

UPDATE

# ELECTRICITY STATEMENT OF OPPORTUNITIES

FOR THE NATIONAL ELECTRICITY MARKET

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## IMPORTANT NOTICE

### Purpose

AEMO publishes the Electricity Statement of Opportunities (ESOO) in accordance with clause 3.13.3(q) of the National Electricity Rules, to provide technical and market data and information which can be used to assess the future need for electricity generation or demand management capacity or augmentation of the power system in the National Electricity Market.

This ESOO Update is published in accordance with clause 3.13.3(r) to give interested stakeholders updated information about the supply demand balance in South Australia following Alinta Energy's October 2015 announcement about the early withdrawals of the Northern and Playford B power stations.

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### Acknowledgement

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## CHAPTER 1. SOUTH AUSTRALIA

The National Electricity Rule (NER) clause 3.13.3 (r) requires AEMO to publish updates to the Electricity Statement of Opportunities (ESOO) as soon as practicable, when significant new information becomes available relating to supply or demand projections, including plant retirements.

The recent announcement that Northern Power Station will be withdrawn by 31 March 2016 is considered significant new information, requiring a published update to the 2015 ESOO. This ESOO update focuses on implications for supply demand balance in South Australia over the three-year period to 2017–18.

This update to the 2015 ESOO outlines that the earlier withdrawal of Northern Power Station:

- Is not expected to change the projected extent or timing of the Reliability Standard<sup>1</sup> breaches. The 2015 ESOO, published in August 2015, highlighted that generation capacity reserves are reducing and the Reliability Standard may be breached in the region in 2019–20 and 2024–25, under the medium demand scenario. This projection remains current.
- Will impact the supply demand balance for South Australia over the next three years, and increase South Australia's reliance on wind generation and imports from Victoria. When high demand coincides with low wind generation, plant outages, or low levels of imports, South Australia may experience supply shortfalls.

There is an emerging opportunity for the provision of Frequency Control Ancillary Services (FCAS) in South Australia, especially when there is a credible risk of separation from the National Electricity Market (NEM). During these periods of credible risk, AEMO would need to source FCAS locally within South Australia to manage system security.

### 1.1 Background

In the 2015 ESOO, published in August 2015, AEMO used Alinta Energy's June 2015 announcement about the closure of Northern and Playford B power stations to model:

- The expected withdrawal of Northern Power Station by summer 2017–18.
- The permanent withdrawal of Playford B Power Station (mothballed since 2012).

On 7 October 2015, Alinta Energy issued a press release announcing that generation would cease at both Northern and Playford B power stations by 31 March 2016.

The closure of these power stations removes 786 MW (or 15%) of generation capacity from South Australia. Of this total, 240 MW (the capacity of Playford B) was already modelled as withdrawn in the 2015 ESOO. The 546 MW capacity of Northern Power Station will be removed some 18 months earlier than modelled in the 2015 ESOO.

The following generation capacity changes, announced since the 2015 ESOO, have also been included in this update<sup>2</sup>:

- 102 MW Hornsdale Wind Farm (Stage 1) in South Australia from November 2016.
- 240 MW Ararat Wind Farm project in Victoria from May 2017.
- Temporary withdrawal of remaining 239 MW unit at Pelican Point Power Station in winter 2016.
- Return to service of 58 MW Tamar Valley peaking plant from June 2016 (although this will not impact on supply demand balance in South Australia).

<sup>1</sup> The Reliability Standard is a measure of sufficiency of installed capacity to meet demand. The Reliability Standard (National Electricity Rules clause 3.9.3C) requires that a maximum of 0.002% of all operational consumption can go unserved for any region in any financial year.

<sup>2</sup> AEMO provides updated generation data at: <http://www.aemo.com.au/Electricity/Planning/Related-Information/Generation-Information>.

Other assumption changes include:

- Incorporation of additional Heywood Interconnector constraints post upgrade.
- New forced outage rate assumptions based on historical performance. These revised assumptions improve the modelled reliability for the remaining South Australian thermal generators.

