



NEM Event – Directions Report 25 October to 1 November 2019

October 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 23 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
MN	Market Notice
NEM	National Electricity Market
NER	National Electricity Rules
PS	Power Station
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 25 October and 1 November 2019, AEMO issued five 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 25 October and 1 November 2019

Direction	Directed Participant	Event no.	Issue time	Cancellation time	Direction instruction
Torrens Island Power Station (PS) B unit 1	AGL SA Generation Pty Limited	1	0000 hrs, 25 October 2019	1730 hrs, 25 October 2019	Remain synchronised and follow dispatch targets from 0100 hrs, 25 October 2019
Pelican Point Gas Turbine (GT) 12 and Steam Turbine (ST) 18	Pelican Point Power Limited (ENGIE)	2	1630 hrs, 25 October 2019	1730 hrs, 26 October 2019	Remain synchronised and follow dispatch targets from 0130 hrs, 26 October 2019
Torrens Island PS B unit 3	AGL SA Generation Pty Limited	2	1640 hrs, 25 October 2019	1500 hrs, 26 October 2019	Remain synchronised and follow dispatch targets from 2000 hrs, 25 October 2019
Osborne PS	Origin Energy Electricity Limited	3	0850 hrs, 31 October 2019	1400 hrs, 31 October 2019	Remain synchronised and follow dispatch targets from 0930 hrs, 31 October 2019
Torrens Island PS B unit 4	AGL SA Generation Pty Limited	4	2100 hrs, 31 October 2019	0600 hrs, 1 November 2019	Remain synchronised and follow dispatch targets from 2300 hrs, 31 October 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

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.

the required level of synchronous units. The need for intervention, and options considered, were assessed against the set of viable plant combinations available on 25 October 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	Torrens Island PS B unit 1	1045 hrs, 24 October 2019	Rebid to de-commit from 0100 hrs, 25 October 2019 ^A
2	Torrens Island PS B unit 3	1500 hrs, 25 October 2019	Rebid to de-commit from 2000 hrs, 25 October 2019 ^B
3	Osborne PS	0740 hrs, 31 October 2019	Rebid to de-commit from 0930 hrs, 31 October 2019 ^C
4	Torrens Island PS B unit 4	1527 hrs, 17 October 2019	Rebid to de-commit from 2300 hrs, 31 October 2019 ^D

A. Rebid reason: 1040~P~050 CHG IN UNIT OPERATION~UNIT SWAP OVER

B. Rebid reason: 1455~P~050 CHG IN UNIT OPERATION~501 CHANGED STARTING ORDER (B3/

C. Rebid reason: 0736A CONSTRAINT MANAGEMENT – F_S++HYSE_L5 SL

D. Rebid reason: 1431~A~050 CHG IN AEMO PD~AVAILABLEGENERATION SA DECREASE AVG

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.

AEMO were delayed with issuing a market notice advising of the latest time for market response as required under NER 4.8.5A(a) prior to issuing a direction at the start of event three. The direction to Origin Energy Electricity Limited for Osborne PS to remain synchronised was issued at 0850 hrs, 31 October 2019. The market notice (MN 70832) advising of the latest time to intervene was issued at 0913 hrs, 31 October 2019.

The Origin Energy Electricity Limited trader revised the bid at 0740 hrs, 31 October 2019, for Osborne Power Station to de-synchronise at 0930 hrs. AEMO control room only became aware when at 0838 hrs Osborne Power Station called to advise of unit de-commitment at 0930 hrs. There was not sufficient time to seek market response prior to intervening in the market before Osborne PS starting the shutdown sequence.

Table 3 Summary of latest time to intervene

Event no.	Latest time to respond	Market Notice (MN)
1	0000 hrs, 25 October 2019	MN 70662
2	1630 hrs, 25 October 2019	MN 70682
3	0920 hrs, 31 October 2019	MN 70832 ^A
4	2100 hrs, 31 October 2019	MN 70845

A. MN 70835 explained that MN 70832 was issued after a direction had already been issued.

3. Intervention process

AEMO considers that it followed all applicable processes under NER clause 4.8 for the management of the directions between 25 October to 1 November 2019². The issuance of a market notice advising the latest time to intervene was not issued prior to a direction being issued. AEMO informed the market of this occurrence at the earliest possible time.

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 25 October and 1 November 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 4,881 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

² AEMO. Power system operating procedure SO_OP 3707, "Procedures For Issue Of Directions And Clause 4.8.9 Instructions", 6 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.

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)

	Queensland	New South Wales	Victoria	South Australia	Tasmania
Without direction	305,314	332,038	238,021	66,120	26,568
Actual	305,241	331,439	236,496	63,903 + 4,881 ^A	26,339
Change	-73	-599	-1,525	2,664	-229

A. 4,881 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	-2,765	-24,726	20,396	-14,643	-199	-17,883
Actual ^B	-2,662	-24,757	21,028	-16,918	-484	-18,113
Change	102 MW less into NSW	32 MWh more into NSW	633 MWh more into NSW	2,275 MWh more into VIC	285 MWh more into VIC	229 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 these 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	0005 hrs, 25 October 2019	1730 hrs, 25 October 2019
2	1635 hrs, 25 October 2019	1730 hrs, 26 October 2019
3	0855 hrs, 31 October 2019	1400 hrs, 31 October 2019
4	2105 hrs, 31 October 2019	0600 hrs, 1 November 2019

4.3 Direction costs

The compensation recovery costs for the directions between 25 October to 1 November 2019 were \$733,382. Direction compensation recovery data can be found on the AEMO website³.

5. Conclusions and further actions

Between 25 October and 1 November 2019, AEMO issued five 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, 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. The issuance of a market notice advising the latest time to intervene was not issued prior to a direction being issued. AEMO informed the market of this occurrence at the earliest possible time.

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

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>.