



NEM Event – Direction 14 to 19 August 2018

July 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 03 July 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
PS	Power Station
SA	South Australia

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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 14 and 19 August 2018, AEMO issued six directions to South Australian Market Participants to maintain power system security. These six directions are classified under two direction events and are summarised in Table 1.

Table 1 Summary of the nine South Australia directions between 14 and 19 August 2018

Direction	Directed Participant	Event No.	Issue time	Cancellation time	Direction instruction
Torrens Island A unit 3	AGL SA Generation Pty Ltd	1	1530 hrs, 14 August 2018	0830 hrs, 15 August 2018	To synchronise and follow dispatch targets from 2130 hrs on 14 August 2018.
Torrens Island B unit 2	AGL SA Generation Pty Ltd	1	1530 hrs, 14 August 2018	0600 hrs, 15 August 2018	Remain synchronised and follow dispatch targets from 2200 hrs on 14 August 2018.
Torrens Island A unit 3	AGL SA Generation Pty Ltd	2	1630 hrs, 17 August 2018	1300 hrs, 19 August 2018	Remain synchronised and follow dispatch targets from 2230 hrs on 17 August 2018.
Torrens Island B unit 1	AGL SA Generation Pty Ltd	2	1630 hrs, 17 August 2018	1300 hrs, 19 August 2018	Remain synchronised and follow dispatch targets from 0030 hrs on 18 August 2018.
Torrens Island B unit 2	AGL SA Generation Pty Ltd	2	1630 hrs, 17 August 2018	1500 hrs, 19 August 2018	Remain synchronised and follow dispatch targets from 2300 hrs on 17 August 2018.
Torrens Island B unit 3	AGL SA Generation Pty Ltd	2	1630 hrs, 17 August 2018	1500 hrs, 19 August 2018	Remain synchronised and follow dispatch targets from 0100 hrs on 18 August 2018.

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

2. Intervention assessment

2.1 The need for intervention

To ensure adequate system strength for secure operation of the South Australian power system, suitable combinations of synchronous generating units must be in service at all times. 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 from 14 August 2018 for each of the direction events.

For the first direction event, at 1243 hrs on 14 August 2018, ENGIE submitted a rebid to de-commit Pelican Point GT from 2130 hrs on 14 August 2018².

For the second direction event, at 1119 hrs on 17 August 2018, AGL SA Generation Pty Ltd submitted a rebid to de-commit Torrens Island A unit 3 from 2230 hrs on 17 August 2018³.

AEMO determined that there would be insufficient online synchronous units available to meet system strength requirements following these de-commitments and assessed all available options before directing.

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. For the first direction event, AEMO issued market notice (MN 63864) at 1943 hrs on 13 August 2018 and an update market notice (MN 63872) at 1329 hrs on 14 August 2018. For the second direction event, AEMO issued this market notice (MN 63928) at 1625 hrs on 16 August 2018 and an update market notice (MN 63931) at 1348 hrs on 17 August 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.

For the two direction events, AEMO assessed the latest time to intervene taking account of the advised lead times. The latest times to intervene were 1500 hrs on 14 August and 1630 hrs on 17 August 2018, respectively.

2.3 Decision to intervene

With insufficient market response 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.

² Rebid reason: 1240~A~RESPOND TO PREDISPATCH D+1~

³ Rebid reason: 1050~P~010 UNEXPECTED/PLANT LIMITS~112 REDIST ACROSS PORTFOLIO -

3. Intervention process

AEMO considers that it followed all applicable processes under NER Clause 4.8 for the management of the directions between 14 to 19 August 2018⁴. Table 2 provides a high-level timeline of the intervention event.

