



NEM Event – Directions 8 to 13 February 2019

October 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) clauses 4.8.9(f) and 3.13.6A(a). This report satisfies those NER obligations, and is based on information available to AEMO at 23 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

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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 8 and 13 February 2019, AEMO issued four directions to South Australian Market Participants to maintain power system security across three direction events. These three direction events are summarised in Table 1.

Table 1 Summary of the four South Australia directions between 8 and 13 February 2019

Direction	Directed Participant	Event No.	Issue time	Cancellation time	Direction instruction
Pelican Point unit gas turbine (GT) 12	Pelican Point Power Pty Ltd (ENGIE)	1	1600 hrs, 8 February 2019	1730 hrs, 9 February 2019	Remain synchronised and follow dispatch targets from 0030 hrs on 9 February 2019.
Torrens Island B unit 4	AGL SA Generation Pty Ltd	1	0130 hrs, 9 February 2019	1530 hrs, 9 February 2019	Remain synchronised and follow dispatch targets from 0200 hrs on 9 February 2019.
Torrens Island B unit 1	AGL SA Generation Pty Ltd	2	2230 hrs, 11 February 2019	0630 hrs, 12 February 2019	Remain synchronised and follow dispatch targets from 0030 hrs on 12 February 2019.
Torrens Island B unit 1	AGL SA Generation Pty Ltd	3	1400 hrs, 12 February 2019	0445 hrs, 13 February 2019	To synchronise and follow dispatch targets from 2100 hrs on 12 February 2019.

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. 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 8 February 2019 for each of the direction events.

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

For each of the direction events, the need for intervention arose due to rebids submitted by ENGIE and AGL SA Generation Pty Ltd to de-commit their respective units:

1. First direction event: At 1246 hrs on 8 February 2019, ENGIE submitted a rebid to de-commit Pelican Point GT from 0030 hrs on 9 February 2019². At 1521 hrs on 8 February 2019, AGL SA Generation submitted a rebid to de-commit Torrens Island B unit 4 from 0200 hrs on 9 February 2019³. As a result, AEMO determined that there would be insufficient online synchronous units available to meet system strength requirements from 0030 hrs on 9 February 2019.
2. Second direction event: At 1146 hrs on 11 February 2019, AGL SA Generation submitted a rebid to de-commit Torrens Island B unit 1 from 0030 hrs on 12 February 2019⁴. As a result, AEMO determined that there would be insufficient online synchronous units available to meet system strength requirements from 0030 hrs on 12 February 2019.
3. Third direction event: At 1317 hrs on 11 February 2019, ENGIE submitted a bid to de-commit Pelican Point GT 11 from 2100 hrs on 12 February 2019⁵. As a result, AEMO determined that there would be insufficient online synchronous units available to meet system strength requirements from 2100 hrs on 12 February 2019.

2.2 Assessment of market response and latest time to intervene

Under NER clauses 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 each of the direction events, AEMO issued market notices as listed in Table 2.

AEMO contacted all participants who operate suitable synchronous generating units in South Australia to confirm their availability and the latest time to intervene. Those participants indicated they did not intend to adjust their market offers, but identified units that would be available if directed.

For each of the three direction events, AEMO assessed the latest time to intervene taking account of the advised lead times. The latest times to intervene are listed in Table 2.

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 directions between 8 to 13 February 2019⁶.

Table 2 provides a high-level timeline of the intervention event.

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

³ Rebid reason: 1301~A~050 CHG IN AEMO PD~50 PD AVAILABLEGENERATON DECREASE SA1

⁴ Rebid reason: 1231~P~050 CHG IN UNIT OPERATION~UNIT TO COME OFF IN-LINE WITH D

⁵ Rebid reason: 1315~A~RESPOND TO PREDISPATCH D+1~

⁶ 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.

