than not), then use of short duration, audited contracts for the short-term (say 1-4 year in tenure) for the provision of the required inertia or FFR services while the technical envelopes for the market are developed, would seem far more efficient than the current direction.

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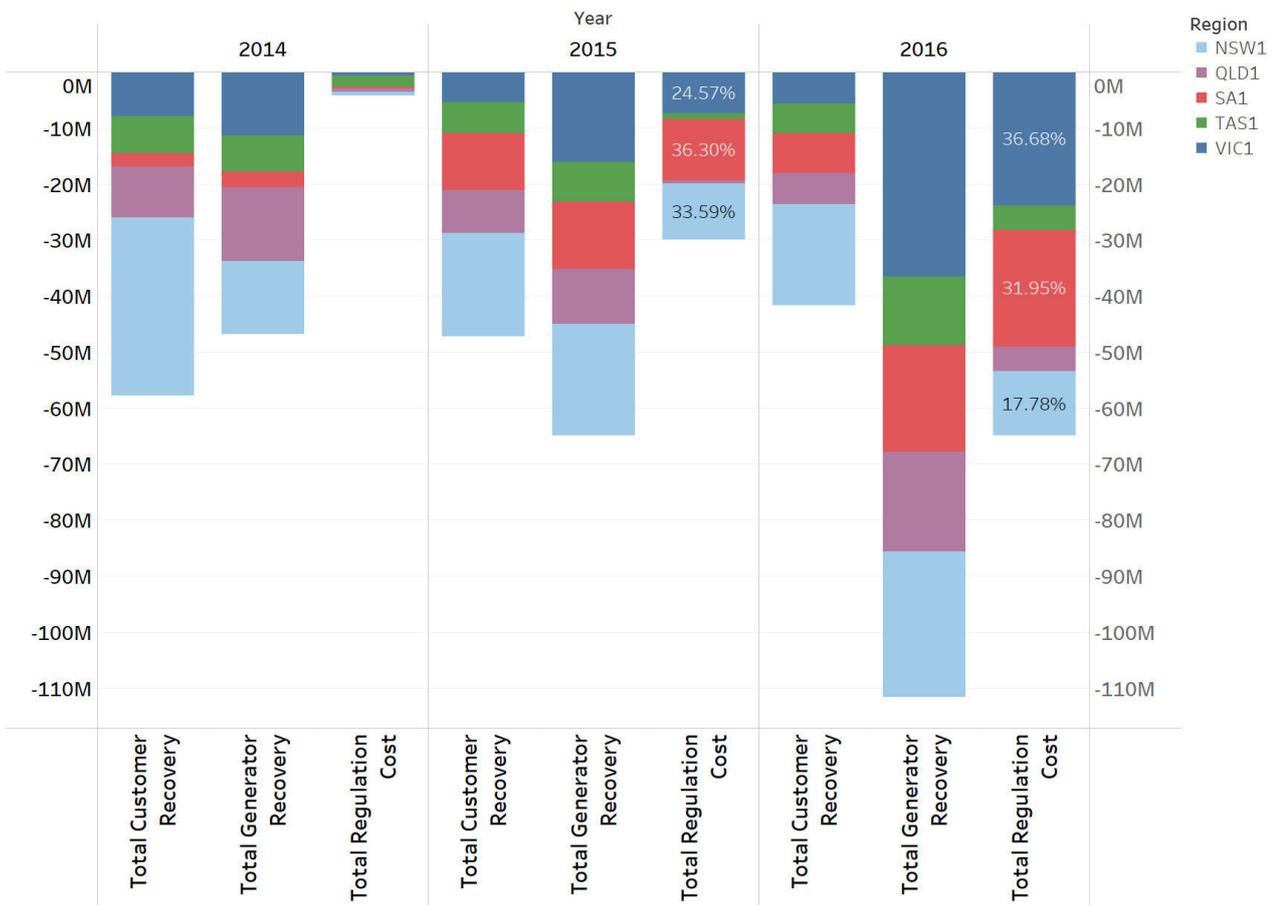
<sup>1</sup> <http://www.escosa.sa.gov.au/ArticleDocuments/1047/20170208-Inquiry-LicensingInverterConnectedGeneratorsIssuesPaperSubmission-KSummers.pdf.aspx?Embed=Y>