Table 2 Timeline of key events between 14 to 19 August 2018

Time	Events / comments
13 August 2018	
1943 hrs	AEMO published a market notice seeking a market response and noting to provide an update market notice with the latest time to intervene at a reasonable time (MN 63864).
14 August 2018	
1243 hrs	ENGIE submitted a rebid to de-commit Pelican Point GT from 2130 hrs on 14 August 2018.
1329 hrs	AEMO published an update market notice seeking a market response and noting the latest time to intervene was at 1500 hrs on 14 August 2018 (MN 63872).
1530 hrs	<ul style="list-style-type: none"> Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 3 to synchronise and follow dispatch targets from 2130 hrs on 14 August 2018 (TORRA3 direction event 1). Intervention constraints applied to Torrens Island A unit 3 in central dispatch from dispatch interval (DI) ending 2135 hrs on 14 August 2018. Direction issued to AGL SA Generation Pty Ltd for Torrens Island B unit 2 to remain synchronised and follow dispatch targets from 2200 hrs on 14 August 2018 (TORRB2 direction event 1). Intervention constraints applied to Torrens Island B unit 2 in central dispatch from dispatch interval (DI) ending 2205 hrs on 14 August 2018.
1551 hrs	<ul style="list-style-type: none"> AEMO published MN 63875 declaring directions were issued to a South Australian participant. AEMO published MN 63876 declaring that an AEMO intervention event had commenced from dispatch interval (DI) ending 1535 hrs and that all dispatch intervals during the AEMO intervention event would be intervention price DIs.
15 August 2018	
0600 hrs	The direction to Torrens Island B unit 2 (direction event 1) was cancelled and intervention constraints were revoked.
0830 hrs	<ul style="list-style-type: none"> The direction to Torrens Island A unit 3 (direction event 1) was cancelled and intervention constraints were revoked. AEMO published MN 63891 declaring the cancellation of the directions.
16 August 2018	
1625 hrs	AEMO published a market notice seeking a market response and noting the latest time to intervene was at 2200 hrs on 17 August 2018 (MN 63928).
17 August 2018	
1119 hrs	AGL SA Generation Pty Ltd submitted a rebid to de-commit Torrens Island A unit 3 from 2230 hrs on 17 August 2018.
1348 hrs	AEMO published an update market notice seeking a market response and noting the latest time to intervene was at 1630 hrs on 17 August 2018 (MN 63931).

⁴ AEMO. Power system operating procedure SO_OP 3707, "Intervention, direction and clause 4.8.9 instructions", 11 September 2014, available at 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
1630 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 2230 hrs on 17 August 2018 (TORRA3 direction event 2). Intervention constraints applied to Torrens Island A unit 3 in central dispatch from dispatch interval (DI) ending 2235 hrs on 17 August 2018. Direction issued to AGL SA Generation Pty Ltd for Torrens Island B unit 1 to remain synchronised and follow dispatch targets from 0030 hrs on 18 August 2018 (TORRB1 direction event 2). Intervention constraints applied to Torrens Island B unit 1 in central dispatch from dispatch interval (DI) ending 0035 hrs on 18 August 2018. Direction issued to AGL SA Generation Pty Ltd for Torrens Island B unit 2 to remain synchronised and follow dispatch targets from 2300 hrs on 17 August 2018 (TORRB2 direction event 2). Intervention constraints applied to Torrens Island B unit 2 in central dispatch from dispatch interval (DI) ending 2305 hrs on 17 August 2018. 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 18 August 2018 (TORRB3 direction event 2). Intervention constraints applied to Torrens Island B unit 3 in central dispatch from dispatch interval (DI) ending 0105 hrs on 18 August 2018.
1636 hrs	<ul style="list-style-type: none"> AEMO published MN 63937 declaring directions were issued to a South Australian participant. AEMO published MN 63938 declaring that an AEMO intervention event had commenced from dispatch interval (DI) ending 1635 hrs and that all dispatch intervals during the AEMO intervention event would be intervention price DIs.
18 August 2018	
1500 hrs	The direction to Torrens Island B unit 3 (direction event 2) was cancelled and intervention constraints were revoked.
19 August 2018	
1300 hrs	<ul style="list-style-type: none"> The direction to Torrens Island A unit 3 (direction event 2) was cancelled and intervention constraints were revoked. The direction to Torrens Island B unit 1 (direction event 2) was cancelled and intervention constraints were revoked.
1500 hrs	The direction to Torrens Island B unit 2 (direction event 2) was cancelled and intervention constraints were revoked.
1501 hrs	AEMO published MN 63959 declaring the cancellation of the directions.

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 from AGL SA Generation Pty Ltd for information prior to issuing the directions between 14 and 19 August 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 and Torrens Island B units resulted in approximately 5,390 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 all six directions. 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 other NEM regions.

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

	QLD	NSW	VIC	SA	TAS
Without direction	322,551	332,760	281,093	60,330	82,738
Actual	320,944	332,205	278,471	60,709 + 5,390 ^A	81,764
Change	-1,607	-555	-2,622	5,769	-974

A. 5,390 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	-2,937	-28,891	49,366	5,607	-4,327	20,566
Actual^A	-2,720	-27,554	51,465	843	-5,228	19,660
Change^B	217 MWh less into NSW	1338 MWh less into NSW	2099 MWh more into NSW	4764 MWh less into SA	900 MWh more into VIC	906 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].

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.

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 Methodology⁶.

Intervention pricing applies whenever the direction meets the region reference node test, that is a direction at the region 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 can be fully substituted by directing at the region reference node (Torrens Island) in the current system strength scenarios. Accordingly, system strength directions in South Australia pass the region 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 1535 hrs on 14 August 2018 until DI ending 0830 hrs on 15 August 2018.
- DI ending 1635 hrs on 17 August 2018 until DI ending 1500 hrs on 19 August 2018.

5. Conclusions and further actions

Between 14 and 19 August 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, available at http://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Dispatch/Policy_and_Process/2018/Intervention-Pricing-Methodology.pdf.