



NEM Event – Directions 20 to 23 December 2018

September 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 06 September 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 20 and 23 December 2018, AEMO issued four directions to South Australian Market Participants to maintain power system security, in two directions events, as summarised in Table 1.

Table 1 Summary of the four South Australia directions between 20 and 23 December 2018

Direction	Directed Participant	Event No.	Issue time	Cancellation time	Direction instruction
Torrens Island A unit 3	AGL SA Generation Pty Ltd	1	1640 hrs, 20 December 2018	1830 hrs, 21 December 2018	To synchronise and follow dispatch targets from 0900 hrs on 21 December 2018.
Torrens Island B unit 1	AGL SA Generation Pty Ltd	1	1640 hrs, 20 December 2018	1830 hrs, 21 December 2018	Remain synchronised and follow dispatch targets from 0030 hrs on 21 December 2018.
Torrens Island B unit 3	AGL SA Generation Pty Ltd	1	1640 hrs, 20 December 2018	1830 hrs, 21 December 2018	Remain synchronised and follow dispatch targets from 0100 hrs on 21 December 2018.
Pelican Point unit gas turbine (GT) 12	Pelican Point Power Pty Ltd (ENGIE)	2	1920 hrs, 21 December 2018	1600 hrs, 23 December 2018	Remain synchronised and follow dispatch targets from 0400 hrs on 22 December 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. 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 20 December 2018 for each of the direction events.

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

1. First direction event – at 1416 hrs on 20 December 2018, ENGIE submitted a rebid to de-commit Pelican Point GT from 0900 hrs on 21 December 2018². At 1607 hrs on 20 December 2018, AGL SA Generation submitted rebids to de-commit Torrens Island B unit 1³ and unit 3⁴ from 0030 hrs and 0100 hrs on 21 December 2018 respectively. As a result, AEMO determined that there would be insufficient online synchronous units available to meet system strength requirements from 0900 hrs on 21 December 2018.
2. Second direction event – at 1817 hrs on 21 December 2018, ENGIE submitted a rebid to de-commit Pelican Point GT 12 from 0400 hrs on 22 December 2018⁵. As a result, AEMO determined that there would be insufficient online synchronous units available to meet system strength requirements from 0400 hrs on 22 December 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. For the first direction event, AEMO issued this market notice (MN 66078) at 1632 hrs on 20 December 2018. For the second direction event, AEMO issued this market notice (MN 66098) at 1519 hrs on 21 December 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 1640 hrs on 20 December 2018 and 0800 hrs on 22 December 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.

3. Intervention process

AEMO considers that it followed all applicable processes under NER Clause 4.8 for the management of the directions between 20 and 23 December 2018⁶.

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

² Rebid reason: 1410~F~REVISED TOLLING NOMINATION~

³ Rebid reason: 1555~A~040 CHG IN AEMO DISP~44 PRICE DECREASE VS PD SA \$58.62

⁴ Rebid reason: 1555~A~040 CHG IN AEMO DISP~44 PRICE DECREASE VS PD SA \$58.62

⁵ Rebid reason: 1815~F~REVISED TOLLING NOMINATION: #960~

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 20 to 23 December 2018

Time	Events / comments
20 December 2018	
1416 hrs	ENGIE submitted a rebid to de-commit Pelican Point GT 12 from 0900 hrs on 21 December 2018 August 2018.
1607 hrs	AGL SA Generation submitted rebids to de-commit Torrens Island unit 1 and 3 from 0030 hrs and 0100 hrs on 21 December 2018 respectively.
1632 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 66078).
1640 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 0900 hrs on 21 December 2018. • Intervention constraints applied to Torrens Island A unit 3 in central dispatch from dispatch interval (DI) ending 0935 hrs on 21 December 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 21 December 2018. • Intervention constraints applied to Torrens Island B unit 1 in central dispatch from DI ending 0035 hrs on 21 December 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 21 December 2018. • Intervention constraints applied to Torrens Island B unit 3 in central dispatch from DI ending 0105 hrs on 21 December 2018.
1654 hrs	<ul style="list-style-type: none"> • AEMO published MN 66082 declaring directions were issued to a South Australian participant. • AEMO published MN 66083 declaring that an AEMO intervention event had commenced from DI ending 1645 hrs and that all dispatch intervals during the AEMO intervention event would be intervention price DIs.
21 December 2018	
1519 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 66098).
1817 hrs	ENGIE submitted a rebid to de-commit Pelican Point GT 12 from 0400 hrs on 22 December 2018.
1830 hrs	<ul style="list-style-type: none"> • The directions to Torrens Island A unit 3, Torrens Island B unit 1 and 3 were cancelled and intervention constraints were revoked. • AEMO published MN 66109 declaring the cancellation of the directions.
1920 hrs	<ul style="list-style-type: none"> • Direction issued to ENGIE for Pelican Point GT 12 to remain synchronised and follow dispatch targets from 0400 on 22 December 2018. <p>Intervention constraints applied to Pelican Point GT 12 in central dispatch from DI ending 0405 hrs on 22 December 2018.</p>
1929 hrs	<ul style="list-style-type: none"> • AEMO published MN 66112 declaring directions were issued to a South Australian participant. • AEMO published MN 66113 declaring that an AEMO intervention event had commenced from DI ending 1925 hrs and that all dispatch intervals during the AEMO intervention event would be intervention price DIs.
23 December 2018	
1600 hrs	<ul style="list-style-type: none"> • The directions to Pelican Point GT 12 was cancelled and intervention constraints were revoked. • AEMO published MN 66157 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 and ENGIE for information prior to issuing the directions between 20 and 23 December 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 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 A and Torrens Island B units, and Pelican Point GT 12, resulted in approximately 7,623 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 minimised⁷. 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 decreased imports into South Australia. The decreased imports, coupled with an impact on network constraints, resulted in displacement of generation in other NEM regions.

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.

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

	QLD	NSW	VIC	SA	TAS
Without direction	380,346	361,395	256,127	38,887	47,913
Actual	379,593	358,229	253,581	38,200 + 7,623A	46,954
Change	-753	-3,167	-2,546	6,937	-959

A. 7,623 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	-1,995	-15,541	18,577	13,024	2,163	-7,502
Actual ^A	-1,935	-14,853	22,529	7,218	911	-8,459
Change ^B	60 MWh less into NSW	688 MWh less into NSW	3,952 MWh more into NSW	5,805 MWh less into SA	1,252 MWh more into VIC	957 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 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 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:

- Dispatch interval (DI) ending 1645 hrs on 20 December 2018 until DI ending 1830 hrs on 21 December 2018.
- DI ending 1925 hrs on 21 December 2018 until DI ending 1600 hrs on 23 December 2018.

⁸ 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.

5. Conclusions and further actions

Between 20 and 23 December 2018, 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.