

# POWER SYSTEM OPERATION PROCEDURE: DISPATCH

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## VERSION RELEASE HISTORY

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3	5 January 2010	AEMO proposed amendments to this procedure resulting in publication of Procedure Change Report PPCL 0014
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## 1. PROCEDURE OVERVIEW

### 1.1. Relationship with the Wholesale Electricity Market Rules

- 1.1.1. This Power System Operation Procedure (PSOP): Dispatch Power System Operation Procedure: Dispatch (Procedure) has been developed in accordance with the Wholesale Electricity Market Rules (WEM Rules) as described in step 1.3 below.
- 1.1.2. References to particular WEM Rules within the Procedure in bold and square brackets **[Clause XX]** are current as at 1 October 2017. These references are included for convenience only and are not part of this Procedure.

### 1.2. Interpretation

- 1.2.1. In this Procedure:
- (a) terms that are capitalised but not defined in this Procedure have the meaning given in the WEM Rules;
  - (b) to the extent that this Procedure is contrary or inconsistent with the WEM Rules, the WEM Rules shall prevail to the extent of the inconsistency;
  - (c) a reference to the WEM Rules or Market Procedures includes any associated forms required or contemplated by the WEM Rules or Market Procedures;
  - (d) unless the context requires otherwise, references to AEMO include AEMO in its System Management capacity; and
  - (e) words expressed in the singular include the plural or vice versa.
- 1.2.2. In this Procedure there are shaded text boxes. The shaded text boxes contain explanatory text. They are included in this Procedure only as interpretational aids and do not form part of this Procedure.

### 1.3. Purpose and application of this Procedure

- 1.3.1. The purpose of this Procedure is to describe:
- (a) the format and method by which each Market Generator must provide to AEMO, for each of its Intermittent Generators with capacity exceeding 10MW, its most current forecast of the MWh energy output of the Intermittent Generator **[Clause 7.2.5]**;
  - (b) the procedure to be followed when scheduling and issuing Operating Instructions to dispatch Registered Facilities covered by any Ancillary Services Contract **[Clause 7.6.13]**;
  - (c) the format and time resolution for the provision of data by Synergy to AEMO with respect to the scheduling of Stand Alone Facilities for Ancillary Services and the scheduling of Facilities in the Balancing Portfolio **[Clause 7.6A.2]**;
  - (d) the process for selecting Non-Balancing Facilities from the Non-Balancing Dispatch Merit Order **[Clause 7.7.4A]**;
  - (e) the information that must be provided by a Market Participant to AEMO for each of its Non-Scheduled Generators to enable an estimation of the Facility's output by AEMO **[Clauses 7.7.5A and 7.7.5C]**;
  - (f) the procedure for AEMO to estimate the maximum amount of sent out energy, in MWh, which each Non-Scheduled Generator, by Trading Interval, would

have supplied in the Trading Interval had a Dispatch Instruction not been issued [**Clause 7.7.5B**];

- (g) the procedure to be followed by AEMO and Market Participants in forming, issuing, recording, receiving, confirming and responding to Dispatch Instructions and Operating Instructions [**Clause 7.7.9**];
- (h) the procedure to be followed by AEMO in determining the quantities described under clause 7.7.5A(a) [**Clause 7.7.9**];
- (i) the procedure for calculating the Load Rejection Reserve Response Quantity and the Spinning Reserve Response Quantity [**Clause 7.13.1(eD)**];
- (j) the procedure to be followed in providing settlement and monitoring data [**Clause 7.13.3**];
- (k) the procedure for determining an estimate for each Trading Interval in the Trading Day and for each Balancing Facility of [**Clause 7A.3.7**]:
  - (i) the SOI Quantity;
  - (ii) the EOI Quantity; and
  - (iii) the Relevant Dispatch Quantity at the end of a Trading Interval;
- (l) the procedure for determining forecasts of the Relevant Dispatch Quantity and EOI Quantity for Non-Scheduled Generators for each future Trading Interval in the Balancing Horizon [**Clause 7A.3.15**];
- (m) the procedure for determining the forecast LFAS Quantity for each Trading Interval in the next Trading Day [**Clause 7B.1.4**]; and
- (n) the procedure for Market Participants who have been assigned DSM Capacity Credits to provide AEMO with their consumption information [**Clause 7.6.10A**].

1.3.2. This Procedure applies to:

- (a) AEMO in its general dispatch obligations and those relating to scheduling the Synergy Balancing Portfolio as a service provided to Synergy;
- (b) Rule Participants in complying with the provision of information required for Dispatch as described in step 1.3.1; and
- (c) Market Participants in respect to the operation of their Facilities.

