



NEM Event – Directions Report 29 November to 7 December 2019

November 2020

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 27 July 2020.

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
DI	Dispatch Interval
MN	Market Notice
NEM	National Electricity Market
NER	National Electricity Rules
PS	Power Station
SA	South Australia
GT	Gas Turbine
ST	Steam Turbine

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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 29 November and 7 December 2019, AEMO issued 17 directions across four events to South Australian Market Participants to maintain power system security. These directions are summarised in Table 1.

Table 1 Summary of the South Australia directions between 29 November and 7 December 2019

Direction	Directed Participant	Event no.	Issue time	Cancellation time	Direction instruction
Pelican Point Gas Turbine (GT) 11 and Steam Turbine (ST) 18	Pelican Point Power Limited (ENGIE)	1	1600 hrs, 29 November 2019	1805 hrs, 30 November 2019	Remain synchronised and follow dispatch targets from 0930 hrs, 30 November 2019
Torrens Island PS B unit 2	AGL SA Generation Pty Ltd	1	1615 hrs, 29 November 2019	1400 hrs, 3 December 2019	Remain synchronised and follow dispatch targets from 0100 hrs, 30 November 2019
Torrens Island PS B unit 1	AGL SA Generation Pty Ltd	1	1615 hrs, 29 November 2019	1430 hrs, 2 December 2019	Remain synchronised and follow dispatch targets from 0130 hrs, 30 November 2019
Pelican Point GT 11 and ST 18	Pelican Point Power Limited (ENGIE)	1	2030 hrs, 30 November 2019	1700 hrs, 2 December 2019	Remain synchronised and follow dispatch targets from 0030 hrs, 1 December 2019
Quarantine PS unit 5	Origin Energy Electricity Limited	1	1450 hrs, 2 December 2019	2030 hrs, 2 December 2019	Synchronise and follow dispatch targets from 1455 hrs, 2 December 2019
Dry Creek GT unit 1	Synergen Power Pty Limited (ENGIE)	1	1455 hrs, 2 December 2019	1715 hrs, 2 December 2019	Synchronise and follow dispatch targets from 1500 hrs, 2 December 2019
Dry Creek GT unit 2	Synergen Power Pty Limited (ENGIE)	1	1455 hrs, 2 December 2019	1715 hrs, 2 December 2019	Synchronise and follow dispatch targets from 1500 hrs, 2 December 2019
Dry Creek GT unit 3	Synergen Power Pty Limited (ENGIE)	1	1455 hrs, 2 December 2019	1715 hrs, 2 December 2019	Synchronise and follow dispatch targets from 1500 hrs, 2 December 2019
Pelican Point GT 12 and ST 18	Pelican Point Power Limited (ENGIE)	1	1525 hrs, 2 December 2019	1730 hrs, 3 December 2019	Synchronise and follow dispatch targets from 2000 hrs, 2 December 2019

¹ AEMO. Transfer Limit Advice – System Strength, available at https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/congestion-information/transfer-limit-advice-system-strength.pdf?la=en.

Direction	Directed Participant	Event no.	Issue time	Cancellation time	Direction instruction
Mintaro PS	Synergen Power Pty Limited (ENGIE)	1	1730 hrs, 2 December 2019	2015 hrs, 2 December 2019	Synchronise and follow dispatch targets from 1715 hrs, 2 December 2019
Pelican Point GT 11 and ST 18	Pelican Point Power Limited (ENGIE)	2	1800 hrs, 3 December 2019	1500 hrs, 4 December 2019	Remain synchronised and follow dispatch targets from 0900 hrs, 4 December 2019
Pelican Point GT 12	Pelican Point Power Limited (ENGIE)	2	1800 hrs, 3 December 2019	1600 hrs, 4 December 2019	Remain synchronised and follow dispatch targets from 0030 hrs, 4 December 2019
Torrens Island PS A unit 3	AGL SA Generation Pty Ltd	3	1430 hrs, 4 December 2019	1700 hrs, 5 December 2019	Synchronise and follow dispatch targets from 0800 hrs, 5 December 2019
Torrens Island PS A unit 4	AGL SA Generation Pty Ltd	3	1430 hrs, 4 December 2019	1700 hrs, 5 December 2019	Synchronise and follow dispatch targets from 0800 hrs, 5 December 2019
Torrens Island PS B unit 3	AGL SA Generation Pty Ltd	3	1430 hrs, 4 December 2019	1700 hrs, 5 December 2019	Synchronise and follow dispatch targets from 0800 hrs, 5 December 2019
Pelican Point GT 12 and ST 18	Pelican Point Power Limited (ENGIE)	3	0800 hrs, 5 December 2019	0830 hrs, 5 December 2019	Remain synchronised and follow dispatch targets from 0800 hrs, 5 December 2019
Pelican Point GT 12 and ST 18	Pelican Point Power Limited (ENGIE)	4	1700 hrs, 6 December 2019	1530 hrs, 7 December 2019	Remain synchronised and follow dispatch targets from 0830 hrs, 7 December 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. If market conditions lead to market participants seeking to decommit synchronous generation AEMO is required to intervene to maintain the required level of synchronous units. The need for intervention, and options considered, were assessed against the set of viable plant combinations available on 29 November 2019.

