NEM EVENT – DIRECTION TO BASSLINK AND A TASMANIAN GENERATOR – 16 DECEMBER 2014

PREPARED BY: MARKETS DEPARTMENT
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AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

IMPORTANT NOTICE

Purpose

AEMO has prepared this report in accordance with clause 3.13.6A(a) of the National Electricity Rules (NER), using information available as at 10 September 2015, unless otherwise specified.

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1. SUMMARY

At 11:35 hrs on 16 December 2014, AEMO reclassified the loss of the Gordon – Chapel Street No.1 and No.2 220 kV transmission lines and a radial power station in Tasmania as a credible contingency. This increased the requirement for contingency raise frequency control ancillary service (FCAS) to cover the loss of that power station ("FCAS risk") and its enabled FCAS.

At 12:17 hrs, AEMO reclassified the loss of the Basslink interconnector[1] with any transmission line in Tasmania as a credible contingency, requiring all contingency FCAS to be locally sourced. To achieve this, AEMO directed Basslink to turn off its Basslink frequency controller. The local FCAS requirement for the Gordon – Chapel Street contingency then violated for the next 14 dispatch intervals (DIs).

To remove these violations and restore power system security in Tasmania, AEMO issued a direction to a Tasmanian Generator at 13:20 hrs to reduce output from the "FCAS risk" power station and lower the requirement for contingency FCAS.

At 13:40 hrs, AEMO withdrew the Gordon – Chapel Street reclassification and cancelled the direction shortly after. AEMO later found it should have withdrawn the reclassification earlier, and declared the period where it should not have applied as a scheduling error[2]. Without the error, the direction to the Tasmanian Generator would have been unnecessary.

AEMO cancelled the Basslink direction at 13:17 hrs on 19 December 2014.

2. BACKGROUND

Contingency FCAS is required to manage short-term supply and demand balancing to ensure power system frequency is maintained within the Frequency Operating Standards (Tasmania)[3] following a major event such as the credible loss of a large generating unit, load or transmission element.

In situations where there is a risk that power system security cannot be maintained, or needs to be re-established, such as when there is insufficient contingency FCAS available to maintain frequency, AEMO is permitted to issue directions under NER clause 4.8.9 to either enable further FCAS or to lower its requirement by reducing the dispatch on the credible loss element (such as largest generating unit or load).

3. THIS REPORT

If AEMO intervenes in the market through the issue of directions, AEMO must, in accordance with NER clause 4.8.9(f) and 3.13.6A(a), publish a "use of directions" report as soon as reasonably practicable to:

- Assess its compliance with the intervention processes[4];
- Describe the impact of the intervention on dispatch outcomes; and
- If required, identify improvements to the intervention processes.

This report meets those NER obligations.

1 Strictly, Basslink is a Market Network Service Provider, but for simplicity it is herein referred to as an interconnector.

2 AEMO published a report for this scheduling error: http://www.aemo.com.au/Electricity/Resources/Reports-and-Documents/Market-Event-Reports/NEM-Event-Gordon-Chapel-Street-Reclassification-Scheduling-Error-16-December-2014.

3 http://www.aemc.gov.au/Australias-Energy-Market/Market-Legislation/Electricity-Guidelines-and-Standards?type=2.

4 This includes the processes for:

- Calling for a market response to address the identified need prior to intervention under NER clauses 4.8.5A and 4.8.5B;
- Intervening in the market through issuing a direction under NER clause 4.8.9; and
- Applying intervention pricing under NER clause 3.9.3(b).

4. NER COMPLIANCE WITH INTERVENTION PROCESSES

4.1 Circumstances giving rise to the need for the directions

Faults on the Tasmanian 220 kV transmission system on 10 December 2014 and 16 December 2014 resulted in the loss of the Basslink interconnector and the islanding of Tasmania from the NEM[5].

At 07:46 hrs on 16 December 2014, Basslink and the Gordon – Chapel Street No.1 and No.2 220 kV transmission lines in Tasmania tripped. Basslink tripped at the Tasmanian end, 112 milliseconds after the Gordon – Chapel Street trip. Basslink was importing 469 MW into Tasmania at the time[6]. At 08:20 hrs, TasNetworks advised AEMO that the 220 kV lines had tripped and auto-reclosed[7].

