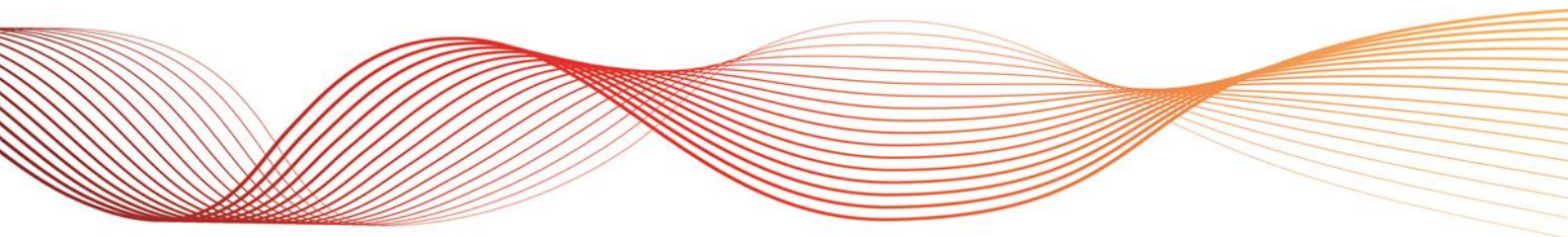




# NEM EVENT – DIRECTION 27-30 OCTOBER 2017

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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 27 October 2017 and 30 October 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 27 October 2017 and 30 October 2017**

Direction	Directed Participant	Issue time	Cancellation time	Direction instruction
<b>Pelican Point PS GT12</b>	Pelican Point Power Limited (ENGIE)	1330 hrs, 27 October 2017	2230 hrs, 28 October 2017	Pelican Point Power Station (PS) gas turbine (GT) 12 at 1430 hours on 27 October 2017 to remain synchronised and follow dispatch targets.
<b>Osborne GT</b>	Origin Energy Electricity Ltd	1430 hrs, 28 October 2017	1400 hrs, 30 October 2017	Synchronise Osborne GT at 2130 hours on 28 October 2017 and follow dispatch targets.
<b>Torrens Island B unit 2</b>	AGL SA Generation Pty Ltd	1500 hrs, 28 October 2017	1600 hrs, 29 October 2017	Torrens Island unit B2 at 0130 hours on 29 October 2017 to remain synchronised and follow dispatch targets.

# 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 27 October 2017.

At 1213 hrs on 27 October 2017, ENGIE submitted a rebid de-committing Pelican Point PS GT12 from 1430 hrs<sup>2</sup>. As a result, AEMO determined there would be insufficient online synchronous generating units available to meet system strength requirements from 1430 hrs on 27 October 2017. AEMO assessed potential options, and determined that directing Pelican Point PS GT12 to remain online was the only viable option (with alternative units unavailable in time to meet the direction requirement).

At the beginning of the direction, ENGIE advised AEMO that Pelican Point PS GT12 would not be available for direction after 0430 hrs on 29 October 2017. As a result, AEMO determined that there would be insufficient online synchronous generating units to meet system strength requirements from 0430 hrs on 29 October 2017. AEMO reassessed potential options, and determined that a direction to Osborne GT was the only viable option<sup>3</sup>.

<sup>1</sup> <http://www.aemo.com.au/Media-Centre/South-Australia-System-Strength-Assessment>.

<sup>2</sup> Rebid reason: 1200~F~CHANGE IN PORTFOLIO POSITION~.

<sup>3</sup> Osborne GT only became available for direction following the initial direction had been issued to Pelican Point PS.



While the previous directions were still in effect, at 1250 hrs on 28 October 2017, AGL SA Generation Pty Ltd submitted a rebid de-committing Torrens Island B unit 2 capacity from 0130 hrs on 29 October 2017<sup>4</sup>. AEMO determined that, as a result, there would be insufficient online synchronous generating units to meet system strength requirements from 0130 hrs on 29 October 2017. AEMO reassessed potential options, and determined that a direction to Torrens Island B unit 2 was the only viable option.

## 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 that may require intervention, and the latest time for market response before AEMO would need to intervene.

