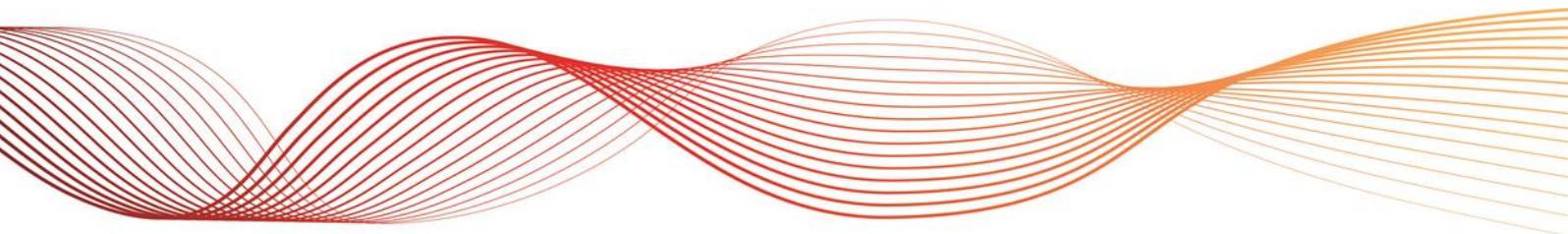




# NEM EVENT – DIRECTION 23-26 DECEMBER 2017

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# IMPORTANT NOTICE

## Purpose

Where the Australian Energy Market Operator (AEMO) intervenes in the National Electricity Market (NEM) through the use of directions, AEMO must publish a report in accordance with National Electricity Rules (NER) clause 4.8.9(f) and 3.13.6A(a). This report satisfies those NER obligations, and is based on information available to AEMO at 22 May 2018.

Unless otherwise indicated, terms in this report have the same meanings as those defined in the NER.

All references to time in this report are based on Australian Eastern Standard Time (AEST).

## Disclaimer

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## 1. SUMMARY

To ensure adequate system strength for secure operation of the South Australian power system, certain combinations of synchronous generating units must be in service at all times<sup>1</sup>.

Clause 4.8.9 of the National Electricity Rules (NER) allows AEMO to intervene in the market by issuing directions or clause 4.8.9 instructions, if AEMO is satisfied that it is necessary to maintain or re-establish the power system to a secure, satisfactory, or reliable operating state. Section 116 of the National Electricity Law allows AEMO to issue directions to take certain action if AEMO considers that it is necessary to maintain power system security or for reasons of public safety.

Between 23 December 2017 and 26 December 2017, AEMO issued three directions to South Australian Market Participants to maintain power system security. The three directions are summarised in Table 1.

**Table 1 Summary of the three South Australia directions between 23 December 2017 and 26 December 2017**

Direction	Directed Participant	Issue time	Cancellation time	Direction instruction
<b>Torrens Island A unit 1, unit 2 and unit 4</b>	AGL SA Generation Pty Ltd	1430 hrs, 23 December 2017	1305 hrs, 24 December 2017	Synchronise Torrens Island A1, A2 and A4 at 0300 hrs on 24 December 2017 and follow dispatch targets
<b>Osborne Power Station</b>	Origin Energy Electricity Ltd	1450 hrs, 23 December 2017	1125 hrs, 26 December 2017	Osborne Power Station to remain synchronised and follow dispatch targets from 0730 hrs on 24 December 2017
<b>Torrens Island B unit 2</b>	AGL SA Generation Pty Ltd	1510 hrs, 23 December 2017	1330 hrs, 26 December 2017	Torrens Island Unit B2 to remain synchronised and follow dispatch targets from 0130 hrs on 24 December 2017

## 2. INTERVENTION ASSESSMENT

### 2.1 The need for intervention

To ensure adequate system strength for secure operation of the South Australian power system, certain combinations of synchronous generating units must be in service at all times<sup>1</sup>. AEMO continues to investigate system strength requirements in South Australia, and updates the set of viable combinations on a regular basis. The need for intervention, and options considered, were assessed against the set of viable combinations available at 23 December 2017.

At 1157 hrs on 22 December 2017, AGL SA Generation Pty Ltd submitted a rebid de-committing Torrens Island Unit B2 from 0130 hrs on Sun 24 December 2017. Subsequently, the 1330 hrs Pre-Dispatch (PD) run on 22 December 2017 (produced at approximately 1300 hrs) indicated that there would be insufficient online synchronous generating units available to meet system strength requirements from 0130 hrs on 24 December 2017.

As a result, AEMO sought a market response, assessed available options for intervention, and determined the latest time to intervene should a market response not be provided.

Further to the 1330 hrs PD on 22 December 2017, at 1311 and 1312 hrs on 23 December 2017, Pelican Point and Osborne Power Stations also submitted a rebid to zero availability from 0400 hrs and 0730 hrs on Sunday 24 December 2017, respectively.