AEMO subsequently determined the Gordon – Chapel Street lines tripped to clear a fault due to a lightning strike, and declared the lines as "vulnerable" in accordance with the criteria[8] in section 11.4 of its Power System Security Guidelines. At 09:38 hrs, AEMO issued Market Notice No. 47307 to inform the market of the trip and the "vulnerable lines" declaration[9].

At 11:35 hrs, AEMO reclassified the loss of the vulnerable Gordon – Chapel Street lines and a radially connected power station in Tasmania as a credible contingency event due to lightning in the vicinity[10]. In preparation for this, AEMO invoked the relevant security constraint sets 'T-CSGO_N-2' and 'F-T-CSGO'[11] at 11:29 hrs, effective in Dispatch from DI 1140. The reclassification increased the requirement for contingency raise FCAS to cover the loss of that "FCAS risk" power station and its enabled FCAS. AEMO issued Market Notice No. 47312 at 11:34 hrs to inform the market of the reclassification and the constraints invoked.

At 12:08 hrs, the Gordon – Chapel Street No.2 220 kV line tripped and single pole auto-reclosed. TasNetworks informed AEMO of this at 12:11 hrs[7].

At 12:17 hrs, AEMO reclassified the loss of the Basslink interconnector with any transmission line in Tasmania as a credible contingency event on the basis that Basslink was unable to ride through the fault[12]. At the same time, AEMO issued a direction to Basslink Pty Ltd[13] to turn off its frequency controller (BFC) to ensure that sufficient contingency FCAS was enabled within Tasmania to maintain power system security. AEMO could not rely on any FCAS being delivered over the Basslink interconnector, given its heightened risk of trip.

Ideally, the BFC would remain in service to regulate power system frequency, with the appropriate FCAS requirement constraints invoked to locally source contingency raise FCAS, but globally source contingency lower FCAS and regulation FCAS. However, AEMO did not have the appropriate FCAS

5 AEMO published a detailed report investigating these incidents: http://www.aemo.com.au/Electricity/Resources/Reports-and-Documents/~/link.aspx?_id=10F603F478C04BC7899FB1D41E08A217&_z=z

6 At 07:47 hrs, AEMO invoked Basslink disconnection constraints (constraint set 'I-BL_ZERO'), effective in Dispatch from DI 0755. At 08:54 hrs, AEMO revoked the constraint after Basslink had earlier rebid unavailable until DI 0900. Basslink returned to service at 09:01 hrs.

7 AEMO was unaware that the event had occurred prior to this, because its SCADA had not detected any circuit breaker operations at either Gordon or Chapel Street ends due to the speed of the auto-reclose.

8 A double-circuit transmission line that has tripped due to lightning is declared as vulnerable, unless the trip involved a successful single pole auto-reclose. Absent the information for this event that the auto-reclose was single pole, AEMO correctly declared the lines as vulnerable. Power System Security Guidelines SO_OP_3715, at: http://www.aemo.com.au/Electricity/Policies-and-Procedures/System-Operating-Procedures/Power-System-Security-Guidelines-SO_OP3715

9 The declaration was delayed because AEMO's lightning detection system did not initially indicate lightning in the vicinity.

10 AEMO had already reclassified seven other Tasmanian lines as credible contingencies at various times of the day due to lightning in the vicinity.

11 Constraint set 'T-CSGO_N-2' manages output from the "FCAS risk" power station to within post-contingent voltage stability limits, to a maximum of 250 MW. Constraint set 'F-T-CSGO' defines requirements that enable sufficient 6 second, 60 second and 5 minute contingency raise (R6, R60, R5) FCAS.

12 Subsequent investigations revealed that Basslink tripped as a consequence of the effect of the faults, see: http://www.aemo.com.au/Electricity/Resources/Reports-and-Documents/~/link.aspx?_id=10F603F478C04BC7899FB1D41E08A217&_z=z

