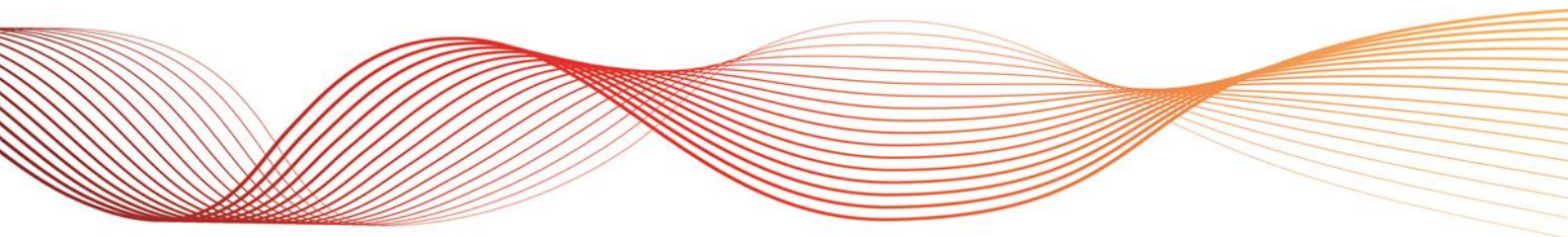




# NEM EVENT – DIRECTION 20-21 MARCH 2018

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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 18 June 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 20 and 21 March 2018, AEMO issued a direction to a South Australian Market Participant to maintain power system security. The direction is summarised in Table 1.

**Table 1 Summary of the South Australia direction between 20 and 21 March 2018**

Direction	Directed Participant	Issue time	Cancellation time	Direction instruction
<b>Pelican Point Gas Turbine (GT) 12</b>	Pelican Point Power Pty Ltd (ENGIE)	2000 hrs, 20 March 2018	0600 hrs, 21 March 2018	Remain synchronised and follow dispatch targets effective from 2100 hrs on 20 March 2018.

# 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 on 20 March 2018.

ENGIE submitted a rebid at 1345 hrs on 20 March 2018 to de-commit Pelican Point Power Station (PS) from 2100 hrs on 20 March 2018<sup>2</sup>. Subsequently, the 1430 hrs Pre-Dispatch (PD) run on 20 March indicated that there were insufficient online synchronous generating units available to meet South Australian system strength requirements following the credible loss of a generating unit from 2100 hrs on 20 March 2018.

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

## 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 issued this market notice (MN 61767) at 1420 hrs on 20 March 2018<sup>3</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.

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

<sup>2</sup> Rebid reason: 1340~F~REVISED TOLLING NOMINATION SL~

<sup>3</sup> AEMO Market Notices are at <http://www.aemo.com.au/Market-Notices>.



Those Registered Participants indicated they did not intend to adjust their market offers, but identified units that would be available if directed. Based on 1430 hrs PD run, and the advised synchronisation lead times, AEMO assessed that the latest time to intervene was 2000 hrs on 20 March 2018.

## 2.3 Decision to intervene

With insufficient market response provided, AEMO evaluated the estimated costs, and issued a direction to ENGIE for Pelican Point Gas Turbine (GT) 12 remain synchronised and follow dispatch targets.

AEMO cancelled the Pelican Point GT 12 directions at 0600 hrs on 21 March 2018, when ENGIE rebid their directed unit into the market.

# 3. INTERVENTION PROCESS

AEMO considers that it followed all applicable processes under NER Clause 4.8 for the management of the direction between 20 and 21 March 2018<sup>4</sup>. Table 2 provides a high level timeline of the intervention event.

**Table 2 Timeline of key events between 20 and 21 March 2018**

Time	Events / Comments
<b>20 March 2018</b>	
1345 hrs	ENGIE submitted a rebid to de-commit Pelican Point PS from 2100 hrs on 20 March 2018.
1420 hrs	AEMO published market notice seeking a market response and noting the latest time to intervene was at 2000 hrs on 20 March 2018 (MN 61767).
2000 hrs	Direction issued to ENGIE for Pelican Point GT 12 to remain synchronised and follow dispatch targets from 2100 hrs on 20 March 2018.
2005 hrs	AEMO published MN 61772 declaring a direction was issued to a South Australian participant from 2000 hrs on 20 March 2018.
2006 hrs	AEMO published MN 61773 declaring that an AEMO intervention event had commenced and that all dispatch intervals (DIs) during the AEMO intervention event would be intervention price DIs.
2100 hrs	Intervention constraints applied to Pelican Point PS in central dispatch from DI ending 2105 hrs on 20 March 2018.
<b>21 March 2018</b>	
0546 hrs	AEMO publishes MN 61776 declaring the cancellation of the Direction event at 0600 hrs on 21 March 2018.
0600 hrs	The direction to Pelican Point GT 12 was cancelled.
0602 hrs	AEMO publishes MN 61777 declaring the cancellation of intervention pricing at 0600 hrs on 21 March 2018.

## 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 the direction between 20 and 21 March 2018.

<sup>4</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).



### 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 remain synchronised and dispatch to technical minimum loads resulted in approximately 1,477 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>5</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.

Tables 3 and 4 summarise the estimated change to dispatch outcomes resulting from the directions. These are estimated by comparing against a simulated dispatch with the directions 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 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)**

	QLD	NSW	VIC	SA	TAS
<b>Without direction</b>	57,763	56,554	40,023	12,265	4,821
<b>Actual</b>	57,224	55,971	39,867	12,226 +1,477 <sup>A</sup>	4,781
<b>Change</b>	<b>-540</b>	<b>-583</b>	<b>-156</b>	<b>+1,438</b>	<b>-41</b>

A. 1,477 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>	-477	-3,079	2,095	-1,605	-233	-3,968
<b>Actual<sup>A</sup></b>	-433	-2,591	3,238	-2,819	-411	-4,009
<b>Change<sup>B</sup></b>	<b>44 MWh less into NSW</b>	<b>487 MWh less into NSW</b>	<b>1143 MWh more into NSW</b>	<b>1215 MWh more into VIC</b>	<b>177 MWh more into VIC</b>	<b>41 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|.

<sup>5</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.



## 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 AEMO to 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>6</sup>.

Intervention pricing was declared for this event in accordance with NER 3.9.3(b) for the full intervention period from Dispatch Interval (DI) ending 2005 hrs on 20 March 2018 until DI ending 0600 hrs on 21 March 2018.

## 5. CONCLUSIONS AND FURTHER ACTIONS

Between 20 and 21 March 2018, AEMO issued a direction to a South Australian Market Participant to maintain power system security, in response to a forecast lack of system strength in the region.

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, and seeking market response from all generators capable of meeting the system strength requirements.

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

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<sup>6</sup> Intervention Pricing Methodology <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
FCAS	Frequency Control Ancillary Services
MN	Market Notice
NEM	National Electricity Market
NER	National Electricity Rules
PD	Pre-Dispatch
SCADA	Supervisory Control And Data Acquisition