<sup>1</sup> For more information about this requirement, see <http://www.aemo.com.au/Media-Centre/South-Australia-System-Strength-Assessment>.



## 2.2 Assessment of market response and latest time to intervene

Under NER clause 4.8.5A (a) and (c), AEMO must notify the market of any anticipated power system security or reliability issue and the latest time for market response before AEMO would need to intervene. AEMO issued this market notice (MN 60426) at 1343 hrs on 22 December 2017<sup>2</sup>.

AEMO contacted the Registered Participants who operate eligible synchronous generating units in South Australia to seek their availability for the relevant period, and to determine the latest time to intervene. Those Registered Participants indicated they did not intend to adjust their market offers, but identified units that would be available if directed. Based on advised lead times, AEMO assessed that the latest time to intervene was 0030 hrs on 24 December 2017.

AEMO did not issue a market notice to update the latest time to intervene after Pelican Point and Osborne Power Stations rebid to zero availability as the latest time to intervene was already imminent.

## 2.3 Decision to intervene

With insufficient time for a market response to be provided, AEMO evaluated the estimated costs, and issued an initial direction to AGL SA Generation Pty Ltd to synchronise Torrens Island A units 1, 2, and 4 and follow dispatch targets.

A direction was also issued to Origin Energy Electricity Ltd for Osborne Co-Generation unit to remain synchronised and follow targets.

A further direction was issued to AGL SA Generation Pty Ltd for Torrens Island B unit 2 to remain synchronised and follow dispatch targets.

These directions were considered the least-cost viable option for satisfying system strength requirements in South Australia.

# 3. INTERVENTION PROCESS

AEMO considers that it followed all applicable processes under NER Clause 4.8 for the management of the directions on 23 to 26 December 2017<sup>3</sup>. Table 2 provides a high level timeline of the intervention event.

**Table 2 Timeline of key events between 23 and 26 December 2017**

Time	Events / comments
<b>22 December 2017</b>	
1343 hrs	AEMO published a market notice seeking a market response and noting the latest time to intervene was at 0030 hrs on 24 December 2017 (MN 60426)
<b>23 December 2017</b>	
1307 hrs	Pelican Point Power Station bid units to zero availability from 0400hrs 24 December 2017
1312 hrs	Osborne Power Station bid unit to zero availability from 0730 hrs 24 December 2017
1430 hrs	Direction issued to AGL SA Generation Pty Ltd to synchronise Torrens Island A unit 1, unit 2 and unit 4 at 0300 hrs 24 December 2017 and follow dispatch targets
1450 hrs	Direction issued to Origin Energy Electricity Ltd for Osborne Power Station to remain synchronised and follow dispatch targets from 0730 hrs 24 December 2017
1510 hrs	Direction issued to AGL SA Generation Pty Ltd for Torrens Island Unit B2 to remain synchronised and follow dispatch targets from 0130 hrs 24/12/2017 24 December 2017

<sup>2</sup> AEMO Market Notices are at <http://www.aemo.com.au/Market-Notices>.

<sup>3</sup> AEMO power system operating procedure SO\_OP 3707 "Intervention, Direction and Clause 4.8.9 Instructions", September 2014, available at [http://aemo.com.au/-/media/Files/Electricity/NEM/Security\\_and\\_Reliability/Power\\_System\\_Ops/Procedures/SO\\_OP\\_3707---Intervention-Direction-and-Clause-4-8-9-Instructions.pdf](http://aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Power_System_Ops/Procedures/SO_OP_3707---Intervention-Direction-and-Clause-4-8-9-Instructions.pdf).



Time	Events / comments
1528 hrs	AEMO publishes MN 60435 declaring the multiple directions to participants in the South Australian Region
1529 hrs	AEMO publishes MN 60436 declaring the implementation of intervention pricing
<b>24 December 2017</b>	
0452 hrs	Loy Yang A1 comes offline due to plant issues
0532 hrs	Pelican Point Power Station rebid its unit availability to minimum loading. This mitigated the need for TIPS A direction to remain in place
0650 hrs	AEMO receives updated information in relation to operational and cost information for a directed participant
1305 hrs	Following the latest PD run for 25 December 2017 and confirmation of SA Participants' availability bids, AEMO determined that directions applied to Torrens Island A unit 1, unit 2, and unit 4 could be cancelled
<b>26 December 2017</b>	
1125 hrs	Following return to service of the second GT at Pelican Point Power Station, the direction to Osbourne Power Station was cancelled
1330 hrs	Following confirmation that Pelican Point and Osborne would remain in service, the direction to Torrens Island Unit B2 was cancelled
1336 hrs	AEMO published MN 60472 declaring the cancellation of the Direction event
1337 hrs	AEMO published MN 60473 declaring the cancellation of intervention pricing

### 3.1 Adequacy of responses to AEMO inquires

NER 4.8.5A (d) permits AEMO to request information from Scheduled Network Service Providers, Scheduled Generators, Semi-Scheduled Generators, and Market Customers.