AEMO contacted the Registered Participants who operate eligible synchronous generating units in South Australia to seek their availability for the relevant periods. Those Registered Participants indicated they did not intend to adjust their market offers, but identified units that would be available if directed. AEMO did not publish a market notice seeking additional market response as there was only one viable option for each of the directions.

AEMO determined that directions to Pelican Point PS GT12, Osborne GT and Torrens Island B2 were the only viable options that would address the identified power system security requirements.

## 2.3 Decision to intervene

As no market response could be provided, AEMO evaluated the potential options, and issued a direction to Pelican Point Power Limited for Pelican Point PS GT12 to remain synchronised and follow dispatch targets from 1430 hrs on 27 October 2017.

After considering advice from ENGIE that Pelican Point PS GT12 would not be available for direction after 0430 hrs on 29 October 2017, AEMO issued a direction to Origin Energy Electricity Ltd for Osborne GT to synchronise and follow dispatch targets from 2130 hrs on 29 October 2017.

Following the subsequent rebid de-committing Torrens Island B unit 2 capacity from 0130 hrs on 29 October 2017, AEMO issued a direction to AGL SA Generation Pty Ltd for Torrens Island B unit 2 to remain synchronised and follow dispatch targets from 0130 hrs on 29 October 2017.

# 3. INTERVENTION PROCESS

AEMO considers that it followed all applicable processes under NER Clause 4.8 for the management of the directions between 27 October 2017 and 30 October 2017<sup>5</sup>. AEMO did not publish a market notice prior to the interventions under NER 4.8.5A(a) or (c), as there was only one viable option for each of the directions. Timeline of key events between 27 and 30 October 2017 Table 2 provides a high-level timeline of the intervention event.

**Table 2 Timeline of key events between 27 and 30 October 2017**

Time	Events / comments
<b>27 October 2017</b>	
<b>1213 hrs</b>	Pelican Point unit GT12 submitted a rebid withdrawing its capacity from 1430 hrs.

<sup>4</sup> Rebid reason: 1231~F~91 PD PRICE F/CAST LOWER THAN AGL EST~SA D+1~.

<sup>5</sup> [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
1330 hrs	Direction issued to ENGIE for Pelican Point PS GT12 to remain synchronised and follow dispatch targets from 1430 hours on 27 October 2017. ENGIE advised that Pelican Point unit GT12 would not be available for direction after 0430 hrs on 29 October 2017.
1430 hrs	Intervention constraints applied to Pelican Point PS GT12 in central dispatch from dispatch interval (DI) ending 1435 hrs.
1432 hrs	AEMO published MN 59647 declaring a direction was issued to a SA participant at 1330 hrs. AEMO published MN 59648 declaring an AEMO intervention event commenced from DI ending 1330 hrs and that all DIs during the AEMO intervention event to be intervention price DIs.
<b>28 October 2017</b>	
1250 hrs	Torrens Island B unit 2 submitted a rebid withdrawing its capacity from 0130 hrs on 29 October 2017.
1430 hrs	Direction issued to Origin Energy Electricity Ltd for Osborne GT to synchronise and follow dispatch targets from 2130 hours on 28 October 2017.
1432 hrs	AEMO published MN 59664 declaring a direction was issued to an SA participant at 1430 hrs. AEMO published MN 59665 declaring an AEMO intervention event commenced from DI ending 1430 hrs and that all DIs during the AEMO intervention event to be intervention price DIs.
1500 hrs	Direction issued to AGL SA Generation Pty Ltd for Torrens Island B unit 2 to remain synchronised and follow dispatch targets from 0130 hours on 29 October 2017.
1502 hrs	AEMO published MN 59667 declaring a direction was issued to an SA participant at 1500 hrs. AEMO published MN 59668 declaring an AEMO intervention event commenced from DI ending 1500 hrs and that all DIs during the AEMO intervention event to be intervention price DIs.
1810 hrs	Intervention constraints applied to Osborne GT in central dispatch from DI ending 1815 hrs, aligning with the commencement of synchronisation for Osborne GT.
2230 hrs	ENGIE (Pelican Point PS GT12) direction was cancelled at 2230 hrs on 28 October 2017. Intervention constraints were revoked for Pelican Point unit GT12.
2243 hrs	AEMO published MN 59682 declaring the cancellation of the direction to an SA participant (MN 59647). AEMO published MN 59683 declaring the cancellation of the AEMO intervention event at 2230 hrs.
<b>29 October 2017</b>	
0130 hrs	Intervention constraints applied to Torrens Island B unit 2 in central dispatch from DI ending 0135 hrs.
1600 hrs	AGL SA Generation Pty Ltd (Torrens Island B unit 2) direction was cancelled at 1600 hrs on 29 October 2017. Intervention constraints were revoked for Torrens Island B unit 2.
1601 hrs	AEMO published MN 59695 declaring the cancellation of the direction to an SA participant (MN 59664). AEMO published MN 59695 declaring the cancellation of the AEMO intervention event at 1600 hrs.
<b>30 October 2017</b>	
1400 hrs	Origin Energy Electricity Ltd (Osborne GT) direction was cancelled at 1400 hrs on 30 October 2017. Intervention constraints were revoked for Osborne GT. AEMO published MN 59710 declaring the cancellation of the direction to an SA participant (MN 59664). AEMO published MN 59712 declaring the cancellation of the AEMO intervention event at 1400 hrs.