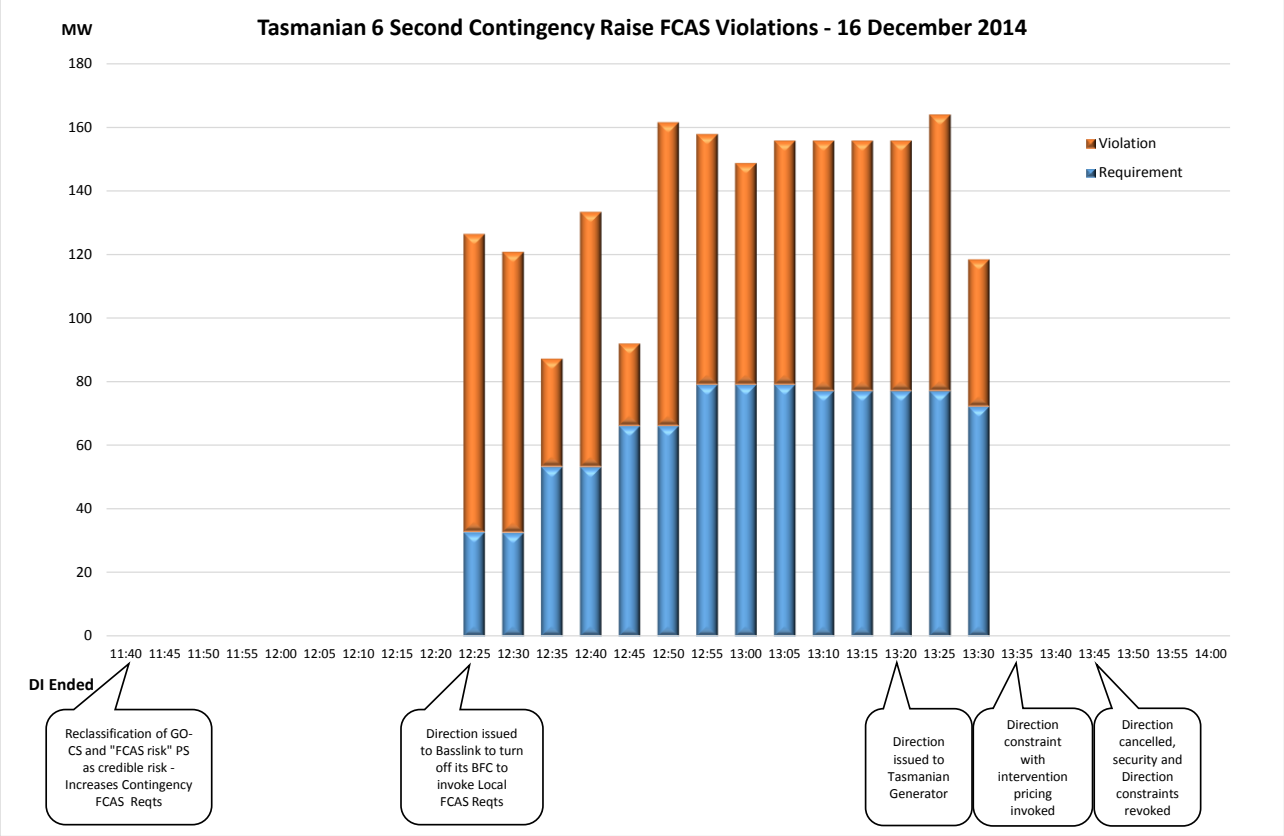
13 As permitted under NER clause 4.8.2(a), and more broadly clause 4.8.9(a)

requirement constraints available to achieve this[14], and instead used existing FCAS requirement constraints and caused all services to be locally sourced by making the BFC unavailable.

The Tasmanian 6-second contingency raise (R6) FCAS requirement (constraint 'F_T+CSGO_T6_R6') then violated for the next 14 DIs commencing DI 1225, resulting in an insecure operating state.

Figure 1 shows the violation of these FCAS requirements and the remedial actions taken.

Figure 1 Violation of Tasmanian Contingency FCAS requirements



4.2 AEMO's determination that a market response would not have avoided the direction

4.2.1 Basslink direction

A market response would not have avoided the need for the Basslink direction, because AEMO did not have the appropriate FCAS requirement constraints available to enable Tasmanian contingency FCAS whilst still allowing the BFC to continue operating.

4.2.2 Tasmanian Generator direction

The market initially responded to the violation of the Tasmanian R6 FCAS requirement from DI 1225. The only viable market response was from a Tasmanian Generator. The Tasmanian Generator attempted to rebid to meet this FCAS requirement, however at 12:46 hrs it advised AEMO that all

14 AEMO did not develop the appropriate FCAS requirement constraints because it could not reasonably foresee the reclassification of such a contingency event as credible.

available generating units were on-line and no further R6 FCAS could be made available, even if directed to provide it.