AEMO is satisfied with the timeliness, adequacy, and effectiveness of all responses to its requests for information prior to issuing directions between 23 and 26 December 2017.

### 3.2 Participant ability to comply with the intervention

NER 4.8.9(d) requires that a Registered Participant must immediately notify AEMO of its inability to comply, or intention not to comply, with a direction or clause 4.8.9 instruction.

AEMO did not receive any indication that a Registered Participant would be unable to comply with the directions.

## 4. CHANGES TO DISPATCH OUTCOMES

The directions to synchronise and dispatch to technical minimum loads resulted in approximately 11,069 megawatt hours (MWh) of generation being added to the market.

Under NER 3.8.1(b)(11), AEMO must ensure that, as far as reasonably practicable, the number of participants affected by the intervention, and the resulting changes to interconnector flows are minimised<sup>4</sup>. AEMO considered the application of counter-action constraints to achieve this objective, but concluded this was not practical during this intervention, because all eligible units were either offline or operating at technical minimum load.

Table 3 and Table 4 summarise the estimated change to dispatch outcomes resulting from this direction. These are estimated by comparing against a simulated dispatch with the direction removed.

<sup>4</sup> AEMO's power system operating procedure SO\_OP 3707 "Intervention, Direction and Clause 4.8.9 Instructions" describes this objective. In practice, AEMO meets the objective by selecting generating units located in the same region as the directed generation (and, if possible, belonging to the same participant) and then constraining the dispatch of the selected generating units by an equal and opposite amount to that of the directed units.

Directions in one region can cause dispatch changes to other regions. In particular, these changes are driven by economic co-optimisation within the market, and by the interplay between network constraint equations across multiple regions.

Of note is that as these directions increased local generation in South Australia, they also increased exports from the region. The increased exports, coupled with an impact on network constraints, resulted in displacement of generation in all regions.

**Table 3 Estimated changes to local generation in each region (MWh)**

Generation (MWh)	QLD	NSW	VIC	SA	TAS
Without direction	417,165	462,984	307,578	64,965	41,312
Actual	415,395	455,624	307,199	64,300 + 11,069 <sup>A</sup>	40,991
Change	-1,770	-7,360	-379	10,404	-321

A. 11,069 MWh is the directed energy

**Table 4 Estimated changes to interconnector flow between regions (MWh)**

	Terranora	QNI	VIC-NSW	Heywood	Murraylink	Basslink
Without direction <sup>A</sup>	-1,551	-5,181	27,556	792	-25	-27,126
Actual <sup>A</sup>	-1,204	-3,726	37,343	-6,984	-3,080	-27,446
Change <sup>B</sup>	347 MWh less into NSW	1456 MWh less into NSW	9787 MWh more into NSW	7776 MWh more into VIC	3055 MWh more into VIC	321 MWh more into TAS

A. Positive numbers are for flows flowing north or west, negative for flows flowing south or east.

B. Change = |Actual - Without direction|.

## 4.1 Application of intervention pricing

AEMO declares intervention pricing for periods subject to an AEMO intervention event. Under intervention pricing, NER 3.9.3(b) requires that AEMO set the dispatch price and ancillary service prices at the value which AEMO, in its reasonable opinion, considers would have applied had the intervention event not occurred. AEMO determines and publishes these prices in accordance with the Intervention Pricing Methodology<sup>5</sup>.

Intervention pricing was applied for this event in accordance with NER 3.9.3(b), and for the full intervention period from DI ending 1435 hrs on 23 December 2017 until DI ending 1330 hrs on 26 December 2017.

## 5. CONCLUSIONS AND FURTHER ACTIONS

On 23 December 2017, AEMO issued three energy directions to South Australian Market Participants to maintain power system security in response to a forecast lack of system strength.

AEMO is satisfied that all applicable procedures and processes were followed in assessing the need for intervention, determining the latest time to intervene, enacting and managing the intervention, and applying appropriate intervention pricing and informing the market.

AEMO is also satisfied with the timeliness and adequacy of participant responses and communication throughout.

<sup>5</sup> Intervention Pricing Methodology at <https://www.aemo.com.au/-/media/Files/PDF/Intervention-Pricing-Methodology-October-2014.pdf>.



## ABBREVIATIONS

Abbreviation	Expanded name
DI	Dispatch Interval
MN	Market Notice
NEM	National Electricity Market
NER	National Electricity Rules
AEMO	Australian Energy Market Operator Limited
AEST	Australian Eastern Standard Time
PD	Pre-Dispatch