## 2. MANAGEMENT OF DISPATCH INFORMATION AND DISPATCH CRITERIA

### 2.1. Management of Dispatch Information

2.1.1. AEMO must maintain all necessary data needed to carry out the following processes:

- (a) preparing the information necessary for the Scheduling Day;
- (b) planning for dispatch;
- (c) issuing Dispatch Advisories;
- (d) issuing Dispatch Instructions, Operating Instructions and Dispatch Orders; and
- (e) preparing the ex-post settlement and monitoring data.

## 2.2. Dispatch Criteria

- 2.2.1. When scheduling and dispatching Market Participants' Facilities, AEMO must at all times seek to meet the criteria described in clause 7.6.1 of the WEM Rules.
- 2.2.2. The criteria are, in order of priority:
- (a) to enable operation of the SWIS within the Technical Envelope parameters appropriate for the applicable SWIS Operating State;
  - (b) to minimise involuntary load shedding on the SWIS; and
  - (c) to maintain Ancillary Services to meet the Ancillary Services standards appropriate for the applicable SWIS Operating State
- 2.2.3. For the avoidance of doubt, satisfying the Dispatch Criteria will always take precedence over other dispatch rules such as adherence to the Balancing Merit Order.

## 3. SCHEDULING AND DISPATCH OF THE BALANCING PORTFOLIO

- 3.1.1. AEMO's and Synergy's obligations for scheduling and dispatching the Facilities of the Balancing Portfolio are set out in clause 7.6A of the WEM Rules.
- 3.1.2. Synergy must provide AEMO with a set of dispatch guidelines for its Facilities comprising the Balancing Portfolio in a form agreed between Synergy and AEMO.
- 3.1.3. AEMO must prepare a Dispatch Plan daily for the Balancing Portfolio in a form agreed between Synergy and AEMO.
- 3.1.4. Synergy must update the Balancing Portfolio dispatch guidelines at least once every month and advise AEMO of the date and time from which the updated guidelines are to take effect [**Clause 7.6A.2(a)**].
- 3.1.5. Communication of the Balancing Portfolio dispatch guidelines must be made in a form agreed by Synergy and AEMO.
- 3.1.6. Communication of, and consultation in relation to, the information referred to in clause 7.6A.2(c) of the WEM Rules must normally be by means of an electronic interface. Synergy and AEMO may communicate by other means where necessary provided that all communications create, or are subsequently verified by, an electronic record.

## 4. PRE-GATE CLOSURE

### 4.1. Pre-dispatch plan

- 4.1.1. AEMO must produce, and update as required, a pre-Dispatch Plan covering all periods in the Balancing Horizon.
- 4.1.2. The pre-Dispatch Plan referred to in step 4.1.1 must, where practicable, be produced using a mathematical program based on the same formulation used to create Dispatch Instructions (refer step 5.3 below).



- 4.1.3. Upon determining a Forecast BMO, AEMO must formulate any constraints necessary to maintain Power System Security and use those constraints when producing the pre-Dispatch Plan referred to in step 4.1.1.
- 4.1.4. AEMO must report any pre-dispatch constraints binding, and any pre-dispatch constraints violated, via Dispatch Advisory notices as described in section 5.9 of this Procedure. In addition if it is expected that a Dispatch Instruction will be issued to a Non-Balancing Facility or a Demand Side Programme within the next 24 hours, a Dispatch Advisory must be issued [**Clauses 7.11.5(j) and (k)**].
- 4.1.5. AEMO may communicate warnings to individual Market Participants if it detects significant discrepancies between Standing Data equipment limits and the pre-Dispatch Plan.

*Note: The warnings referred to in step 4.1.5 are for information only. It remains the Market Participant's responsibility to ensure their Balancing Submissions reflect the physical capabilities of their Facilities at all times.*

## 4.2. Constraints used in the pre-Dispatch Plan

- 4.2.1. The constraints referred to in step 4.1.3 may include, as appropriate, constraints to ensure any one or more of the following:
- (a) maintenance of Ancillary Services standards;
  - (b) appropriate use of contracted services, including Dispatch Support Services and Network Control Services;
  - (c) maintenance of the Ready Reserve Standard;
  - (d) adherence to Equipment Limits, but only to the extent that those limits are not inconsistent with the dispatch of Balancing Facilities that, but for the Equipment Limits, would be dispatched under clause 7.6.1C of the WEM Rules;
  - (e) maintenance of overall system security; and
  - (f) appropriate management of fuel, if and to the extent that AEMO is required to manage such constraints during a fuel supply emergency.