At 13:17 hrs the Tasmanian Generator then rebid in an attempt to reduce output from the "FCAS risk" power station and reduce the R6 FCAS requirement itself. However, security constraint 'T>T_NIL_LIPM_N-2_2B'[15] prevented this by constraining-on the dispatch of the "FCAS risk" power station, and the R6 FCAS violations continued.

Having exhausted all market options, the remaining option was for AEMO to issue a direction to that Tasmanian Generator at 13:20 hrs to reduce output from the "FCAS risk" power station, in accordance with NER clause 4.8.9 and section 5.7 of AEMO's Power System Security Guidelines SO_OP3715 [19].

4.3 AEMO's determination of the latest time for issuing the direction

Under NER clause 4.8.5A(a), AEMO must immediately publish a notice of any foreseeable circumstances (such as a power system security or reliability issue) that may require it to implement an AEMO intervention event. Under NER clause 4.8.5A(c), AEMO must, as soon as reasonably practicable after that notice, estimate and publish the latest time[16] at which it would need to intervene should there be insufficient response from the market to obviate that need.

4.3.1 Basslink direction

AEMO issued the direction to Basslink because it had insufficient time to develop and implement the appropriate local FCAS requirement constraints following the Basslink loss reclassification. The direction itself did not address any power system security requirements, but ensured those requirements were appropriately redefined to allow the market to meet them.

The requirement to provide advance notice of the need for direction did not arise, because the need was immediate and could not be met by a market response.

4.3.2 Tasmanian Generator direction

At 13:09 hrs, AEMO was considering the need to issue a direction after receiving advice that all available market response had been provided and yet FCAS violations continued.

AEMO did not provide advance notice to the market of the need for direction because the only viable market response was from the directed Tasmanian Generator, and AEMO is satisfied that it provided all its available market response before resorting to direction.

4.4 AEMO's process for issuing the directions

AEMO correctly followed the relevant power system operating procedures for management of these directions:

- Section 10 of "Dispatch" SO_OP 3705 [17]
- "Intervention, Direction and Clause 4.8.9 Instruction" SO_OP 3707 [18]
- Section 5.7 of "Power System Security Guidelines" SO_OP 3715 [19]

15 This system normal constraint prevents overload of Palmerston–Waddamana 110kV line for loss of Liapootah–Waddamana–Palmerston 220kV lines.

16 Under NER clause 4.2.6(b), AEMO should take all reasonable actions to return the power system to a secure operating state as soon as it is practical to do so, and, in any event, within thirty minutes following a contingency event or significant change in power system conditions.

17 http://www.aemo.com.au/Electricity/Policies-and-Procedures/System-Operating-Procedures/Dispatch-SO_OP3705

18 http://www.aemo.com.au/Electricity/Policies-and-Procedures/System-Operating-Procedures/Intervention-Direction-and-Clause-Instructions-SO_OP3707

19 http://www.aemo.com.au/Electricity/Policies-and-Procedures/System-Operating-Procedures/Power-System-Security-Guidelines-SO_OP3715

- Intervention Pricing Methodology [20]

4.4.1 Basslink direction

At 12:17 hrs on 16 December 2014, AEMO reclassified the loss of the Basslink interconnector with any transmission line in Tasmania as a credible contingency event on the basis that Basslink was unable to ride through the fault.

At the same time, AEMO issued a direction to Basslink Pty Ltd[21] to turn off its BFC to ensure that sufficient contingency FCAS was enabled within Tasmania to maintain power system security.

AEMO issued Market Notices No. 47315 at 12:38 hrs and No. 47319 at 12:48 hrs, to inform the market of the reclassification and the Basslink direction.

At 12:30 hrs on 19 December 2014, AEMO declared that the loss of the Basslink interconnector with any Tasmanian transmission line was only a credible contingency when Tasmania was importing, informing the market of this in Market Notice No. 47360 issued at 12:37 hrs.

At 13:17 hrs that day, AEMO cancelled the Basslink direction after changes to the contingency FCAS requirement constraints to ensure the continued local sourcing of contingency FCAS with the BFC in-service. AEMO issued Market Notice No. 47363 at 13:24 hrs to inform the market of the cancelled direction.

