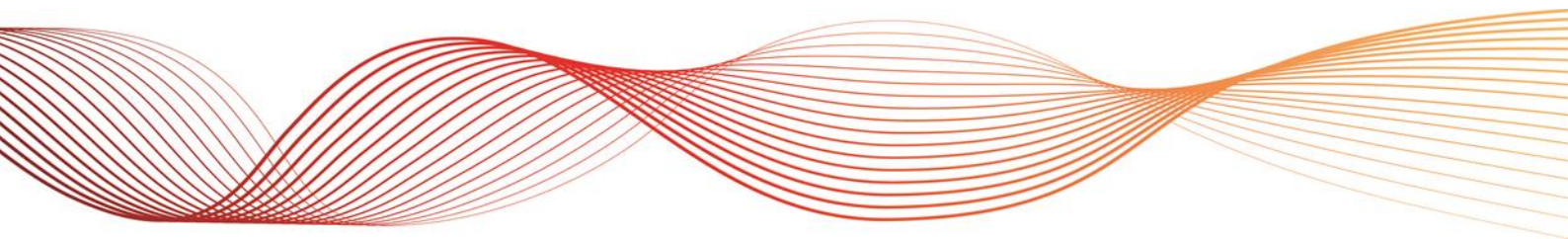




NEM EVENT – DIRECTION 4-6 NOVEMBER 2017

Published: **May 2018**





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 22 May 2018.

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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CONTENTS

Purpose	2
Disclaimer	2
1. SUMMARY	4
2. INTERVENTION ASSESSMENT	4
2.1 The need for intervention	4
2.2 Assessment of market response and latest time to intervene	5
2.3 Decision to intervene	5
3. INTERVENTION PROCESS	5
3.1 Adequacy of responses to AEMO inquiries	6
3.2 Participant ability to comply with the intervention	6
4. CHANGES TO DISPATCH OUTCOMES	6
4.1 Application of intervention pricing	7
5. CONCLUSIONS AND FURTHER ACTIONS	7
ABBREVIATIONS	8

TABLES

Table 1	Summary of the two South Australia directions between 4 November 2017 and 6 November 2017	4
Table 2	Timeline of key events between 4 and 6 November 2017	5
Table 3	Estimated changes to local generation in each region (MWh)	7
Table 4	Estimated changes to interconnector flow between regions (MWh)	7

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 4 November 2017 and 6 November 2017, AEMO issued two directions to South Australian Market Participants to maintain power system security. The two directions are summarised in Table 1.

Table 1 Summary of the two South Australia directions between 4 November 2017 and 6 November 2017

Direction	Directed Participant	Issue time	Cancellation time	Direction instruction
Osborne Power Station (PS)	Origin Energy Electricity Ltd	1615 hrs, 4 November 2017	0900 hrs, 5 November 2017	Osborne PS to remain synchronised and follow dispatch targets from 1900 hrs on 4 November 2017.
Osborne PS	Origin Energy Electricity Ltd	0942 hrs, 5 November 2017	0600 hrs, 6 November 2017	Osborne PS to remain synchronised and follow dispatch targets from 1000 hrs on 5 November 2017.

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 times¹. 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 at 4 November 2017.

At 1509 hrs on 4 November 2017, Origin Energy Electricity Ltd submitted a rebid de-committing Osborne PS capacity with effect from 1900 hrs². As a result, AEMO determined there would be insufficient online synchronous generating units available to meet system strength requirements from 1900 hrs on 4 November 2017.

AEMO assessed available options, and determined that directing Osborne PS to remain online was the only viable option.

After the initial direction had been revoked at 0928 hrs on 5 November 2017 (following revocation of the initial direction at 0900 hrs), a rebid was submitted de-committing Osborne PS capacity from 1000 hrs³. As a result, AEMO determined there would be insufficient online synchronous generating units available to meet system strength requirements from 1000 hrs on 4 November 2017. AEMO assessed available options, and determined that a direction to Osborne PS to remain online was the only viable option.

¹ <http://www.aemo.com.au/Media-Centre/South-Australia-System-Strength-Assessment>.

² Rebid reason: 1500A CONSTRAINT MANAGEMENT – V:S_600_HY_TEST SL.

³ Rebid reason: 0928E CORRECT BID -A CONSTRAINT MANAGEMENT – S:V_500_HY_TEST SL.

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 that may require intervention, and the latest time for market response before AEMO would need to intervene.

AEMO contacted the Registered Participants who operate eligible synchronous generating units in South Australia to seek their availability for the relevant periods. Those Registered Participants indicated they did not intend to adjust their market offers, but identified units that would be available if directed. AEMO did not publish a market notice seeking additional market response, with Osborne PS being the only viable option for direction.

AEMO determined that directing Osborne PS to remain online was the only option that would address the identified power system security requirements.

2.3 Decision to intervene

As no market response could be provided, AEMO evaluated the available options, and issued a direction to Origin Energy Electricity Ltd for Osborne PS to remain synchronised and follow dispatch targets from 1900 hrs on 4 November 2017.

Following the cancellation of this direction at 0900 hrs on 5 November 2017, and the subsequent rebid de-committing Osborne PS, AEMO issued a second direction to Origin Energy Electricity Ltd for Osborne PS to remain synchronised and follow dispatch targets from 1000 hrs on 5 November 2017.