## 4.3. Load forecasts

- 4.3.1. AEMO must, by 8:30 AM on the Scheduling Day associated with a Trading Day, determine and provide Synergy with a forecast of total system demand for the Trading Day [**Clause 7.6A.2(b)**].
- 4.3.2. Forecasts of total system demand in relation to step 4.3.1 must separately itemise, for each Trading Interval in the Trading Day, the following quantities, Loss Factor adjusted to the Reference Node:
- (a) Forecast SWIS system load, in MW, at the end of the Trading Interval; and
  - (b) Forecast total energy output, in MWh, over the Trading Interval.

- 4.3.3. The SWIS system load must be calculated as the combined energy (or power) exported from all generating facilities connected to each Network Operator's networks, as measured at the generating facility's connection points, Loss Factor adjusted to the Reference Node.

*Load forecasts are considered to be for system demand in the absence of any curtailment by Non-Balancing Facilities (i.e. Demand Side Management). Forecast curtailment will be communicated to the market via a Dispatch Advisory notice.*

- 4.3.4. Forecasts of total system demand must be provided to Synergy through AEMO's market system or any other medium agreed between AEMO and Synergy.
- 4.3.5. AEMO must, by 7:30 AM on the Scheduling Day associated with a Trading Day, determine a Load Forecast for the Trading Day **[Clause 7.2.1]**.
- 4.3.6. When determining forecast quantities in step 4.3.1 or step 4.3.5, AEMO must, where practicable, utilise the most recent information available to it.
- 4.3.7. AEMO must, for each future Trading Interval in the Balancing Horizon, determine a forecast of the Relevant Dispatch Quantity. AEMO must, each time it has new information on which to determine these quantities, update these forecasts, but is not required to do so more than once per Trading Interval **[Clause 7A.3.15]**.
- 4.3.8. AEMO must, by 12:00 PM on the Scheduling Day, prepare a forecast of the LFAS Quantity for each Trading Interval in the next Trading Day **[Clause 7B.1.4]**.
- 4.3.9. The LFAS Quantity will be forecast by adjusting the LFAS Requirement specified in the Ancillary Service Report to account for forecast conditions of Load and Non - Scheduled Generators available to AEMO on the Scheduling Day.
- 4.3.10. The LFAS Quantity may be further adjusted to account for Commissioning Tests that has been approved by AEMO to take place on the Trading Day.

#### **4.4. [Blank]**

*This section, intended to cover treatment of significant discrete loads, is blank at this time. AEMO is considering whether it is necessary to model significant discrete loads (suggested definition is a load at a single connection point on the SWIS with a non-Loss Factor adjusted peak greater than or equal to 20MW or a set of related loads with more than one connection point sharing coincident load profiles with the sum of the non-Loss Factor adjusted peaks being greater than or equal to 20 MW).*

## 4.5. Forecasts of Non-scheduled Generators

- 4.5.1. Unless otherwise directed by AEMO, each Market Generator must provide, for each of its Intermittent Generators with a maximum output capacity exceeding 10 MW, the data specified in the WEM Rules **[Clause 7.2.5]**.
- 4.5.2. A Market Generator must provide the forecast information referred to in step 4.5.1 via the interface to AEMO's market system unless an alternative medium is agreed between AEMO and the Market Generator.
- 4.5.3. Where so required by AEMO, each Market Generator must provide, for each of its Non-Scheduled Generators, modelling data sufficient to allow AEMO to forecast the output of that Non-Scheduled Generator **[Clauses 7.7.5A and 7.7.5C]**. This should be done via the System Management IT system.
- 4.5.4. The modelling data provided in step 4.5.3 must include, but is not necessarily limited to, identification of the main independent variables affecting output and the function relating those variables to output. All modelling data shall be provided on, or be sufficient to allow conversion to, a sent-out basis.
- 4.5.5. Where AEMO is required to determine a forecast of the output of a Non-Scheduled Generator:
- (a) AEMO may utilise a forecast of sent-out energy for the Non-Scheduled Generator provided by the Market Generator in a Resource Plan or Balancing Submission;
  - (b) where AEMO considers that a forecast of sent-out energy received for a Non-Scheduled Generator is not reflective of the level of output actually occurring or likely to occur, AEMO may estimate the expected Non-Scheduled Generator output using the information provided under step 4.5.3 and may substitute this data for part or all of the data provided for that Non-Scheduled Generator; and
  - (c) AEMO may utilise other forecast data where required, if Non-Scheduled Generator forecast data is received late or if sections of data are missing. This may be output data derived from recordings of injection levels from past Trading Intervals, or a separate forecast derived for that purpose.

## 4.6. Forecasts of Ancillary Services demand

- 4.6.1. AEMO must determine the estimated Ancillary Service requirements for each Market Participant that is a provider of Ancillary Services in accordance with the WEM Rules **[Clause 7.2.3A]**.