### 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 27 October 2017 and 30 October 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 Pelican Point PS GT12, Osborne GT and Torrens Island B unit 2 resulted in approximately 12,183 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>6</sup>. AEMO considered the application of counter-action constraints to achieve this objective, but concluded this was not practical due to limited online units and potential for all to be at technical minimums during the period of direction counter-action.

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

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 while these directions displaced market-based generation in South Australia, they also increased exports from South Australia. 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)**

	QLD	NSW	VIC	SA	TAS
<b>Without direction</b>	459,262	449,123	255,226	79,684	64,988
<b>Actual</b>	457,108	445,241	250,960	77,474 + 12,183 <sup>A</sup>	63,898
<b>Change</b>	-2,153	-3,881	-4,266	<b>+9,973</b>	<b>-1,090</b>

A. 12,183 MWh is the directed energy.

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

	Terranora	QNI	VIC-NSW	Heywood	Murraylink	Basslink
<b>Without direction<sup>A</sup></b>	-4,735	-27,430	39,390	-12,769	-2,392	-8,013
<b>Actual<sup>A</sup></b>	-4,487	-25,795	46,164	-21,382	-4,319	-8,867
<b>Change<sup>B</sup></b>	<b>249 MWh less into NSW</b>	<b>1635 MWh less into NSW</b>	<b>6774 MWh more into NSW</b>	<b>8613 MWh more into VIC</b>	<b>1926 MWh more into VIC</b>	<b>854 MWh more into TAS</b>

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 a regional 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

<sup>6</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 generating units.



event not occurred. AEMO determines and publishes these prices in accordance with the Intervention Pricing Methodology<sup>7</sup>.

Intervention pricing was applied for this event in accordance with NER 3.9.3(b) for the full intervention period from DI ending 1335 hrs on 27 October 2017 until DI ending 1400 hrs on 30 October 2017.

## 5. CONCLUSIONS AND FURTHER ACTIONS

Between 27 October 2017 and 30 October 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, applying appropriate intervention pricing. Although AEMO did not publish a market notice under NER 4.8.5A(a) or (c) before issuing the directions, the market was otherwise informed at all stages.

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

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<sup>7</sup> Intervention Pricing Methodology is available at <https://www.aemo.com.au/-/media/Files/PDF/Intervention-Pricing-Methodology-October-2014.pdf>.





## ABBREVIATIONS

Abbreviation	Expanded name
AEMO	Australian Energy Market Operator
AEST	Australian Eastern Standard Time
DI	Dispatch Interval
GT	Gas turbine
MN	Market Notice
NEM	National Electricity Market
NER	National Electricity Rules
PD	Pre-Dispatch
PS	Power Station
SA	South Australia