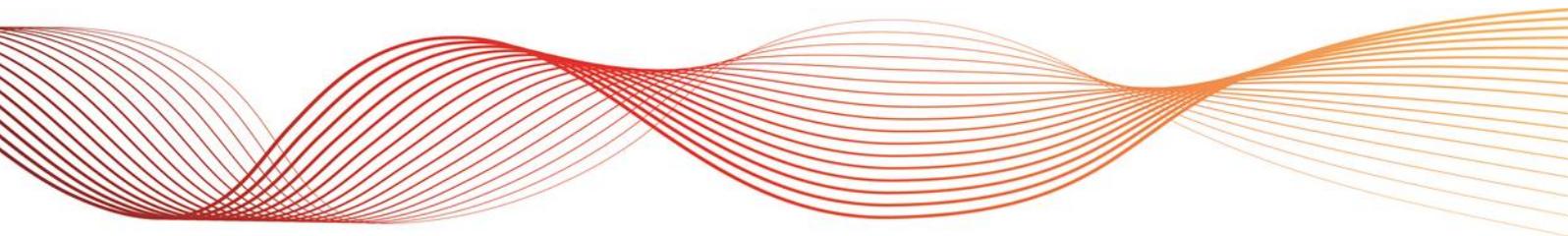




# NEM EVENT – DIRECTION 29 MARCH - 03 APRIL 2018

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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 29 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 29 March and 03 April 2018, AEMO issued seven directions to South Australian Market Participants to maintain power system security. The directions are summarised in Table 1.

**Table 1 Summary of the three South Australia directions between 29 March and 03 April 2018**

Direction	Directed Participant	Issue time	Cancellation time	Direction instruction
Osborne Power Station (PS)	Origin Energy Electricity Limited	1445 hrs, 29 Mar 2018	0630 hrs, 03 Apr 2018	Remain synchronised and follow dispatch targets from 0900 hrs on 30 March 2018.
Pelican Point Gas Turbine (GT) 12	Pelican Point Power Pty Ltd (ENGIE)	1445 hrs, 29 Mar 2018	1500 hrs, 30 Mar 2018	Remain synchronised and follow dispatch targets from 0030 hrs on 30 March 2018.
		1500 hrs, 30 Mar 2018	1530 hrs, 31 Mar 2018	Remain synchronised and follow dispatch targets from 0100 hrs on 31 March 2018.
		1530 hrs, 31 Mar 2018	1600 hrs, 01 Apr 2018	Remain synchronised and follow dispatch targets from 0030 hrs on 01 April 2018.
		1630 hrs, 01 Apr 2018	1530 hrs, 02 Apr 2018	Remain synchronised and follow dispatch targets from 0030 hrs on 02 April 2018.
Torrens Island B unit 3	AGL SA Generation Pty Ltd	1447 hrs, 29 Mar 2018	1830 hrs, 31 Mar 2018	Remain synchronised and follow dispatch targets from 0100 hrs on 30 March 2018.
		2100 hrs, 31 Mar 2018	1800 hrs, 02 Apr 2018	Remain synchronised and follow dispatch targets from 0130 hrs on 01 April 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 29 March 2018.

Origin Energy Electricity Limited submitted an initial bid at 1058 hrs on 28 March 2018 to de-commit Osborne PS from 0900 hrs on 30 March 2018. Subsequently, the 1230 hrs Pre-Dispatch (PD) run on 28 March indicated that there were insufficient online synchronous generating units available to meet South Australian system strength requirements from 0100 hrs on 30 March 2018. Following 1230 hrs PD run on 28 March, AGL SA Generation Pty Ltd submitted a rebid at 0750 hrs on 29 March 2018 to de-commit Torrens Island B unit 3 from 0100 hrs on 30 March 2018<sup>2</sup>, ENGIE also submitted a rebid at 1329 hrs on 29 March 2018 to de-commit Pelican Point Power Station (PS) from 0030 hrs on 30 March 2018<sup>3</sup>.

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

<sup>2</sup> Rebid Reason: 0713~P~050 CHG IN UNIT OPERATION~501 CHANGED UNIT SHUTTING DOWN

<sup>3</sup> Rebid Reason: 1325~A~RESPOND TO PREDISPATCH D+1~



AEMO determined that there would be insufficient online synchronous units available to meet system strength requirements following these de-commitments.

