



NEM Event – Direction 18-22 May 2018

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 April 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).

DISCLAIMER

AEMO has made every reasonable effort to ensure the quality of the information in this report but cannot guarantee its accuracy or completeness. Any views expressed in this report are those of AEMO unless otherwise stated, and may be based on information given to AEMO by other persons.

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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

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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 times¹.

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 18 and 22 May 2018, AEMO issued six directions to a South Australian Market Participant to maintain power system security. The directions are summarised in Table 1.

Table 1 Summary of the six South Australia directions between 18 and 22 May 2018

Direction	Directed Participant	Direction No.	Issue time	Cancellation time	Direction instruction
Torrens Island A unit 3	AGL SA Generation Pty Ltd	1	1200 hrs, 18 May 2018	1520 hrs, 18 May 2018	Remain synchronised and follow dispatch targets from 0130 hrs on 19 May 2018. This direction was cancelled before effective.
		2	1400 hrs, 20 May 2018	0400 hrs, 22 May 2018	Remain synchronised and follow dispatch targets from 0100 hrs on 21 May 2018.
Torrens Island A unit 4		3	1200 hrs, 18 May 2018	1520 hrs, 18 May 2018	Remain synchronised and follow dispatch targets from 0200 hrs on 19 May 2018. This direction was cancelled before effective.
		4	2300 hrs, 19 May 2018	1330 hrs, 22 May 2018	Remain synchronised and follow dispatch targets from 0030 hrs on 20 May 2018.
Torrens Island A unit 1		5	1730 hrs, 20 May 2018	2115 hrs, 22 May 2018	Remain synchronised and follow dispatch targets from 2000 hrs on 22 May 2018.
Torrens Island A unit 2		6	1630 hrs, 22 May 2018	2350 hrs, 22 May 2018	Remain synchronised and follow dispatch targets from 2000 hrs on 23 May 2018. This direction was cancelled before effective.

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 times¹. AEMO continues to investigate system strength requirements in South Australia, and updates the set of viable combinations on a regular

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

basis. The need for intervention, and options considered, were assessed against the set of viable combinations available on 18 May 2018.

At 1427 hrs on 17 May 2018, AGL SA Generation Pty Ltd submitted a rebid to de-commit Torrens Island A unit 3 and 4 from 0130 hrs on 18 May 2018 and 0200 hrs on 18 May 2018, respectively². Pelican Point GT12 was scheduled to return to service however until AEMO passed the performance tests, Pelican Point was not considered eligible for System Strength. As a result, AEMO determined that there would be insufficient online synchronous units available to meet system strength requirements from 0130 hrs on 19 May 2018.

At 1520 hrs 18 May 2018 the directions were cancelled because AGL SA Generation Pty Ltd informed AEMO that the units were going to remain on-line (commercial operation) until at least 0030 hrs 20 May 2018.

At 1325 hrs on 19 May 2018, AGL SA Generation Pty Ltd submitted a rebid to de-commit Torrens Island A unit 4 (previously was to be unit 3), from 0030 hrs on 20 May³. Pelican Point was still not considered eligible for System Strength. As a result, AEMO determined that there would be insufficient online synchronous units available to meet system strength requirements from 0030 hrs on 20 May 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 62880) at 1304 hrs on 19 May 2018.

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 2300 hrs on 19 May 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 18 and 22 May 2018⁴. Table 2 provides a high-level timeline of the intervention event.

Table 2 Timeline of key events between 18 and 22 May 2018

Time	Events / comments
18 May 2018	
1200 hrs	<ul style="list-style-type: none"> Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 3 to remain synchronised and follow dispatch targets from 0130 hrs on 19 May 2018 and for Torrens Island A unit 4 to remain synchronised and follow dispatch targets from 0200 hrs on 19 May 2018 AEMO published MN62872 declaring a direction was issued to a South Australian participant

² 1231~F~90 PD PRICE F/CAST HIGHER THAN AGL EST~

³ 1231~F~010 UNEXPECTED/PLANT LIMITS~112 REDIST ACROSS PORTFOLIO

⁴ 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.

1220 hrs	AEMO published MN62873 declaring an intervention event commenced in the 1205 hrs dispatch interval and that all dispatch intervals (DIs) during the AEMO intervention event would be intervention price DIs.
1520 hrs	AGL SA Generation Pty Ltd informed AEMO Torrens Island A unit 3 and Torrens Island A unit 4 were going to remain on-line (commercial operation) until at least 0030 hrs 20 May 2018. These directions were cancelled before effective.
1533 hrs	AEMO published MN62877 declaring the cancellation of the directions
19 May 2018	
1300 hrs	The 1300 hrs 19 May 2018 predispatch indicated insufficient system strength in South Australia from 0030 hrs on 20 May 2018 due to Torrens Island A unit 3 de-committing. AGL SA Generation Pty Ltd later changed the de-committing unit to Torrens Island A unit 4
1304 hrs	AEMO published MN62880 seeking a market response for a possible intervention event in the SA region and nominating the latest time to intervene as 2300 hrs 19 May 2018. No market response was received.
2300 hrs	<ul style="list-style-type: none"> • Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 4 to remain synchronised and follow dispatch targets from 0030 hrs on 20 May 2018 • AEMO published MN62882 declaring a direction was issued to a South Australian participant
2302 hrs	AEMO published MN62873 declaring an intervention event commenced in the 2305 hrs dispatch interval and that all dispatch intervals (DIs) during the AEMO intervention event would be intervention price DIs.
20 May 2018	
1400 hrs	Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 3 to remain synchronised and follow dispatch targets from 0100 hrs on 21 May 2018
21 May 2018	
1730 hrs	Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 1 to synchronise and follow dispatch targets from 2000 hrs on 22 May 2018
22 May 2018	
0400 hrs	Cancellation of direction to to AGL SA Generation Pty Ltd for Torrens Island A unit 3
1330 hrs	AGL SA Generation Pty Ltd Torrens Island A unit 4 unit becomes commercial in operation, effectively cancelling the direction
1630 hrs	Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 2 to synchronise and follow dispatch targets from 2000 hrs on 23 May 2018
2115 hrs	Cancellation of direction to to AGL SA Generation Pty Ltd for Torrens Island A unit 1
2350 hrs	Cancellation of direction to to AGL SA Generation Pty Ltd for Torrens Island A unit 2. This direction was cancelled before effective.
23 May 2018	
0004 hrs	AEMO published MN62913 declaring the cancellation of the direction

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 18 and 22 May 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, 3 and 4 resulted in approximately 4,059 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 minimised⁵. 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. The increased exports, coupled with an impact on network constraints, resulted in displacement of generation in all NEM regions except Tasmania.

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

	QLD	NSW	VIC	SA	TAS
Without direction	470,470	478,454	378,911	66,358	79,318
Actual	471,226	479,617	380,081	63,573 +4,059 ^A	79,318
Change	757	1,163	1,170	1,273	0

A. 4,059 MWh is the directed energy.

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

	Terranora	QNI	VIC-NSW	Heywood	Murraylink	Basslink
Without direction ^A	-7,455	-57,893	4,230	24,257	3,292	0
Actual ^A	-7,375	-57,254	6,096	22,018	2,680	0
Change ^B	80 MWh less into NSW	639 MWh less into NSW	1,866 MWh more into NSW	2,239 MWh less into SA	612 MWh less into SA	0 MWh less 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

⁵ 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.

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 Methodology⁶.

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 2305 hrs on 19 May 2018 until DI ending 2115 hrs on 22 May 2018.

5. Conclusions and further actions

Between 18 and 22 May 2018, AEMO issued six 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 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.

⁶ 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.