At the time of writing, the reclassification of the loss of the Basslink interconnector (for flow in the direction of Victoria to Tasmania only) with any Tasmanian transmission line[22] as a credible contingency remains in force.

4.4.2 Tasmanian Generator direction

At 12:17 hrs on 16 December 2014, after invoking local FCAS requirements to cover the credible loss of Basslink interconnector with any Tasmania transmission line, the Tasmanian R6 FCAS requirement violated for the next 14 DIs, resulting in an insecure operating state.

Having exhausted all viable market options, the remaining option was for AEMO to issue a direction to reduce the FCAS requirement and prevent further FCAS violations[21].

At 13:20 hrs, AEMO issued a direction to a Tasmanian Generator to reduce output from its “FCAS risk” power station by an amount equivalent to the R6 FCAS available from other Tasmanian FCAS providers, in accordance with section 5.7 of the Power System Security Guidelines. As part of the direction, AEMO also required the Tasmanian Generator to rebid the availability of the “FCAS risk” power station to the required level, and to manually reduce its output by turning off its automatic generation control (AGC) system[23] as permitted by NER clause 4.8.9(h)(2).

At 13:23 hrs, AEMO invoked a direction constraint with intervention pricing to reduce the energy dispatch of the “FCAS risk” power station to the required level, effective in Dispatch from DI 1335.

At 13:35 hrs, AEMO identified that the reclassification of the loss of the Gordon – Chapel Street lines as a credible contingency should no longer apply[24], and at 13:40 hrs withdrew the reclassification and revoked the relevant security constraints[25]. At 13:42 hrs, AEMO cancelled the direction to the

20 http://www.aemo.com.au/Electricity/Market-Operations/Dispatch/Intervention-Pricing-Methodology

21 As permitted under NER clause 4.8.2(a), and more broadly clause 4.8.9(a).

22 Except for faults on either of the two George Town - Pacific Aluminium 220 kV lines – refer to Market Notice No. 47855 issued at 17:54 on 23 January 2015.

23 The aim of turning off AGC is to ensure the generating unit moves to its directed output without delay due to frequency regulation duty. Turning off its AGC resulted in a much lower ramp rate of 1 MW per minute, which delayed the reduction in energy dispatch over the next two DIs 1330 and 1335.

24 At 13:00 hrs, AEMO received further information from TasNetworks that the Gordon – Chapel Street trip event at 07:46 hrs was a single pole auto-reclose on red phase on both lines. With this further information, AEMO should have applied the criteria in section 11.4.1, table 4 of AEMO’s Power System Security Guidelines and immediately withdrawn the “vulnerable” lines declaration and withdrawn its reclassification as a credible contingency loss. AEMO did not do this until 13:40 hrs.

25 At 13:54 hrs, AEMO issued Market Notice No. 47322 to inform the market that the reason for revoking the credible loss reclassification constraint sets was “there is no longer any lightning activity in the vicinity of the Gordon - Chapel St No.1 and No.2 220 kV lines”. AEMO later clarified this, issuing Market Notice No. 47324 at 14:11 hrs to inform the market that “in accordance with SO_OP_3715 section

Tasmanian Generator and revoked the direction constraint. The security and direction constraints did not apply in Dispatch after DI 1345 [26].

At 14:39 hrs, AEMO issued Market Notice No. 47326 to inform the market that it had issued a direction to a Tasmanian Generator to maintain power system security.

4.5 Basis for AEMO not following processes under clause 4.8 prior to direction

AEMO followed all processes set out in NER clause 4.8 apart from the requirement to determine the latest time for AEMO intervention. The basis for this is described in section 4.3.

4.6 Effectiveness of responses to AEMO inquiries under clause 4.8.5A(d)

4.6.1 Basslink direction

AEMO did not request information with respect to the latest time for intervention, because the direction was not issued to address any power system security needs, but to ensure those needs were appropriately defined in Dispatch to allow the market to meet them.

4.6.2 Tasmanian Generator direction

AEMO regularly requested information from a Tasmanian Generator on its available market response to address the power system security need.

AEMO is satisfied with the effectiveness of their responses to those requests.

