



NEM Event – Direction 8-15 September 2018

June 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 27 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).

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
PD	Pre-Dispatch
PS	Power Station
SA	South Australia

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Abbreviations

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1. Summary

To ensure adequate system strength for secure operation of the South Australian (SA) 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 8 and 15 September 2018, AEMO issued 10 directions to South Australian Market Participants to maintain power system security. These 10 directions are classified under three direction events and are summarised in Table 1.

Table 1 Summary of the ten South Australia directions between 8 and 15 September

Direction	Directed Participant	Event No.	Issue time	Cancellation time	Direction instruction
Torrens Island B unit 2	AGL SA Generation Pty Ltd	1	1700 hrs, 8 September 2018	1600 hrs, 9 September 2018	Remain synchronised and follow dispatch targets from 2230 hrs on 8 September 2018
Torrens Island B unit 1	AGL SA Generation Pty Ltd	1	1700 hrs, 8 September 2018	1600 hrs, 9 September 2018	Remain synchronised and follow dispatch targets from 0030 hrs on 9 September 2018
Pelican Point Gas Turbine (GT) 12 and ST 18	Pelican Point Power Pty Ltd (ENGIE)	1	1730 hrs, 8 September 2018	1700 hrs, 9 September 2018	Remain synchronised and follow dispatch targets from 0200 hrs on 9 September 2018
Torrens Island A unit 1	AGL SA Generation Pty Ltd	2	1400 hrs, 10 September 2018	1200 hrs, 12 September 2018	Synchronise Torrens Island A unit 1 at 2300 hrs on 10 September 2018 and follow dispatch targets.
Torrens Island B unit 1	AGL SA Generation Pty Ltd	2	1400 hrs, 10 September 2018	0800 hrs, 12 September 2018	Remain synchronised and follow dispatch targets from 2300 hrs on 10 September 2018
Torrens Island B unit 2	AGL SA Generation Pty Ltd	2	1400 hrs, 10 September 2018	1740 hrs, 11 September 2018	Synchronise Torrens Island B unit 2 at 2300 hrs on 10 September 2018 and follow dispatch targets.
Torrens Island B unit 3	AGL SA Generation Pty Ltd	2	1400 hrs, 10 September 2018	1800 hrs, 11 September 2018	Remain synchronised and follow dispatch targets from 0030 hrs on 11 September 2018
Torrens Island A unit 1	AGL SA Generation Pty Ltd	3	1400 hrs, 13 September 2018	2235 hrs, 15 September 2018	Synchronise Torrens Island A unit 1 at 0000 hrs on 14 September 2018 and follow dispatch targets.
Torrens Island B unit 1	AGL SA Generation Pty Ltd	3	1400 hrs, 13 September 2018	1730 hrs, 15 September 2018	Remain synchronised and follow dispatch targets from 0100 hrs on 14 September 2018

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

Direction	Directed Participant	Event No.	Issue time	Cancellation time	Direction instruction
Pelican Point GT 11 and ST 18	Pelican Point Power Pty Ltd (ENGIE)	3	1600 hrs, 13 September 2018	2200 hrs, 15 September 2018	Remain synchronised and follow dispatch targets from 0030 hrs on 14 September 2018

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 regularly. The need for intervention, and options considered, were assessed against the set of viable combinations available from 8 September 2018 for each of the respective direction events.

For the first direction event, AGL SA Generation Pty Ltd submitted a rebid at 0942 hrs on 8 September 2018 to decommit TORRB2 from 2230 hrs on 8 September 2018².

For the second direction event, ENGIE submitted a rebid at 1324 hrs on 9 September 2018 to decommit PPCCGT from 0000 hrs on 11 September 2018³. AGL SA Generation Pty Ltd also submitted a rebid at 1123 hrs on 10 September 2018 to decommit TORRB1 from 2300 hrs on 10 September 2018⁴.

For the third direction event, ENGIE submitted a rebid at 1340 hrs on 12 September 2018 to decommit PPCCGT PS from 0030 on 14 September 2018⁵.

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 64152)⁶ at 1438 hrs on 8 September 2018. For the second direction event, AEMO issued market notice (MN 64162) at 1412 hrs on 9 September 2018 and an update market notice (MN 64168) at 1359 hrs on 10 September 2018. For the third direction event, AEMO issued market notice (MN 64194) at 1705 hrs on 12 September 2018 and an update market notice (MN 64195) at 2259 hrs on 12 September 2018.

AEMO contacted all Registered Participants who operate eligible 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.

