

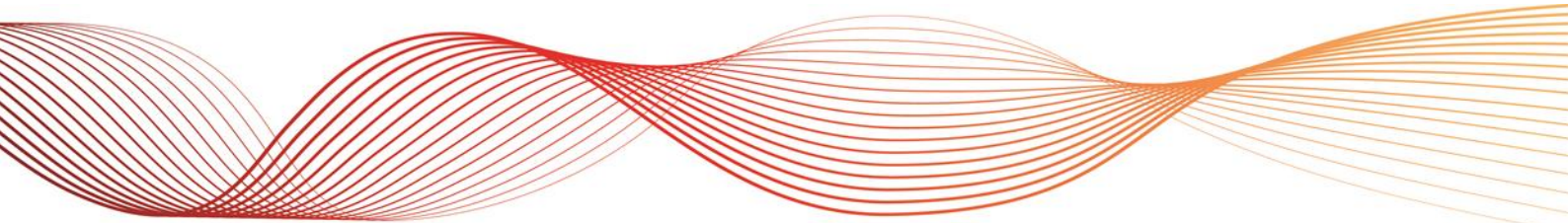


SCHEDULING ERROR REPORT

11 OCTOBER 2017 –

ERRONEOUS SCADA INPUTS

Published: **March 2018**



IMPORTANT NOTICE

Purpose

This report describes the circumstances surrounding a scheduling error identified by AEMO NER 3.8.24(a)(2). AEMO has prepared this report using information available as at March 2018, unless otherwise specified.

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1. SUMMARY

AEMO has determined that a scheduling error occurred on 11 October 2017 due to incorrect SCADA values which were used as an input into the Australian Wind Energy Forecasting System (AWEFS). The incorrect SCADA values were due to failure of the Brisbane Storage Area Network (SAN) B Disk.

AWEFS forecasts based on the erroneous SCADA was used in central dispatch for the following dispatch intervals (DIs):

- From DI ending 1935 hrs until DI ending 2015 hrs, and
- From DI ending 2205 hrs until DI ending 2255 hrs.

AEMO declares that this constitutes a scheduling error.

While the scheduling error did not affect power system security, AEMO estimates that approximately 130 MWh of generation was constrained off as a result.

2. DESCRIPTION OF THE EVENT

On 11 October 2017 at 1921 hrs, a server disk failure resulted in the loss of visibility of the Brisbane Energy Management System (EMS) session, but did not impact the Norwest EMS session.

2.1 Impact on AWEFS

At the time of the incident, AWEFS was using the Brisbane server for Unconstrained Intermittent Generation Forecast (UIGF) calculations. The incident resulted in an initial period where UIGF was being calculated using incorrect (static) SCADA values, and a subsequent period where these incorrect SCADA values were being included in time-averaged inputs to the UIGF calculations.

Table 2 below presents a timeline of the impact of this event on AWEFS forecasting inputs.

Table 1 Timeline of AWEFS forecast impact

	Event/ Comment
DI ending 1930 hrs	AWEFS using Brisbane server for UIGF calculation. No issues.
DI ending 1935 to 2015 hrs <i>Scheduling error present</i>	AWEFS using Brisbane server for UIGF calculation. Due to the disk failure, input SCADA has become static, resulting in bad quality forecasts.
DI ending 2020 hrs	At 2009 hrs, the standby Brisbane EMS session identified the static data as bad quality, and AWEFS automatically switched to the Norwest server for UIGF calculation from DI ending 2020 hrs.
DI ending 2020 to 2200 hrs	AWEFS using Norwest server for UIGF calculation. No issues.
DI ending 2205 to 2255 hrs <i>Scheduling error present</i>	Following restoration of the Brisbane EMS session, the Brisbane SCADA data was flagged as good from 2153 hrs, and AWEFS automatically reverted to using the Brisbane server for UIGF calculation. However, the UIGF calculations included time averaged actual MWs from the previous 60 minutes, and included a single erroneous value from 2153 hrs.
DI ending 2300 hrs	Erroneous static values no longer included in UIGF calculation inputs.



2.2 Impact on Bidding Systems

Following the disk failure, AEMO's primary (FTP) bidding system was unavailable from 1921 hrs until 2144 hrs. However, during this time AEMO's alternative (web-based) bidding system remained available, and several bids were received using this tool.

As a participant bidding system was available at all times, this incident does not constitute a scheduling error with regards to bidding systems, and market suspension was not required as per Power System Operating Procedure SO_OP 3706 "Failure of Market or Market Systems".

3. SCHEDULING ERROR

A scheduling error occurs when AEMO declares that it has failed to follow the central dispatch process (refer to clause 3.8.24(a)(2) of the National Electricity Rules).

Due to the use of AWEFS forecasts based on incorrect SCADA values, AEMO considers that there was a scheduling error in the following DIs:

- From DI ending 1935 hrs until DI ending 2015 hrs, and
- From DI ending 2205 hrs until DI ending 2255 hrs.

To assess the market impact due to the scheduling error, AEMO simulated dispatch outcomes after replacing the incorrect (Brisbane) UIGF values with the correct (Norwest) UIGF values. This analysis showed that approximately 130 MWh of generation was constrained off due to the scheduling error. Average NEM energy prices were between \$54/MWh and \$74/MWh for the impacted DIs.

Under NER clause 3.16.2(a), Market Participants affected by a scheduling error may apply to a dispute resolution panel established under NER clause 8.2.6A for a determination on whether they are entitled to compensation.

4. CORRECTIVE ACTION

AEMO responded to the disk failure incident in accordance with all internal procedures.

Erroneous SCADA inputs were identified as the root cause of incorrect AWEFS forecasts during this incident. AEMO is currently investigating possible improvements to the AWEFS system to better exclude suspect SCADA values from periods immediately adjacent to known bad SCADA periods.

AEMO also intends to review its communication procedures related to bidding system failure, to ensure participants are informed as soon as possible when either the primary or secondary bidding systems become unavailable.

5. CONCLUSION

On 11 October 2017, there was a hardware disk failure resulting in incorrect AWEFS forecasts being used in central dispatch for the following dispatch intervals (DIs):

- From DI ending 1935 hrs until DI ending 2015 hrs, and
- From DI ending 2205 hrs until DI ending 2255 hrs.

AEMO declares that this was a scheduling error under NER 3.8.24(a)(2), and estimates that approximately 130 MWh of generation was constrained off as a result.



ABBREVIATIONS

Abbreviation	Expanded name
AEMO	Australian Energy Market Operator
AWEFS	Australian Wind Energy Forecasting System
DI	Dispatch Interval
EMS	Energy Management System
MN	Market Notice
MW	Megawatt
MWH	Megawatt Hour
NEM	National Electricity Market
NEMDE	National Electricity Market Dispatch Engine
NER	National Electricity Rules
SAN	Storage Area Network
SCADA	Supervisory Control and Data Acquisition
UIGF	Unconstrained Intermittent Generation Forecast

GLOSSARY

Term	Definition
Supervisory Control and Data Acquisition	Supervisory Control and Data Acquisition is a system that gathers real-time data from remote terminal units and other communication sources in the field and enables operators to control field devices from their consoles.