



# NEM Event – Direction 13-17 June 2018

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**May 2019**

# 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 02 May 2019.

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).

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## ABBREVIATIONS

Abbreviation	Expanded name
<b>AEMO</b>	Australian Energy Market Operator
<b>AEST</b>	Australian Eastern Standard Time
<b>DI</b>	Dispatch Interval
<b>MN</b>	Market Notice
<b>NEM</b>	National Electricity Market
<b>NER</b>	National Electricity Rules

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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 13 and 17 June 2018, AEMO issued three directions to a South Australian Market Participant to maintain power system security. The directions are summarised in Table 1.

**Table 1 Summary of the three South Australia directions between 13 and 17 June 2018**

Direction	Directed Participant	No.	Issue time	Cancellation time	Direction instruction
Torrens Island A unit 1	AGL SA Generation Pty Ltd	1	2000 hrs, 13 Jun 2018	1400 hrs, 15 Jun 2018	Remain synchronised and follow dispatch targets from 0030 hrs on 14 June 2018.
		2	1400 hrs, 15 Jun 2018	1600 hrs, 16 Jun 2018	Remain synchronised and follow dispatch targets from 2230 hrs on 15 June 2018.
		3	1245 hrs, 16 Jun 2018	1330 hrs, 17 Jun 2018	Remain synchronised and follow dispatch targets from 2230 hrs on 16 June 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 13 June 2018.

At 1916 hrs on 13 June 2018, AGL SA Generation Pty Ltd submitted a rebid to de-commit Torrens Island A unit 1 and 3 from 0030 hrs on 14 June 2018 and 2230 hrs on 13 June 2018, respectively<sup>2</sup>. As a result, AEMO determined that there would be insufficient online synchronous units available to meet system strength requirements from 0030 hrs on 14 June 2018.

### 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 63191) at 1759 hrs on 13 June 2018 and an update market notice (MN 63195) at 1919 hrs on 13 June 2018.

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

<sup>2</sup> 1910~P~050 CHG IN UNIT OPERATION~501 CHANGED SHUT DOWN ORDER

AEMO contacted all participants who operate suitable synchronous generating units in South Australia to confirm their availability and 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 the advised lead times, AEMO assessed the latest time to intervene was 2000 hrs on 13 June 2018.

## 2.3 Decision to intervene

As all participants contacted had indicated that no market response would be provided, AEMO evaluated the estimated costs, and issued directions as listed in Table 1. AEMO cancelled the directions when relevant synchronous generating 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 13 and 17 June 2018<sup>3</sup>. Table 2 provides a high-level timeline of the intervention event.

**Table 2 Timeline of key events between 13 and 17 June 2018**

Time	Events / comments
<b>13 June 2018</b>	
1759 hrs	AEMO published a market notice seeking a market response and noting the latest time to intervene was 2000 hrs on 13 June 2018 (MN63191).
1916 hrs	AGL SA Generation Pty Ltd submitted a rebid to change the shut-down order of their Torrens Island A units; Torrens Island A unit 1 and 3 now de-committing at 0030 hrs on 14 June 2018 and 2230 hrs on 13 June 2018, respectively.
1919 hrs	AEMO published an updated market notice seeking a market response and noting the latest time to intervene was 2000 hrs on 13 June 2018 (MN63195).
2000 hrs	<ul style="list-style-type: none"> <li>Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 1 to remain synchronised and follow dispatch targets from 0030 hrs on 14 June 2018 (1st Torrens Island A unit 1 direction).</li> <li>AEMO published MN63197 declaring a direction was issued to a South Australian participant from 2000 hrs on 13 June 2018.</li> <li>Intervention constraints applied to Torrens Island A unit 1 in central dispatch from DI ending 0035 hrs on 14 June 2018.</li> </ul>
2002 hrs	AEMO published MN63199 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>15 June 2018</b>	
1400 hrs	<ul style="list-style-type: none"> <li>The first direction to Torrens Island A unit 1 was cancelled and intervention constraints were revoked.</li> <li>AEMO published MN63222 declaring the cancellation of the direction.</li> </ul>
1400 hrs	<ul style="list-style-type: none"> <li>Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 1 to remain synchronised and follow dispatch targets from 2230 hrs on 15 June 2018 (2nd Torrens Island A unit 1 direction).</li> <li>AEMO published MN63224 declaring a direction was issued to a South Australian participant from 1400 hrs on 15 June 2018.</li> <li>Intervention constraints applied to Torrens Island A unit 1 in central dispatch from DI ending 2235 hrs on 15 June 2018.</li> </ul>
<b>16 June 2018</b>	
1245 hrs	<ul style="list-style-type: none"> <li>Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 1 to remain synchronised and follow dispatch targets from 2230 hrs on 16 June 2018 (3rd Torrens Island A unit 1 direction).</li> <li>AEMO published MN63229 declaring a direction was issued to a South Australian participant from 1245 hrs on 16 June 2018.</li> </ul>