## 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 61996) at 1408 hrs on 28 March 2018<sup>4</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 1230 hrs PD run on 28 March 2018, and the advised synchronisation lead times, AEMO assessed that the latest time to intervene was 1500 hrs on 29 March 2018.

## 2.3 Decision to intervene

With insufficient market response provided, AEMO evaluated the estimated costs, and issued directions to Origin Energy Electricity Limited, ENGIE and AGL SA Generation Pty Ltd for Osborne PS, Pelican Point PS GT12 and Torrens Island B unit 3 to remain synchronised and follow dispatch targets, respectively. AEMO cancelled the directions when the relevant directed units rebid 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 29 March and 03 April 2018<sup>5</sup>. Table 2 provides a high-level timeline of the intervention event.

**Table 2 Timeline of key events between 29 March and 03 April 2018**

Time	Events / comments
<b>28 March 2018</b>	
1058 hrs	Origin Energy Electricity Limited submitted an initial bid to de-commit Osborne PS from 0900 hrs on 30 March 2018.
1408 hrs	AEMO published market notice seeking a market response and noting the latest time to intervene was at 1500 hrs on 29 March 2018 (MN 61996).
<b>29 March 2018</b>	
0750 hrs	AGL SA Generation Pty Ltd submitted a rebid to de-commit Torrens Island B unit 3 from 0100 hrs on 30 March 2018.
1329 hrs	ENGIE submitted a rebid to de-commit Pelican Point PS from 0030 hrs on 30 March 2018.
1445 hrs	Direction issued to Origin Energy Electricity Limited for Osborne PS to remain synchronised and follow dispatch targets from 0900 hrs on 30 March 2018. AEMO published MN 62024 declaring a direction was issued to a South Australian participant from 1445 hrs on 29 March 2018.

<sup>4</sup> AEMO Market Notices are at <http://www.aemo.com.au/Market-Notices>.

<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
1445 hrs	Direction issued to ENGIE for Pelican Point GT12 to remain synchronised and follow dispatch targets from 0030 hrs on 30 March 2018 (1 <sup>st</sup> Pelican Point GT12 direction). AEMO published MN 62026 declaring a direction was issued to a South Australian participant from 1445 hrs on 29 March 2018.
1447 hrs	Direction issued to AGL SA Generation Pty Ltd for Torrens Island B unit 3 to remain synchronised and follow dispatch targets from 0100 hrs on 30 March 2018 (1 <sup>st</sup> Torrens Island B unit 3 direction). AEMO published MN 62028 declaring a direction was issued to a South Australian participant from 1447 hrs on 29 March 2018.
1553 hrs	AEMO published MN 62029 declaring that an AEMO intervention event had commenced and that all dispatch intervals (DIs) during the AEMO intervention event would be intervention price DIs.
<b>30 March 2018</b>	
0030 hrs	Intervention constraints applied to Pelican Point PS in central dispatch from DI ending 0035 hrs on 30 March 2018.
0100 hrs	Intervention constraints applied to Torrens Island B unit 3 in central dispatch from DI ending 0105 hrs on 30 March 2018.
0900 hrs	Intervention constraints applied to Osborne PS in central dispatch from DI ending 0905 hrs on 30 March 2018.
1500 hrs	The 1 <sup>st</sup> direction to Pelican Point GT 12 was cancelled and intervention constraints were revoked. AEMO published MN 62043 declaring the cancellation of the direction.
1500 hrs	Direction issued to ENGIE for Pelican Point GT 12 to remain synchronised and follow dispatch targets from 0100 hrs on 31 March 2018. (2 <sup>nd</sup> Pelican Point GT12 direction). AEMO published MN 62045 declaring a direction was issued to a South Australian participant from 1500 hrs on 30 March 2018.
<b>31 March 2018</b>	
0100 hrs	Intervention constraints applied to Pelican Point PS in central dispatch from DI ending 0105 hrs on 31 March 2018.
1530 hrs	The 2 <sup>nd</sup> direction to Pelican Point GT 12 was cancelled and intervention constraints were revoked. AEMO published MN 62062 declaring the cancellation of the direction.
1530 hrs	Direction issued to ENGIE for Pelican Point GT 12 to remain synchronised and follow dispatch targets from 0030 hrs on 01 April 2018. (3 <sup>rd</sup> Pelican Point GT12 direction). AEMO published MN 62064 declaring a direction was issued to a South Australian participant from 1530 hrs on 31 March 2018.
1830 hrs	The 1 <sup>st</sup> direction to Torrens Island B unit 3 was cancelled and intervention constraints were revoked. AEMO published MN 62067 declaring the cancellation of the direction.
2100 hrs	Direction issued to AGL SA Generation Pty Ltd for Torrens Island B unit 3 to remain synchronised and follow dispatch targets from 0130 hrs on 01 April 2018 (2 <sup>nd</sup> Torrens Island B unit 3 direction). AEMO published MN 62070 declaring a direction was issued to a South Australian participant from 2100 hrs on 31 March 2018.
<b>01 April 2018</b>	
0030 hrs	Intervention constraints applied to Pelican Point PS in central dispatch from DI ending 0035 hrs on 01 April 2018.
0130 hrs	Intervention constraints applied to Torrens Island B unit 3 in central dispatch from DI ending 0135 hrs on 01 April 2018.
1600 hrs	The 3 <sup>rd</sup> direction to Pelican Point GT 12 was cancelled and intervention constraints were revoked. AEMO published MN 62072 declaring the cancellation of the direction.
1630 hrs	Direction issued to ENGIE for Pelican Point GT 12 to remain synchronised and follow dispatch targets from 0030 hrs on 02 April 2018. (4 <sup>th</sup> Pelican Point GT12 direction). AEMO published MN 62074 declaring a direction was issued to a South Australian participant from 1630 hrs on 01 April 2018.
<b>02 April 2018</b>	
0030 hrs	Intervention constraints applied to Pelican Point PS in central dispatch from DI ending 0035 hrs on 02 April 2018.
1530 hrs	The 4 <sup>th</sup> direction to Pelican Point GT 12 was cancelled and intervention constraints were revoked. AEMO published MN 62108 declaring the cancellation of the direction.