3. INTERVENTION PROCESS

AEMO considers that it followed all applicable processes under NER Clause 4.8 for the management of the directions between 4 November 2017 and 6 November 2017⁴. AEMO did not publish a market under notice prior to the interventions under NER 4.8.5A(a) or (c). Timeline of key events between 4 and 6 November 2017 Table 2 provides a high level timeline of the intervention event.

Table 2 Timeline of key events between 4 and 6 November 2017

Time	Events / comments
4 November 2017	
1509 hrs	Rebid withdrawing Osborne PS capacity from 1900 hrs on 4 November 2017.
1615 hrs	Direction issued to Origin Energy Electricity Ltd for Osborne PS to remain synchronised and follow dispatch targets from 1900 hrs on 4 November 2017.
1620 hrs	AEMO published Market Notice (MN) 59791 declaring an AEMO intervention event commenced from DI ending 1620 hrs and that all DIs during the AEMO intervention event would be intervention price DIs. AEMO published MN 59792 declaring a direction was issued to a South Australian participant at 1615 hrs.
1900 hrs	Intervention constraints applied to Osborne PS in central dispatch from DI ending 1905 hrs.
5 November 2017	
0900 hrs	Origin Energy Electricity Ltd (Osborne PS) direction was cancelled at 0900 hrs on 5 November 2017, after Osborne PS was bid available. Intervention constraints revoked for Osborne PS.
0905 hrs	AEMO published MN 59798 declaring the cancellation of the AEMO intervention event from DI ending 0900 hrs.
0915 hrs	AEMO published MN 59799 declaring the cancellation of the direction.
0928 hrs	Osborne PS submitted a bid withdrawing its capacity from 1000 hrs.

⁴ 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.

Time	Events / comments
0942 hrs	Direction issued to Origin Energy Electricity Ltd for Osborne PS to remain synchronised and follow dispatch targets from 1000 hrs on 5 November 2017.
1000 hrs	AEMO published MN 59802 declaring a direction was issued to a South Australian Participant at 0942 hrs on 5 November 2017. AEMO published MN 59803 declaring an AEMO intervention event commenced and that all DIs during the AEMO intervention event would be intervention price DIs. Intervention constraints applied to Osborne PS in central dispatch from DI ending 1005 hrs.
06 November 2017	
0549 hrs	AEMO published MN 59817 declaring the cancellation of the direction. AEMO published MN 59818 declaring the cancellation of the AEMO intervention event at 0600 hrs.
0600 hrs	Origin Energy Electricity Ltd (Osborne PS) was cancelled at 0600 hrs on 6 November 2017, after Osborne PS was bid available. Intervention constraints revoked for Osborne PS.

3.1 Adequacy of responses to AEMO inquires

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 for information prior to issuing directions between 4 November 2017 and 6 November 2017.

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 directions.

4. CHANGES TO DISPATCH OUTCOMES

The two directions for Osborne PS to synchronise and follow dispatch targets resulted in approximately 4,568 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 minimised⁵. To achieve this objective, in accordance with 4.8.9(h)(3) of the NER, AEMO applied counter-action constraints to reduce the output of Pelican Point PS, Torrens Island B unit 1, Torrens Island B unit 2, and Torrens Island B unit 3.

Table 3 and 4 summarise the change to dispatch outcomes resulting from this direction. These are estimated by comparing against a simulated dispatch with the direction removed.

Directions in one region can cause dispatch changes to other regions, even when counter-action constraints are applied to minimise this effect. In particular, these changes are driven by economic co-optimisation within the market, and by the interplay between network constraint equations across multiple regions.

⁵ 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.

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 less energy flow southwards (with the exception of Tasmania), and displacement of some generation in all regions.

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

	QLD	NSW	VIC	SA	TAS
Without direction	218,374	219,509	125,687	44,898	32,784
Actual	217,700	218,955	126,349	41,040 + 4,568 ^A	32,568
Change	-674	-554	+662	+710	-216

A. 4,568 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	-2,799	-17,375	-3,775	-10,564	-1,561	-4,996
Actual^B	-2,707	-16,812	-2,613	-11,110	-1,803	-5,212
Change^C	92 MWh less to NSW	563 MWh less to NSW	1,162 MWh less to VIC	546 MWh more to VIC	242 MWh more to VIC	215 MWh more to TAS

A. Positive numbers are for flows flowing north or west, negative for flows flowing south or east.

B. Change = |Actual - Without direction|.

C. Intervention Pricing Methodology at <https://www.aemo.com.au/-/media/Files/PDF/Intervention-Pricing-Methodology-October-2014.pdf>.

4.1 Application of intervention pricing

AEMO declares intervention pricing for periods subject to a regional 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 Methodology⁶.

Intervention pricing was applied for this event in accordance with NER 3.9.3(b) for the full intervention periods from:

- DI ending 1620 hrs on 4 November 2017 until DI ending 0900 hrs on 5 November 2017, and
- DI ending 0945 hrs on 5 November 2017 until DI ending 0600 hrs on 6 November 2017.

5. CONCLUSIONS AND FURTHER ACTIONS

Between 4 November 2017 and 6 November 2017, AEMO issued two energy directions to South Australian Market Participants, to maintain power system security in response to a forecast lack of system strength.

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. Although AEMO did not publish a market notice under NER 4.8.5A(a) or (c) before issuing the directions, the market was otherwise informed at all stages.

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

⁶ Intervention Pricing Methodology is available at <https://www.aemo.com.au/-/media/Files/PDF/Intervention-Pricing-Methodology-October-2014.pdf>.



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
PD	Pre-Dispatch
PS	Power Station
SA	South Australia