<sup>3</sup> See [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).

	<ul style="list-style-type: none"> <li>Intervention constraints applied to Torrens Island A unit 1 in central dispatch from DI ending 2235 hrs on 16 June 2018.</li> </ul>
1 600 hrs	<ul style="list-style-type: none"> <li>The second direction to Torrens Island A unit 1 was cancelled.</li> <li>AEMO published MN63234 declaring the cancellation of the direction.</li> </ul>
17 June 2018	
1 330 hrs	<ul style="list-style-type: none"> <li>The third direction to Torrens Island A unit 1 was cancelled.</li> <li>AEMO published MN3241 declaring the cancellation of the direction.</li> </ul>

### 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 from AGL prior to issuing the directions between 13 and 17 June 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. AEMO is satisfied with AGL complying with the directions listed in Table 1.

## 4. Dispatch and pricing outcomes

### 4.1 Changes to dispatch outcomes due to the direction

The directions to Torrens Island A unit 1 resulted in approximately 2,648 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.

Tables 3 and 4 summarise the estimated change to dispatch outcomes resulting from this direction. These have been 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 into Victoria. The increased exports, coupled with an impact on network constraints, resulted in displacement of generation in all NEM regions.

<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 generating units.

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

	QLD	NSW	VIC	SA	TAS
Without direction	436,107	531,782	362,184	92,009	99,088
Actual	434,611	530,160	362,415	91,932 +2,648 <sup>A</sup>	99,567
Change	-1,496	-1,622	231	2,571	479

A. 2,648 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>	-3,886	-23,898	23,905	-3,350	-1,868	15,902
Actual <sup>A</sup>	-3,710	-22,559	27,165	-5,507	-2,339	16,359
Change <sup>B</sup>	176 MWh less into NSW	1339 MWh less into NSW	3260 MWh more into NSW	2157 MWh more into VIC	472 MWh more into VIC	457 MWh more into VIC

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

B. Change = [Actual - Without direction].

## 4.2 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 applies whenever the direction meets the regional reference node test, that is a direction hypothetically given to a plant at the regional reference node would have avoided the need for the direction.

AEMO's transfer limit advice on South Australia System Strength provides a number of feasible combinations of generating units that provide the needed level of system strength. All combinations of plant in the limit advice could be fully substituted by directing at the regional reference node (Torrens Island) in the current system strength scenarios. Accordingly, system strength directions in South Australia pass the regional reference node test and intervention pricing is appropriate.

Intervention pricing was applied for this event in accordance with NER 3.9.3(b), and for the full intervention period from DI ending 2005 hrs on 13 June 2018 until DI ending 1330 hrs on 17 June 2018.

# 5. Conclusions and further actions

Between 13 and 17 June 2018, AEMO issued three directions 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

<sup>5</sup> Intervention Pricing Methodology is available at [http://www.aemo.com.au/-/media/Files/Electricity/NEM/Security\\_and\\_Reliability/Dispatch/Policy\\_and\\_Process/2018/Intervention-Pricing-Methodology.pdf](http://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Dispatch/Policy_and_Process/2018/Intervention-Pricing-Methodology.pdf).

appropriate intervention pricing, and seeking market response from all generators capable of meeting the system strength requirements. The market was informed after each direction was issued.

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