



NEM Event – Directions Report 16 November 2019

February 2021

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 7 August 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
WF	Wind Farm

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1. Summary

At 1806 hrs on 16 November 2019, two 500 kV transmission lines in Victoria disconnected simultaneously. This non-credible contingency event resulted in the separation of the South Australian region from the rest of the National Electricity Market (NEM) power system for nearly five hours. Following the separation, constraint sets¹ were invoked to manage the outage of the 500 kV transmission lines. Between dispatch intervals ending 1820 hrs and 2000 hrs on 16 November 2019, a system strength constraint equation violated.

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.

On 16 November 2019, AEMO issued a direction to a South Australian Market Participant to maintain power system security. This direction is summarised in Table 1.

Table 1 Summary of the South Australian direction 16 November 2019

Direction	Directed Participant	Event no.	Issue time	Direction instruction	Cancellation time
Canunda WF	Canunda Power Pty Ltd (ENGIE)	1	1935 hrs, 16 November 2019	Remove all turbines from service at Canunda Wind Farm from 2005 hrs, 16 November 2019	2300 hrs, 16 November 2019

2. Intervention assessment

2.1 The need for intervention

The requirement to intervene for the 16 November 2019 direction event arose following the invocation of regional separation constraints at 1815 hrs. A system strength constraint equation violated, causing a requirement to reduce the amount of online intermittent generation.

The directed plant was a market non-scheduled wind farm, so the relevant action could not have been achieved through dispatch instructions.

2.2 Assessment of market response and latest time to intervene

Under NER clause 4.8.5A(a) and (c) respectively, AEMO must notify the market of any foreseeable circumstances in which it may need to intervene in the market, and the latest time by which AEMO would need to intervene.

In accordance with the constraint equation and following discussion between AEMO and relevant participants, all affected semi-scheduled generation reduced output as required via the dispatch process. One

¹ Using constraint sets F-ESTN_ISLE, F-SA_ESTN_ISLE_REG, F-SA_ISLE, S-X_BC_CP and SA_ESTN_ISLE

other relevant non-scheduled intermittent generator reduced output voluntarily. Canunda Power Pty Ltd indicated to AEMO that it did not intend to reduce output unless directed.

Following an offline review of constraint performance, AEMO confirmed the constraint was still violating and as a result determined it was necessary to issue a direction to reduce the output of Canunda wind farm as soon as possible. At that stage Canunda was the only significant non-scheduled intermittent generator online that could assist. This direction was issued at 1935 hrs, 16 November 2020.

A market notice to advise of a possible intervention specifically related to the requirement to reduce online intermittent generation was not issued prior to the direction.

3. Intervention process

3.1 AEMO processes

AEMO's review has concluded that:

- AEMO did not publish a market notice under NER clause 4.8.5A(a) to advise of the specific circumstances necessitating the direction on 16 November 2019 before issuing this direction.
- The basis for this was the direction had to be implemented as soon as practicable once the requirement to direct had been established. Notice of the latest time to intervene under clause 4.8.5A(c) could not be published before the event without jeopardising power system security.
- AEMO followed all other applicable processes under NER 4.8 for the management of this direction

3.2 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 direction on 16 November 2019.

3.3 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 direction in Table 1.

4. Dispatch and pricing outcomes

4.1 Changes to dispatch outcomes due to the directions

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 2 and 3 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.

Table 2 Estimated changes to local generation in each region (MWh)

	QLD	NSW	VIC	SA	TAS
Without direction	20,844	20,994	12,078	3,711	4,023
Actual	20,833	21,014	12,080	3,767	4,011
Change	-11	20	2	56	-12

Table 3 Estimated changes to interconnector flow between regions (MWh)

	Terranora	QNI	VIC-NSW	Heywood	Murraylink	Basslink
Without direction ^A	-210	-61	560	0	0	844
Actual ^B	-204	-56	511	0	0	807
Change	6 MWh less into NSW	5 MWh less into NSW	49 MWh less into NSW	Nil	Nil	37 MWh less into VIC

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.

The direction issued at 1935 hrs on 16 November was required to facilitate the provision of the required level of system strength, however, this direction itself did not meet the regional reference node test. The constraint violation required a local response and direction of plant at the regional reference node would not have avoided the need to issue this direction. Accordingly, AEMO should not have applied intervention pricing for this direction.

The incorrect application of intervention pricing will not recur as a result of the rule change that took effect in December 2019. Directions for non-market traded services (e.g. system strength) have been removed from the intervention pricing regime. AEMO's related procedures have been updated in line with this rule change.

Table 4 Intervention pricing application

Event No.	Intervention pricing start (DI ending)	Intervention pricing end
1	2010 hrs, 16 November 2019 (MN 71240)	2305 hrs, 16 November 2019 (MN 71263)

4.3 Direction costs

The compensation recovery costs for the direction on 16 November 2019 were \$9,800. Direction compensation recovery data can be found on the AEMO website². This direction was a direction for services other than energy and market ancillary services. Compensation for this direction was determined by an independent expert under NER 3.15.7A.

5. Conclusions and further actions

On 16 November 2019, AEMO issued a direction to a South Australian Market Participant to maintain power system security, in response to a violating system strength constraint equation.

AEMO followed applicable procedures and processes in assessing the need for intervention, determining the latest time to intervene, enacting and managing the intervention, and seeking market response from intermittent generators capable of meeting the requirement. However, AEMO:

- Did not provide specific advance notice to the market of foreseeable intervention circumstances
 - Given that separation events require the application of constraints that may be more likely to violate than in system normal conditions, AEMO will update its market notice templates for separation events to include a note alerting participants to the possibility of intervention.

² 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>.

- Incorrectly applied intervention pricing in the relevant trading intervals. The incorrect application of intervention will not recur as a result of a rule change and corresponding procedure updates.

The market was informed after the direction was issued.

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