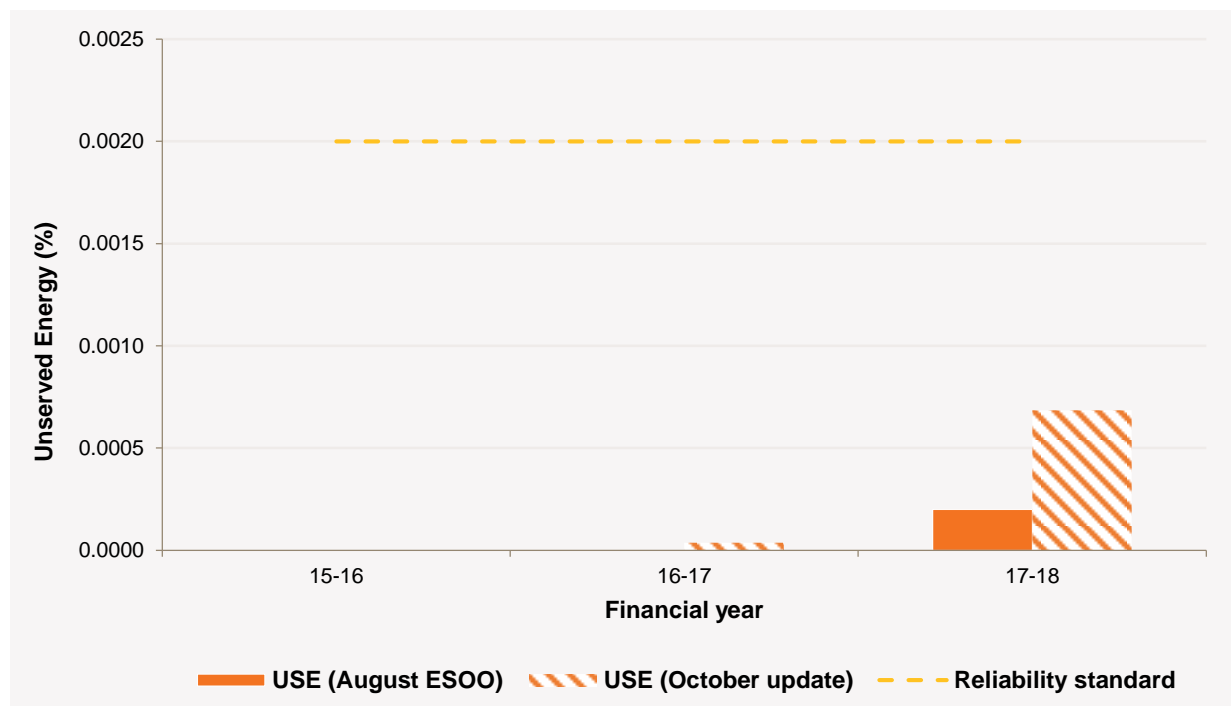
## 1.2 Updated supply demand observations

### 1.2.1 Reliability Standard and unserved energy

The revised closing date for Northern Power Station is not expected to result in Reliability Standard breaches in the three years modelled to 2017–18.

Figure 1 compares the 2015 ES00 expected unserved energy (USE) with the revised USE. The earlier withdrawal of Northern Power Station increases the expected USE in 2016–17 and 2017–18, but USE is still well below a level that would breach the Reliability Standard. In these two years, the USE increase due to Northern Power Station closure outweighs any reduction resulting from the revised forced outage rates.

**Figure 1 USE comparison August 2015 ES00 to October 2015 ES00 Update**



### 1.2.2 Supply challenges – reliance on wind generation and interconnection

Although Reliability Standard breaches are not expected in the next three years, the earlier withdrawal of Northern Power Station will impact South Australia’s supply demand balance from summer 2016–17 under extreme conditions.

For there to be sufficient supply to meet periods of high demand in South Australia, the region will rely (to a greater extent in the next three years than was projected in the 2015 ES00) on:

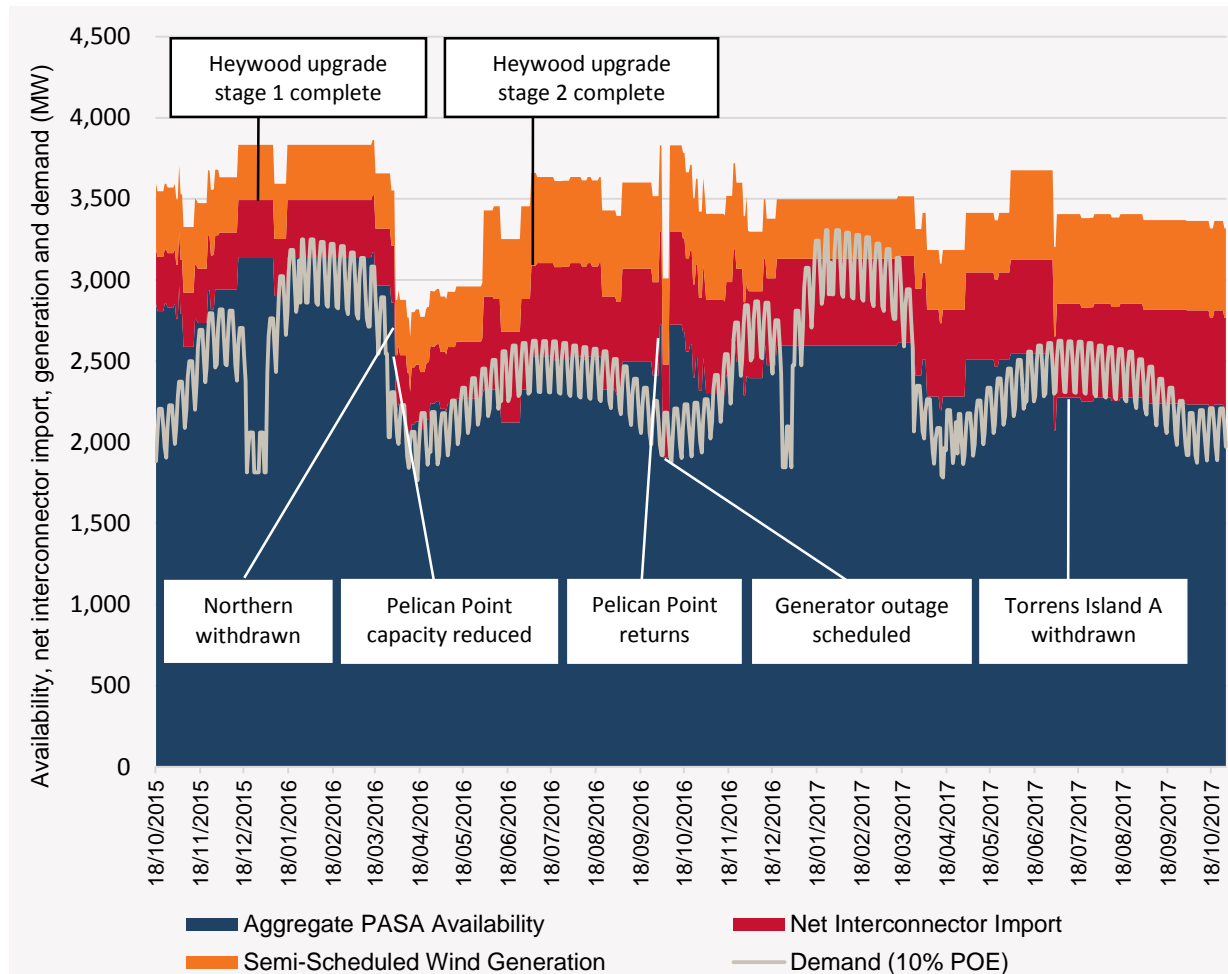
- Availability of wind generation.
- Imports via interconnection from Victoria.
- Reliability of existing generating units.



Focusing on the next two years, Figure 2, derived from AEMO’s Medium Term Projected Assessment of System Adequacy (MT PASA) and ESOO Update analysis, shows how:

- The withdrawal of Northern Power Station proportionately reduces the availability of scheduled coal, gas and diesel-fired generation capacity in South Australia (that is, aggregate PASA availability).
- After Northern Power Station is withdrawn, there are times when maximum daily demand (MT PASA 10% probability of exceedance (POE) forecast)<sup>3</sup> is projected to exceed supply from scheduled generation in South Australia. At these times, the region will rely on imports (via interconnection) and wind generation to meet operational demand.

**Figure 2 Projected supply and demand in South Australia to October 2017**



The semi-scheduled wind generation and interconnector flows assumed in Figure 2 represent the average contribution from wind and from Victorian imports during the top 10% of summer and winter daily maximum demands, derived from the 2015 ESOO analysis. In summer 2016–17, the modelled average wind contribution at these times is 367 MW (which is 31% of installed semi-scheduled wind capacity in South Australia), with an estimated average 535 MW of imports available from Victoria.

Under lower wind conditions (less than 150 MW), there would be supply shortfalls in the state if additional imports from Victoria were not available. The level of imports will be subject to the availability and capacity of the interconnector, and the coincidence of high demand in Victoria.

<sup>3</sup> A probability of exceedance refers to the likelihood that a maximum demand forecast will be met or exceeded. A 10% POE MD projection is expected to be exceeded, on average, one year in 10.