4.7 Notice from Registered Participants of inability to comply with the direction

For both directions, no information was received from the Directed Participant under NER clause 4.8.9(d) that it would be unable to comply with the direction.

11.4, AEMO now considers the Gordon – Chapel Street No. 1 and 2 220 kV lines not to be vulnerable due to lightning" because "AEMO has received further information regarding the trip and auto-reclose of the Gordon – Chapel Street No. 1 & 2 220 kV lines at 0746 hrs". This notice was issued 31 minutes after withdrawing the "vulnerable" declaration and revoking the reclassification constraints.

26 Owing to the timing of the above revocations, the direction and reclassification constraints (constraints sets 'T-CSGO_N-2' and 'F-T-CSGO') continued to apply in Dispatch until DI 1345, as noted in the market notices.

5. DETERMINATION OF WHETHER TO APPLY INTERVENTION PRICING UNDER CLAUSE 3.9.3(B)

5.1 Basslink direction

AEMO did not apply intervention pricing because the direction was not issued to address any power system security needs, but to ensure those needs were appropriately defined in Dispatch to allow the market to meet them.

5.2 Tasmanian Generator direction

AEMO applied intervention pricing with the direction constraint invoked for DI 1335 to 1345.

Under NER clause 3.9.3(b), prices during intervention price dispatch intervals are the prices that AEMO considers would have applied absent the direction, subject to the direction satisfying the "regional reference node test"[27] and returning to a secure operating state[28].

AEMO determined that the direction satisfied the "regional reference node test" under NER clause 3.9.3(d) because the need to restore power system security could be met by directing the same plant if it were located at the regional reference node.

Under NER clause 3.9.3(a), AEMO must declare that the DIs during the direction were intervention price dispatch intervals[29]. AEMO generally achieves this through the issue of a market notice. In this case, however, AEMO did not make this declaration via a market notice.

27 Under NER clause 3..9.3(d), AEMO must not initiate intervention pricing if "a direction given to a Registered Participant in respect of plant at the regional reference node would not in AEMO's reasonable opinion have avoided the need for any direction which constitutes the AEMO intervention event to be issued". This is referred to as the "regional reference node" test.

28 Under NER clause 3.9.3(c), *AEMO* may continue to set prices pursuant to NER clause 3.9.2 and 3.9.2A until the later of:

(1) the second *dispatch interval* after the first *dispatch interval* in which the *AEMO intervention event* occurred; or

(2) if applicable, the second *dispatch interval* after the restoration of the *power system* to a *secure operating state* after any *direction* which constitutes the *AEMO intervention event* was issued, provided that *AEMO* must use its reasonable endeavours to set *dispatch prices* and *ancillary service prices* pursuant to this clause 3.9.3 as soon as practicable following the *AEMO intervention event*.

29 "In respect of a dispatch interval where an AEMO intervention event occurs AEMO must declare that dispatch interval to be an intervention price dispatch interval."

6. CHANGES TO DISPATCH OUTCOMES DUE TO DIRECTION

6.1 Basslink direction

AEMO directed Basslink to turn off its BFC from DI 1225 on 16 December to DI 1320 on 19 December 2014 to ensure that NEMDE applied local contingency raise FCAS requirements in Tasmania.

The intended impact of the direction was to increase the amount of contingency raise FCAS enabled in Tasmania to cover the loss of the Basslink interconnector with any transmission line during Basslink import to Tasmania. Because Tasmania was importing throughout the direction, this contingency remained credible and there were no issues with over-enabling of contingency raise FCAS.

The direction also caused regulation and contingency lower FCAS requirements to be locally sourced. Ideally, these requirements should have remained globally sourced at all times. However, because AEMO did not have the appropriate constraints for these services available at the time, more regulation FCAS (particularly regulation lower) was enabled in Tasmania than necessary based on a global requirement alone. Because regulation FCAS can be enabled to meet a delayed contingency FCAS requirement, the increased amount of regulation lower FCAS enabled in Tasmania resulted in less delayed contingency lower FCAS enabled in Tasmania[30].

AEMO did not implement the appropriate regulation FCAS requirements until 8 January 2015, and the appropriate contingency lower FCAS requirements until 23 January 2015.

6.2 Tasmanian Generator direction

A Tasmanian Generator was directed to reduce output of its “FCAS risk” power station from DIs 1325 to 1345 on 16 December 2014.