### 3. Technical Considerations of FFR

Much of the discussion by AEMO and the AEMC on FFR has been based around the excellent report completed by GE Consulting. SACOSS draws the AEMC’s attention to the inclusion and assessment of the risks associated with implementation of an FFR scheme given the current state of the technology developments (Section 4 of the GE report, p 107 onward). The risks identified in the GE Consulting report should continue to form part of the cost benefit analysis for the implementation of FFR or synthetic inertia mechanisms, especially given the current confusion associated with the levels of primary frequency control the power system has enabled (see footnote 1).

### 4. Other Comments

SACOSS disagrees that works resulting from generator exit should be undertaken by the NSP as a prescribed service (i.e. funded by consumers): entry and exit should be managed by the generation sector-as-a-whole.



**Figure 1: Total Regulation FCAS by Region**

Figure 1 illustrates the total generator and customer recovery for all FCAS services across 2014-2016 using publicly available AEMO data. The total regulation FCAS component makes up a disproportionate amount, based on AEMO’s use of the 35MW local requirement in SA and subsequent market outcomes.

Ms Rebecca Knights  
Director, Energy Policy and Projects  
Department of State Development  
Level 8, 11 Waymouth Street  
Adelaide SA 5000

By email: [DPC.ESTRegulations@sa.gov.au](mailto:DPC.ESTRegulations@sa.gov.au)

26 May 2017

Dear Ms Knights,

**RE: Energy Security Target Consultation**

SACOSS welcomes the opportunity to comment on the Energy Security Target (EST). SACOSS appreciates the significant work already conducted by the South Australian Government to develop solutions to address the system and energy security issues arising in South Australia as a result of federal climate change policies.

As the peak body for the non-government community services and health sectors in South Australia, with a long-standing interest in the efficient delivery of essential services, SACOSS has been investing considerable time, effort and resources in this area of the market. We encourage continued involvement from stakeholders who are willing to set aside self-interested commercial or ideological perspectives and develop practical and positive solutions to address the rapid energy market transitional issues South Australian consumers are facing and the economic and social interests of all South Australians.

SACOSS recognises that the contemplated scheme is designed to increase the amount of gas-fired generation within SA to assist the state to deal with conditions when the wind is not blowing and sun not shining. We acknowledge and recognise this as a desired outcome. SACOSS shares the same desire and goal of the energy security target to increase competition, put downward pressure on prices and provide more energy system stability. We believe that gas is a necessary fuel in the energy market transition process.

SACOSS notes the concern of some stakeholders that at a high level, this scheme will act as a wealth transfer from South Australian consumers to South Australian gas fired generation (within SA) and their gas suppliers (increasingly not within SA) whilst possibly doing very little to guarantee the gas generators will be 'there' when needed. However, we recognise that South Australian consumers do value system and energy security, and that gas is a necessary transition fuel, and hence, we have not taken an approach of opposing this scheme based on the above assumptions.

SACOSS believes that addressing energy and system security in SA is an extremely challenging task and many levers will need to be pulled in order to comprehensively address the issues. Not only is there no silver bullet to adequately address all of the issues, but the technology is at an early stage in terms of its ability to deliver the required protections. For example, the Australian Energy Market Operator has recently cautioned against immediately committing to prescriptive or long-term procurement options for Fast Frequency Response, stating that "It would be preferable to start out with a series of trials to demonstrate the technical capabilities and potential benefits of FFR delivery for real-world frequency control".<sup>1</sup>

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<sup>1</sup> AEMO (2017) Recommended Technical Standards for Generator Licensing in South Australia at <http://www.escosa.sa.gov.au/projects-and-publications/projects/inquiries/inquiry-into-licensing-arrangements-under-the-electricity-act-1996-for-inverter-connected-generators/inquiry-into-licensing-arrangements-under-the-electricity-act-1996-for-inverter-connected-generators>



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More importantly in the context of the current review, AEMO has stated that a minimum quantity of synchronous inertia will continue to be required in the short to medium term:

“In an electrical power system, inertia can be thought of as a measure of the mass of all the rotating generating units synchronously connected to the power system...The management of power system frequency within the limits in the Frequency Operating Standards will be an increasing challenge in operating a low inertia power system. To help address this challenge, new technologies are capable of providing a very rapid active power response to rapidly changing power system frequency conditions, referred to as fast frequency response (FFR)...Synchronous inertia and FFR are technically distinct services, due to the timescales over which they act, and the different effect they have on power system frequency control. The two services therefore are not fully interchangeable, and a minimum quantity of synchronous inertia will continue to be required in the short to medium term, to allow adequate control of power system frequency.”<sup>2</sup>

Therefore, it is in the context of needing a minimum quantity of synchronous inertia in SA that we offer the following considerations as constructive comments, intended to further refine the EST to maximise the system and energy security outcomes:

- That diesel generators should be included in the scheme;
- That the certificate target be adjusted as a percentage of the prevailing scheduled demand;
- Additional measures should be implemented to allow the scheme to be adjusted if demand continues to decrease, otherwise SA households will be paying for generation to meet demand that is not present;
- That provision for a dispute resolution mechanism be made;
- That consideration be given to scheme implementation being delayed 6 or 12 months and the reporting framework adjusted from 1 month to 3-6 months, to allow accurate and timely reporting to minimise estimates by the retailers and generators;
- That consideration be given to a trial/prototyping exercise for electricity security certificate creation and acquittal to enable enhanced design and evaluation;
- That further understanding be developed of other similar schemes around the world (and how they differ from the current suggested outcomes), including the Queensland Gas Scheme<sup>3</sup>.

Some additional options which SACOSS suggest should be explored as a further package of work associated with energy security targets and trying to keep the wholesale market price at levels that are sustainable for consumers:

- Modifications to Murraylink to ensure it can achieve very fast response and frequency control signals (including provision of AGC thereby decreasing the overall cost of FCAS services for SA consumers and non-synchronous generators);
- Ensure SAPN continue finish the randomisation of the hot-water peak load timers, thereby removing the induced SA price spikes that occur just before midnight;
- In the interests of trying to ensure some gas fired generation remains in the SA system over the next 13 years, explore a form of inertia/capacity mechanism.

In addition to the above constructive suggestions, SACOSS believes there are some notable questions which remain unanswered and are worth consideration by the South Australian Government:

- Will the scheme targets be adjusted to changing market conditions such as continued demand decreases?

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<sup>2</sup> AEMO (2017)

<sup>3</sup> OBPR (2013) “Technical Report : Queensland Gas Scheme Case Study – Discussion of Findings, Methodology, Inputs and Assumptions”, <http://www.qca.org.au/getattachment/a9551ea0-d951-4486-a9ca-8727268497b2/Queensland-Gas-Scheme-Case-Study-Discussion-of-Fin.aspx>

- Will the scheme be adjusted if a carbon price is implemented?
- Will the scheme remain in place if an inertia market is implemented?
- How will the market price be determined? Will it be a daily, weekly or monthly pricing mechanism and how will it be made public.
- There are also a few administrative aspects to the scheme that need further consideration:
  - The legislation at present contemplates a final report 1 month after the end of Financial Year, yet AEMO interim/initial settlements do not occur until 20 business days following a trading weeks end, therefore compounding the estimations for liabilities on the supply side, but locking in definitive costs to retailers (hence households); and
  - The 10% estimation factor appears excessive and may add to price ambiguity.
- What are the current and future gas price assumptions on gas-fired plant (both existing and new)?
- What changes in historically observed generator and TNSP behaviour have been modelled, hence what decrease in wholesale prices can be expected?
- What impact will the scheme have on the contracting market?
- What assumptions have been made for current business consumers moving to market contracts together with the large industrial consumers, thereby leaving fewer consumers (namely) households to pay for the scheme?

We thank you in advance for consideration of our comments. If you have any questions relating to the following material, please contact me on [jo@sacoss.org.au](mailto:jo@sacoss.org.au) or 08 8305 4211.

Yours sincerely,



Ross Womersley  
Executive Director