### 1.3 Availability of Frequency Control Ancillary Services in South Australia

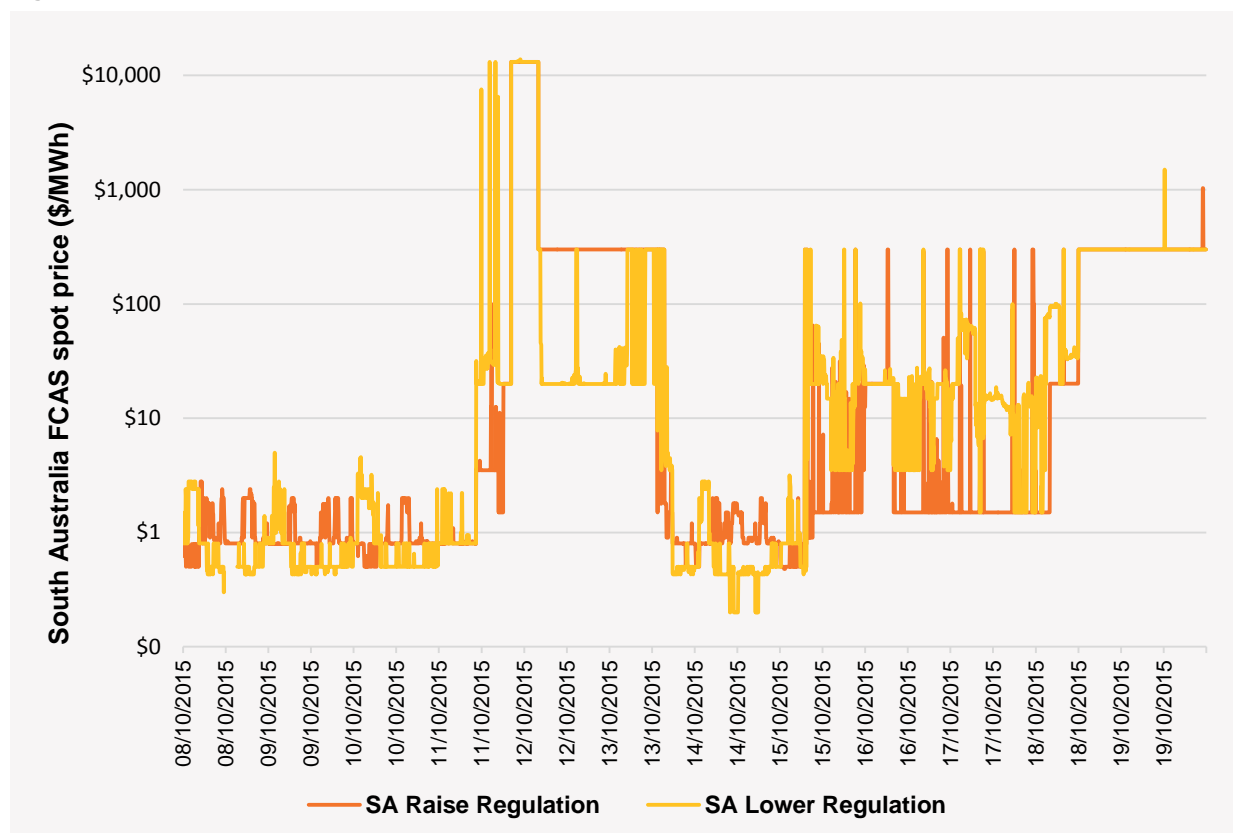
This ESOO update also reports on an emerging opportunity in the Frequency Control Ancillary Services (FCAS) market in South Australia.

Network outages of the Heywood Interconnector in October 2015 resulted in periods where the separation of South Australia from the NEM was a credible risk. A credible separation risk requires AEMO to have arrangements and processes in place to ensure the security of the South Australian power system following separation from the NEM. During these periods of credible risk, AEMO would need to source FCAS locally within South Australia to ensure system security. There are currently only three registered participants in the FCAS market in South Australia, and the closure of Northern Power Station by March 2016 will reduce this participation further.

During the October 2015 outage, sourcing FCAS locally within South Australia resulted in sustained high prices for several FCAS services. Figure 3 below shows the price for Regulation FCAS services in South Australia over the ten days from 8 October to 19 October 2015. The Heywood outage started on 11 October, and the impact on FCAS prices is clearly visible. After prolonged high Lower and Raise Regulation FCAS prices between 2100 hours on 11 October 2015 and 0400 hours on 12 October 2015, the administered price of \$300/MWh was applied during the entire week for all market ancillary services within the South Australia region.

Conditions of credible separation risk have historically existed for 5–10% of the time, normally due to planned maintenance or upgrades along the interconnector. These recent high FCAS prices, coupled with the impending withdrawal of Northern Power Station, signal a potential opportunity for other participants in South Australia to participate in the FCAS market during future periods of credible risk.

**Figure 3 South Australia FCAS prices: October 8 to October 19, 2015**



Note: logarithmic scale on y-axis.