Table 2 Timeline of key events between 8 and 13 February 2019

Time	Events / comments
8 February 2019	
1246 hrs	ENGIE submitted a rebid to de-commit Pelican Point GT from 0030 hrs on 9 February 2019.
1412 hrs	AEMO published a market notice seeking a market response and noting that the latest time to intervene was determined to be 1600 hrs on 8 February 2019 (MN 67158).
1521 hrs	AGL submitted a rebid to de-commit Torrens Island B unit 4 from 0200 hrs on 9 February 2019.
1600 hrs	<ul style="list-style-type: none"> • Direction issued to ENGIE for Pelican Point GT 12 to remain synchronised and follow dispatch targets from 0030 hrs on 9 February 2019. • AEMO published MN 67160 declaring a direction was issued to a SA participant. • AEMO published MN 67161 declaring that an AEMO intervention event had commenced from dispatch interval (DI) ending 1605 hrs and that all dispatch intervals during the AEMO intervention event would be intervention price DIs. • Intervention constraints applied to Pelican Point GT in central dispatch from DI ending 0035 hrs on 9 February 2019.
9 February 2019	
0130 hrs	<ul style="list-style-type: none"> • Direction issued to AGL to synchronise Torrens Island B unit 4 and follow dispatch targets from 0200 hrs on 9 February 2019. • Intervention constraints applied to Torrens Island B unit 4 in central dispatch from DI ending 0205 hrs on 9 February 2019
1530 hrs	<ul style="list-style-type: none"> • The direction to Torrens Island B unit 4 was cancelled and intervention constraints were revoked.
1730 hrs	<ul style="list-style-type: none"> • The direction to Pelican Point GT 12 was cancelled and intervention constraints were revoked. • AEMO published MN 67187 declaring the cancellation of the AEMO intervention event and the associated directions.
11 February 2019	
1146 hrs	AGL submitted a rebid to de-commit Torrens Island B unit 1 from 0030 hrs on 12 February 2019.
1543 hrs	AEMO published a market notice seeking a market response and noting that the latest time to intervene was determined to be 2230 hrs on 11 February 2019 (MN 67213).
2230 hrs	<ul style="list-style-type: none"> • Direction issued to AGL SA Generation for Torrens Island B unit 1 to remain synchronised and follow dispatch targets from 0030 hrs on 12 February 2019. • AEMO published MN 67218 declaring a direction was issued to a SA participant. • AEMO published MN 27219 declaring that an AEMO intervention event had commenced from DI ending 2235 hrs and that all dispatch intervals during the AEMO intervention event would be intervention price DIs. • Intervention constraints applied to Torrens Island B unit 1 in central dispatch from DI ending 0035 hrs on 12 February 2019.
1317 hrs	ENGIE submitted a bid to de-commit Pelican Point GT 11 from 2100 hrs on 12 February 2019.
12 February 2019	
0630 hrs	<ul style="list-style-type: none"> • The direction to Torrens Island B unit 1 was cancelled and intervention constraints were revoked. • AEMO published MN 67222 declaring the cancellation of the AEMO intervention event and the associated directions.
1134 hrs	AEMO published a market notice seeking a market response and noting that the latest time to intervene was determined to be 1400 hrs on 12 February 2019 (MN 67223).

Time	Events / comments
1400 hrs	<ul style="list-style-type: none"> • Direction issued to AGL SA Generation for Torrens Island B unit 1 to synchronise and follow dispatch targets from 2100 hrs on 12 February 2019. • AEMO published MN 67225 declaring a direction was issued to a SA participant. • AEMO published MN 67226 declaring that an AEMO intervention event had commenced from DI ending 1405 hrs and that all dispatch intervals during the AEMO intervention event would be intervention price DIs. • Intervention constraints applied to Torrens Island B unit 1 in central dispatch from DI ending 2105 hrs on 12 February 2019.
13 February 2019	
0445 hrs	<ul style="list-style-type: none"> • The direction to Torrens Island B unit 1 was cancelled and intervention constraints were revoked. • AEMO published MN 67247 declaring the cancellation of the AEMO intervention event and the associated 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 and ENGIE for information prior to issuing the directions between 8 and 13 February 2019.

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 SA Generation Pty Ltd and ENGIE 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 B units and Pelican Point GT 12 resulted in approximately 3,845 megawatt hours (MWh) of generation being added to the market.

Under NER clause 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 minimised⁷.

⁷ 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 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 four 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 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	204,312	223,160	154,530	34,243	18,442
Actual	203,795	221,979	153,220	33,814 + 3,845 ^A	18,437
Change	-517	-1,182	-1,309	3,416	-5

A. 3,845 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	-53	1,182	25,206	-1,422	-1,752	-9,353
Actual ^A	-27	1,669	26,932	-3,886	-2,604	-9,359
Change ^B	26 MWh less into NSW	487 MWh more into QLD	1,726 MWh more into NSW	2,464 MWh more into VIC	852 MWh more into VIC	5 MWh more into TAS

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 clause 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 Methodology⁸.

Intervention pricing applies whenever the direction meets the regional reference node test, that is a direction 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 can 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.

⁸ Intervention Pricing Methodology, at http://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Dispatch/Policy_and_Process/2018/Intervention-Pricing-Methodology.pdf.

Intervention pricing was applied for this event in accordance with NER clause 3.9.3(b), and for the full intervention period from:

- DI ending 1605 hrs on 8 February 2019 until DI ending 1730 hrs on 9 February 2019.
- DI ending 2235 hrs on 11 February 2019 until DI ending 0630 hrs on 12 February 2019.
- DI ending 1405 hrs on 12 February 2019 until DI ending 0445 hrs on 13 February 2019.

5. Conclusions and further actions

Between 8 and 13 February 2019, AEMO issued four directions to two 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.