



NEM Event – Directions Report 30 September to 6 October 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 22 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 30 September and 6 October 2019, AEMO issued 11 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 30 September and 6 October 2019

Direction	Directed Participant	Event no.	Issue time	Cancellation time	Direction instruction
Torrens Island Power Station (PS) A unit 4	AGL SA Generation Pty Limited	1	1900 hrs, 30 September 2019	1400 hrs, 1 October 2019	Remain synchronised and follow dispatch targets from 0100 hrs, 1 October 2019
Torrens Island PS A unit 1	AGL SA Generation Pty Limited	2	1100 hrs, 1 October 2019	1430 hrs, 2 October 2019	Synchronise and follow dispatch targets from 1630 hrs, 1 October 2019
Torrens Island PS B unit 1	AGL SA Generation Pty Limited	2	2000 hrs, 1 October 2019	1430 hrs, 2 October 2019	Remain synchronised and follow dispatch targets from 0030 hrs, 2 October 2019
Osborne PS	Origin Energy Electricity Limited	2	0645 hrs, 2 October 2019	1500 hrs, 2 October 2019	Remain synchronised and follow dispatch targets from 0730 hrs, 2 October 2019
Torrens Island PS B unit 1	AGL SA Generation Pty Limited	3	1400 hrs, 3 October 2019	0830 hrs, 4 October 2019	Remain synchronised and follow dispatch targets from 0130 hrs, 4 October 2019
Torrens Island PS A unit 3	AGL SA Generation Pty Limited	3	1400 hrs, 3 October 2019	1600 hrs, 4 October 2019	Remain synchronised and follow dispatch targets from 0100 hrs, 4 October 2019
Torrens Island PS B unit 4	AGL SA Generation Pty Limited	4	1400 hrs, 4 October 2019	1530 hrs, 6 October 2019	Remain synchronised and follow dispatch targets from 0300 hrs, 5 October 2019
Torrens Island PS A unit 3	AGL SA Generation Pty Limited	4	1425 hrs, 4 October 2019	1830 hrs, 5 October 2019	Remain synchronised and follow dispatch targets from 0230 hrs, 5 October 2019
Torrens Island PS B unit 1	AGL SA Generation Pty Limited	4	1430 hrs, 4 October 2019	1830 hrs, 5 October 2019	Remain synchronised and follow dispatch targets from 0200 hrs, 5 October 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
Osborne PS	Origin Energy Electricity Limited	4	1435 hrs, 4 October 2019	1905 hrs, 5 October 2019	Remain synchronised and follow dispatch targets from 0830 hrs, 5 October 2019
Pelican Point Gas Turbine (GT) 11 and Steam Turbine (ST) 18	Pelican Point Power Limited (ENGIE)	4	1615 hrs, 5 October 2019	1400 hrs, 6 October 2019	Remain synchronised and follow dispatch targets from 0530 hrs, 6 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 the required level of synchronous units. The need for intervention, and options considered, were assessed against the set of viable plant combinations available on 30 September 2019.

The requirement to intervene for the directions 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 A unit 4	1222 hrs, 29 September 2019	Initial bid to de-commit from 0100 hrs, 01 October 2019 ^A
2	Torrens Island PS A unit 1	1912 hrs, 30 September 2019	Rebid to remain offline and not synchronise the unit ^B
3	Torrens Island PS A unit 3	1043 hrs, 2 October 2019	Initial bid to de-commit from 0100 hrs, 4 October 2019 ^C
4	Torrens Island PS B unit 1	2256 hrs, 3 October 2019	Rebid to de-commit from 0200 hrs, 5 October 2019 ^D

A. Initial bid: 1220~F~00 INITIAL BID~

B. Rebid reason: 1903~P~010 UNEXPECTED/PLANT LIMITS~112 REDIST SCROSS PORTFOLIO/T

C. Initial bid: 1015~F~00 INITIAL BID

D. Rebid reason: 2201~A~050 CHG IN AEMO PD~50 PD AVAILABLEGENERATION DECREASE [SA

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 (MN)
1	1900 hrs, 30 September 2019	MN 70297
2	1100 hrs, 1 October 2019	MN 70301
3	1400 hrs, 3 October 2019	MN 70353
4	1400 hrs, 4 October 2019	MN 70372

3. Intervention process

AEMO considers that it followed all applicable processes under NER clause 4.8 for the management of directions between 30 September and 6 October 2019².

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 from participants for information prior to issuing the directions between 30 September and 6 October 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 9,030 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.

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.

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)

	Queensland	New South Wales	Victoria	South Australia	Tasmania
Without direction	579,915	513,904	400,948	115,341	78,304
Actual	579,532	511,719	399,468	111,893 + 9,030 ^A	77,781
Change	-383	-2,185	-1,481	5,582	-522

A. 9,030 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	-9,400	-82,895	27,914	-15,014	-4,658	-6,388
Actual ^B	-9,308	-82,649	30,498	-17,248	-7,670	-6,906
Change	92 MWh less into NSW	246 MWh less into NSW	2,584 MWh more into NSW	2,234 MWh more into VIC	3,012 MWh more into VIC	518 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 (dispatch interval ending)	Intervention pricing end
1	1905 hrs, 30 September 2019	1400 hrs, 1 October 2019
2	1105 hrs, 1 October 2019	1500 hrs, 2 October 2019
3	1405 hrs, 3 October 2019	1600 hrs, 4 October 2019
4	1405 hrs, 4 October 2019	1400 hrs, 6 October 2019

4.3 Direction costs

The compensation recovery costs for the directions between 30 September and 6 October 2019 were \$1,422,649. Direction compensation recovery data can be found on the AEMO website³.

5. Conclusions and further actions

Between 30 September and 6 October 2019, AEMO issued 11 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.

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>.