Generation from the “FCAS risk” power station was reduced by up to 145 MW as a result of the direction, a total of 21.6 MWh over the period of direction.

Note that under NER clause 3.8.1(b)(11), AEMO is required, as far as reasonably practicable, to minimise the market impact of its direction in terms of the number of Affected Participants and changes to interconnector flows[31].

In this instance, no action was taken by AEMO, because the impact of the direction was largely confined to the directed Tasmanian Generator in respect of its other generating units, with only a minor impact on the dispatch of the Basslink interconnector (around 6 MWh).

30 There is a secondary effect, whereby the amount of regulation FCAS enabled on a generating unit can reduce the amount of contingency FCAS available from that unit.

31 Note that AEMO’s power system operating procedure SO_OP 3707 “Intervention, Direction and Clause 4.8.9 Instructions” describes this objective, but does not link it to NER clause 3.8.1(b)(11). 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.

7. CONCLUSIONS AND FURTHER ACTIONS

AEMO has reviewed the directions issued and the circumstances surrounding those directions.

As required by NER clause 3.13.6A, AEMO assessed its compliance with the processes for market notification and intervention.

While AEMO is satisfied the intervention processes were correctly followed, the event highlights issues with the market notification and lightning reclassification processes.

7.1 Issues with Market Notifications

Under NER clause 4.8.5A(a), "AEMO must immediately publish a notice of any foreseeable circumstances that may require AEMO to implement an AEMO intervention event".

At 13:09 hrs on 16 December, AEMO was considering the need for a direction to address ongoing FCAS violations. However, AEMO did not issue a market notice at that time because the only viable market response was from a single participant who had already advised that all its available market options were exhausted.

Further, AEMO did not issue a market notice to declare that the DIs during the direction were intervention price dispatch intervals, as required by NER clause 3.9.3(a)[32].

AEMO will review its procedures for issuing market notices in cases where market response to address the need is only viable from a single participant. AEMO will also provide operator refresher training to reinforce the need to issue a market notice to declare intervention price dispatch intervals.

7.2 Incorrect Lightning Reclassification

AEMO did not withdraw the vulnerable declaration of the Gordon – Chapel Street lines and revoke its reclassification as a credible contingency upon receiving the information required to make that decision. AEMO declared this to be a failure to follow the central dispatch process and hence a scheduling error under NER clause 3.8.24(a)(2)[33].

The error caused high FCAS requirements that violated and ultimately resulted in AEMO unnecessarily issuing a direction to a Tasmanian Generator to reduce the output of its "FCAS risk" power station.

AEMO has since undertaken operator refresher training to reinforce the correct process for declaring double circuit lines as "vulnerable due to lightning" and reclassifying them as a credible contingency event. AEMO has also clarified the "vulnerable lines" criteria in its Power System Security Guidelines.

7.3 Basslink reclassification constraints

The direction to Basslink was necessary because AEMO did not have sufficient time to develop the appropriate FCAS requirement constraints to manage the Basslink loss reclassification.

AEMO has since made a number of improvements to the Basslink reclassification constraints:

- On 22 December 2014, to require the local sourcing of FCAS only when Basslink flow is into Tasmania.
- On 8 January 2015, to allow the global sourcing of regulation FCAS.
- On 23 January 2015, to allow the global sourcing of contingency lower FCAS.

32 "In respect of a dispatch interval where an AEMO intervention event occurs AEMO must declare that dispatch interval to be an intervention price dispatch interval."

33 AEMO published a report for this scheduling error: http://www.aemo.com.au/Electricity/Resources/Reports-and-Documents/Market-Event-Reports/NEM-Event-Gordon-Chapel-Street-Reclassification-Scheduling-Error-16-December-2014.

ABBREVIATIONS AND DEFINITIONS

This report uses several terms that have defined meanings in the NER. They have the same meanings in this report.

Abbreviation	Term
AGC	Automatic Generation Control
BFC	Basslink frequency controller
DI	dispatch interval
Dispatch	5-minute central dispatch process
FCAS	frequency control ancillary service
NEM	National Electricity Market
NEMDE	NEM Dispatch Engine, dispatch and pricing algorithm used by the central dispatch process
NER	National Electricity Rules
SCADA	Supervisory Control And Data Acquisition system