² 0905~P~010 UNEXPECTED/PLANT LIMITS~112 REDIST ACROSS PORTFOLIO

³ Rebid reason: 1320~F~CHANGE IN PORTFOLIO POSITION~

⁴ 1120~P~050 CHG IN UNIT OPERATION~D+1 COMMITMENT

⁵ Rebid reason: 1335~A~RESPOND TO PREDISPATCH D+1~

⁶ AEMO Market Notices are at <http://www.aemo.com.au/Market-Notices>.

Based on the advised lead times and ongoing commercial operation of key units in South Australia, AEMO assessed the latest time to intervene for a possible market intervention as 1700 hrs on 8 September 2018, 1400 hrs on 10 September 2018, 1400 hrs on 13 September 2018 for the respective intervention events.

2.3 Decision to intervene

AEMO cancelled the directions when relevant synchronous generating units rebid into the market. With insufficient market response provided, AEMO evaluated the estimated costs, and issued directions to AGL SA Generation Pty Ltd (Torrens Island A unit 1 and Torrens Island B units 1, 2 and 3) and Pelican Point Power Ltd Pty (Pelican Point PS) for their respective units to either synchronise or remain synchronised, and follow dispatch targets. 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 directions between 8 and 15 September 2018⁷. Table 2 provides a high-level timeline of the intervention event.

Table 2 Timeline of key events between 8 and 15 September

Time	Events / comments
8 September 2018	
0942 hrs	AGL SA Generation Pty Ltd submitted a rebid to decommit TORRB2 from 2230 hrs on 8 September 2018.
1438 hrs	AEMO published MN 64152 indicating a possible need for intervention from 2230 hrs on 8 September 2018 and seeking a market response. The latest time to intervene was noted as 1700 hrs on 8 September 2018.
1700 hrs	<ul style="list-style-type: none"> Direction issued to AGL SA Generation Pty Ltd for Torrens Island B units 1 and 2 to remain synchronised and follow dispatch targets from 0030 hrs on 9 September 2018 (TORRB1 direction 1) and 2230 hrs on 8 September 2018 (TORRB2 direction 1), respectively. AEMO published MN 64157 declaring a direction was issued to a SA participant. AEMO published MN 64158 declaring that an AEMO intervention event had commenced and that all dispatch intervals (DIs) during the AEMO intervention event would be intervention price DIs. Intervention constraints applied to Torrens Island B units 1 and 2 in central dispatch from DI ending 0035 hrs on 9 September 2018 and DI ending 2235 hrs on 8 September 2018, respectively.
1730 hrs	<ul style="list-style-type: none"> Direction issued to ENGIE for Pelican Point GT12 and ST18 (PPCCGT direction 1) to remain synchronised and follow dispatch targets from 0200 hrs on 9 September 2018. Intervention constraints applied to Pelican Point PS in central dispatch from DI ending 0205 hrs on 9 September 2018.
9 September 2018	
1324 hrs	ENGIE submitted a rebid to decommit PPCCGT from 0000 hrs on 10 September 2018

⁷ 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
1412 hrs	AEMO published MN 64162 indicating a possible need for intervention from 2300 hrs on 10 September 2018 and seeking a market response. The latest time to intervene was to be determined in an update notice.
1600 hrs	The directions to AGL SA Generation Pty Ltd for Torrens Island B units 1 and 2 (TORRB1 direction 1 and TORRB2 direction 1) were cancelled and intervention constraints were revoked.
1700 hrs	<ul style="list-style-type: none"> The direction to Pelican Point Power Ltd Pty (PPCCGT direction 1) was cancelled and intervention constraints were revoked. AEMO published MN 64166 declaring the cancellation of the direction.
10 September 2018	
1359 hrs	AEMO published an update notice (MN 64168) noting the latest time to intervene was at 1400 hrs on 10 September 2018.
1400 hrs	<ul style="list-style-type: none"> Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 1 and Torrens Island B unit 2 to synchronise and follow dispatch targets from 2300 hrs on 10 September 2018 (TORRA1 direction 1) and 2300 hrs on 10 September 2018 (TORRB2 direction 2), respectively. Direction issued to AGL SA Generation Pty Ltd for Torrens Island B units 1 and 3 to remain synchronised and follow dispatch targets from 2300 hrs on 10 September 2018 (TORRB1 direction 2) and 0030 hrs on 11 September 2018 (TORRB3 direction 1), respectively. AEMO published MN 64173 declaring a direction was issued to a SA participant. AEMO published MN 64174 declaring that an AEMO intervention event had commenced and that all dispatch intervals (DIs) during the AEMO intervention event would be intervention price DIs. Intervention constraints applied to Torrens Island A unit 1 and Torrens Island B units 1 and 2 in central dispatch from DI ending 2305 hrs on 10 September 2018. Intervention constraints applied to Torrens Island B unit 3 in central dispatch from DI ending 0035 hrs on 11 September 2018.
11 September 2018	
1740 hrs	<ul style="list-style-type: none"> The direction to AGL SA Generation Ltd Pty (TORRB2 direction 2) was cancelled and intervention constraints were revoked.
1800 hrs	<ul style="list-style-type: none"> The direction to AGL SA Generation Ltd Pty (TORRB3 direction 1) was cancelled and intervention constraints were revoked.
12 September 2018	
0800 hrs	<ul style="list-style-type: none"> The direction to AGL SA Generation Ltd Pty (TORRB1 direction 2) was cancelled and intervention constraints were revoked.
1200 hrs	<ul style="list-style-type: none"> The direction to AGL SA Generation Ltd Pty (TORRA1 direction 1) was cancelled and intervention constraints were revoked. AEMO published MN 64192 declaring the cancellation of the direction.
1340 hrs	ENGIE submitted a rebid to decommit PPCCGT PS from 0030 hrs on 14 September 2018.
1705 hrs	AEMO published MN 64194 indicating a possible need for intervention from 0030 hrs on 14 September 2018 and seeking a market response. The latest time to intervene was noted as 1630 hrs on 13 August 2018.
2259 hrs	AEMO published an update notice (MN 64195) noting the latest time to intervene was at 1400 hrs on 13 September 2018.
13 September 2018	
1400 hrs	<ul style="list-style-type: none"> Direction issued to AGL SA Generation Pty Ltd for Torrens Island A unit 1 (TORRA1 direction 2) to synchronise and follow dispatch targets from 0000 hrs on 14 September 2018.