The requirement to intervene for the direction events in this report arose when the bids listed in Table 2 were submitted.

Table 2 Participant offers

Event no.	Unit	Offer date	Bid
1	Pelican Point PS	1449 hrs, 29 November 2019	Rebid to de-commit from 0930 hrs, 30 November 2019 ^A
2	Pelican Point GT 12	1326 hrs, 3 December 2019	Rebid to de-commit Pelican Point GT 12 from 0030 hrs, 4 December 2019 ^B
3	Torrens Island PS A unit 3	0556 hrs, 4 December 2019	Initial bid to remain offline from 0400 hrs, 5 December 2019 ^C
4	Pelican Point PS	1336 hrs, 6 December 2019	Rebid to de-commit from 0830 hrs, 7 December 2019 ^D

A. Rebid reason: 1430~A~RESPOND TO 30 MIN PD. AVERAGE PRICE CHANGED FROM \$30 TO \$6100~

B. Rebid reason: 1320~A~RESPOND TO PREDISPATCH D+1~

C. Initial bid: 0535~F~00 INITIAL BID~

D. Rebid reason: 1240~F~REVISED TOLLING NOMINATION #1707~

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 each of the direction events, AEMO issued this market notification as listed in Table 3.

AEMO contacted all participants who operate suitable generating units in South Australia to confirm their availability and the latest time to intervene. Those participants indicated that no market response would be provided but identified units that would be available if directed.

For each of the 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 3.

Table 3 Summary of latest time to intervene

Event no.	Latest time to respond	Market Notice
1	1600 hrs, 29 November 2019	MN 71427
2	1800 hrs, 3 December 2019	MN 71590
3	1430 hrs, 4 December 2019	MN 71630
4	1700 hrs, 6 December 2019	MN 71672

3. Intervention process

AEMO considers that it followed all applicable processes under NER clause 4.8 for the management of the directions between 29 November and 7 December 2019².

² AEMO. Power system operating procedure SO_OP 3707, "Procedures For Issue Of Directions And Clause 4.8.9 Instructions", 06 September 2019, available at https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/power_system_ops/procedures/so_op_3707-procedures-for-issue-of-directions-and-clause-4-8-9-instructions.pdf?la=en.

3.1 Adequacy of responses to AEMO inquiries

NER clause 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 prior to issuing the directions between 29 November and 7 December 2019.

3.2 Participant ability to comply with the intervention

NER clause 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 is satisfied with all participants complying with the directions listed in Table 1.

4. Dispatch and pricing outcomes

4.1 Changes to dispatch outcomes due to the directions

The directions resulted in approximately 27,207 megawatt hours (MWh) of synchronous generation being directed into 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 minimised. AEMO considered the application of counter-action constraints to achieve this objective but concluded this was not practical during this intervention.

Tables 4 and 5 summarise the estimated change to dispatch outcomes resulting from the direction events. These are estimated by comparing against a dispatch scenario with the directions removed.

Directions in one region can cause dispatch changes to other regions. 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 from South Australia. The increased exports, coupled with an impact on network constraints, resulted in displacement of generation in other NEM regions.

Table 4 Estimated changes to local generation in each region (MWh)

	QLD	NSW	VIC	SA	TAS
Without direction	805,471	806,573	588,794	130,404	115,215
Actual	801,161	800,077	581,141	126,654 + 27,207 ^A .	112,851
Change	-4,310	-6,496	-7,653	23,457	-2,364

A. 27,207 MWh is the directed energy.

Table 5 Estimated changes to interconnector flow between regions (MWh)

	Terranora	QNI	VIC-NSW	Heywood	Murraylink	Basslink
Without direction ^A	-1,555	-1,859	69,033	-6,000	-4,564	-7,010
Actual ^A	-291	-4,894	80,166	-24,030	-9,412	-9,386
Change ^B	1,264 MWh less into NSW	3,034 MWh more into QLD	11,133 MWh more into NSW	18,031 MWh more into VIC	4,848 MWh more into VIC	2,376 MWh more into TAS

A. Positive numbers are for flows north or west, negative for flows 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 Methodology.

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.

Intervention pricing was applied for the events in accordance with NER clause 3.9.3(b), and for the full intervention period.

Table 6 Intervention pricing application

Event no.	Intervention pricing start (DI ending)	Intervention pricing end
1	1605 hrs, 29 November 2019	1730 hrs, 3 December 2019
2	1805 hrs, 3 December 2019	1600 hrs, 4 December 2019
3	1435 hrs, 4 December 2019	1700 hrs, 5 December 2019
4	1705 hrs, 6 December 2019	1530 hrs, 7 December 2019

4.3 Direction costs

The compensation recovery costs for the directions between 29 November and 7 December 2019 were \$3,257,145. Direction compensation recovery data can be found on the AEMO website³.

³ AEMO. Direction Compensation Recovery, available at <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/data-nem/settlements-data/direction-compensation-recovery>.

5. Conclusions and further actions

Between 29 November and 7 December 2019, AEMO issued 17 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.