Time	Events / comments
1800 hrs	The 2 <sup>nd</sup> direction to Torrens Island B unit 3 was cancelled and intervention constraints were revoked. AEMO published MN 62111 declaring the cancellation of the direction.
03 April 2018	
0630 hrs	The direction to Osborne PS was cancelled and intervention constraints were revoked. AEMO published MN 62113 declaring the cancellation of the direction.
0630 hrs	Cancellation of intervention pricing at 0630 hrs on 03 April 2018. AEMO publishes MN 62114 declaring the cancellation of intervention pricing.

### 3.1 Adequacy of responses to AEMO inquiries

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 directions between 29 March and 03 April 2018.

### 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 direction.

## 4. CHANGES TO DISPATCH OUTCOMES

The directions to Osborne PS, Pelican Point GT12 and Torrens Island B unit 3 resulted in approximately 25,591 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 during this intervention because all eligible units were either offline or operating at close to their technical minimum load.

Table 3 and 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.

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 decreased imports into South Australia. The decreased imports, coupled with an impact on network constraints, resulted in displacement of generation in most regions other than Tasmania. The Basslink interconnector was unavailable during the direction period.

<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.

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

	QLD	NSW	VIC	SA	TAS
<b>Without direction</b>	694,589	649,010	476,341	61,279	104,512
<b>Actual</b>	690,416	630,387	473,054	58,883 + 25,591 <sup>A</sup>	104,512
<b>Change</b>	<b>-4,173</b>	<b>-18,623</b>	<b>-3,287</b>	<b>23,195</b>	<b>0</b>

A. 25,591 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>	-9,137	-71,254	4,374	45,424	6,258	0
<b>Actual<sup>A</sup></b>	-8,754	-67,619	27,196	24,991	1,966	0
<b>Change<sup>B</sup></b>	<b>382 MWh less into NSW</b>	<b>3,634 MWh less into NSW</b>	<b>22,823 MWh more into NSW</b>	<b>20,433 MWh less into SA</b>	<b>4,291 MWh less into SA</b>	<b>Unavailable</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 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>7</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 1450 hrs on 29 March 2018 until DI ending 0630 hrs on 03 April 2018.

## 5. CONCLUSIONS AND FURTHER ACTIONS

Between 29 March and 03 April 2018, AEMO issued 7 directions to South Australian Market Participants 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.

<sup>7</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
MN	Market Notice
NEM	National Electricity Market
NER	National Electricity Rules
PD	Pre-Dispatch
PS	Power Station
SA	South Australia