Time	Events / comments
	<ul style="list-style-type: none"> Direction issued to AGL SA Generation Pty Ltd for Torrens Island B unit 1 (TORRB1 direction 3) to remain synchronised and follow dispatch targets from 0100 hrs on 14 September 2018. AEMO published MN 64199 declaring a direction was issued to a SA participant AEMO published MN 64200 declaring that an AEMO intervention had commenced and that all dispatch intervals (DIs) during the AEMO intervention event what be intervention price DIs Intervention constraints applied to Torrens Island A unit 1 and Torrens Island B unit 1 in central dispatch from DI ending 0005 14 September 2018 and 0105 14 September 2018, respectively.
1600 hrs	<ul style="list-style-type: none"> Direction issued to ENGIE for Pelican Point GT11 and ST18 (PPCCGT direction 2) to remain synchronised and follow dispatch targets from 0030 hrs on 14 September 2018. Intervention constraints applied to Pelican Point PS in central dispatch from DI ending 0035 hrs on 14 September 2018.
15 September 2018	
1730 hrs	<ul style="list-style-type: none"> The direction to AGL SA Generation Ltd Pty (TORRB1 direction 3) was cancelled and intervention constraints were revoked.
2200 hrs	<ul style="list-style-type: none"> The direction to Pelican Point Power Ltd Pty (PPCCGT direction 2) was cancelled and intervention constraints were revoked.
2235 hrs	<ul style="list-style-type: none"> The direction to AGL SA Generation Ltd Pty (TORRA1 direction 2) was cancelled and intervention constraints were revoked. AEMO published MN 64254 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 and ENGIE prior to issuing the directions between 8 and 15 September 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 and ENGIE complying with the directions listed in Table 1.

4. Changes to dispatch outcomes

The directions to Torrens Island A and Pelican Point PS resulted in approximately 18,787.76 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 minimised⁸. 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 the two 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 increased exports into Victoria. 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
Without direction	650,675	647,983	493,640	117,598	134,957
Actual	651,004	640,603	486,498	117,040 + 18,788 ^A	133,090
Change	328	-7,380	-7,143	18,230	-1,867

A. 18,788 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	-7,095	-62,857	63,238	-4,381	-3,897	23,449
Actual ^A	-6,455	-63,825	70,592	-17,824	-7,950	21,626
Change ^B	640 MWh less into NSW	968 MWh more into NSW	7,355 MWh more into NSW	13,443 MWh more into VIC	4,054 MWh more into VIC	1,822 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|.

⁸ 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 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 Methodology⁹.

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 1705 hrs on 8 September 2018 until DI ending 1700 hrs on 9 September 2018.
- DI ending 1405 hrs on 10 September 2018 until DI ending 1200 hrs on 12 September 2018.
- DI ending 1405 hrs on 13 September 2018 until DI ending 2235 hrs on 15 September 2018.

5. Conclusions and further actions

Between 8 and 15 September 2018, AEMO issued 10 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. The market was informed after each direction was issued.

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

⁹ Intervention Pricing Methodology, available at <https://www.aemo.com.au/-/media/Files/PDF/Intervention-Pricing-Methodology-October-2014.pdf>.