## 4.7. Updating the Dispatch Plan

*AEMO has an obligation to consult with Synergy in preparing the Dispatch Plan [Clause 7.6A.2(d)].*

- 4.7.1. AEMO is required to notify Synergy of significant changes to the Dispatch Plan **[Clause 7.6A.2(f)]**.
- 4.7.2. The changes referred to in step 4.7.1 must be deemed to be significant when they indicate:
  - (a) previously uncommitted generating Facilities are expected to be committed, or previously committed generating Facilities are expected to be de-committed;
  - (b) fuel required is forecast to be outside the limits set by Synergy; or
  - (c) AEMO expects to need to dispatch Facilities in the Balancing Portfolio outside the Balancing Portfolio dispatch guidelines described in step 3.1.2.
- 4.7.3. AEMO must transmit the revised Dispatch Plan to Synergy as soon as practicable through the interface to AEMO's market system.
- 4.7.4. Synergy may request changes to the Dispatch Plan, which AEMO must use reasonable endeavours to accommodate.

## 4.8. Demand Side Programmes

- 4.8.1. AEMO may request a Market Participant to provide the current consumption **[Clause 7.6.10A]**, in a manner agreed between the parties when it is anticipated that the dispatch of a Non-Balancing Facility may be required. This will include for each Trading Interval for which the information is requested, the consumption of each Associated Load of the Demand Side Programme as well as the total consumption of the Demand Side Programme. If no agreed position is reached, AEMO (acting reasonably) will specify the manner.
- 4.8.2. If AEMO issues a Dispatch Instruction to a Demand Side Programme, it must use best endeavours to maximise the extent to which the resulting Non-Balancing Facility Dispatch Instruction Payments across all Demand Side Programmes are zero, in preference to causing any Tranche 2 DSM Dispatch Payments or Tranche 3 DSM Dispatch Payments to become payable **[Clause 7.6.1E]**.
- 4.8.3. The Unused Expected DSM Dispatch Quantity contained in the Non-Balancing Dispatch Merit Order will initially be updated to reflect the Dispatch Instructions not already taken into account.
- 4.8.4. When metering data becomes available, AEMO will recalculate the Unused Expected DSM Dispatch Quantity and this information will be used to generate the subsequent Non-Balancing Dispatch Merit Order.

4.8.5. AEMO is required to issue a Dispatch Advisory if it expects to issue a Dispatch Instruction to a Non-Balancing Facility (including to a Demand Side Programme under clause 7.6.1C(d) of the WEM Rules) within the next 24 hours **[Clause 7.11.5(i) and (k)]**. System Management must not issue a Dispatch Instruction to a Demand Side Programme under clause 7.6.1C(d) of the WEM Rules unless it has issued a Dispatch Advisory under clause 7.11.5(k) more than two hours before the time the Dispatch Instruction will come into effect **[Clause 7.6.1F]**.

#### 4.9. Dispatch Advisory notices

4.9.1. The requirements for the issue and release of Dispatch Advisory notices to Market Participants, Network Operators and the Economic Regulation Authority are specified in the WEM Rules **[Clause 7.11]**.

4.9.2. Dispatch Advisories may arise as a result of one or more of:

- (a) conditions detected in the pre-Dispatch Plan; or
- (b) conditions detected in the Dispatch Plan; or
- (c) real-time monitoring thresholds being reached; or
- (d) conditions detected or forecast manually by AEMO Controllers.

4.9.3. Types of Dispatch Advisory notices are listed in Appendix 1.

4.9.4. AEMO must transmit automatically generated Dispatch Advisory notices as soon as practicable after the completion of each Trading Interval, and at other times if required. Manually-generated Dispatch Advisory notices must be transmitted as soon as practicable.

4.9.5. Where there is a communication failure or insufficient time to issue such a notice, AEMO may convey the content of the notice via telephone or such other means as are practicable at the time, but must provide confirmation in the form of a formal Dispatch Advisory notice as soon as practicable.

4.9.6. AEMO has an obligation under the WEM Rules **[Clause 7.11.6A]** to ensure that confidential information is not disclosed in Dispatch Advisory notices.

#### 4.10. Content and management of Dispatch Advisory notices

4.10.1. Each Dispatch Advisory notice must contain:

- (a) the information required under the WEM Rules **[Clause 7.11.6]**; and
- (b) a Dispatch Advisory Type field, as defined in Appendix 1 of this Procedure.

4.10.2. Dispatch Advisory notices remain in force until withdrawn.

4.10.3. Withdrawal of Dispatch Advisory notices must occur as follows:

- (a) Dispatch Advisory notices issued pursuant to the pre-Dispatch Plan or Dispatch Plan cover one Trading Interval and are deemed to have been withdrawn at the end of that Trading Interval; or
- (b) Dispatch Advisory notices issued retrospectively in response to events that have already occurred are deemed to have been withdrawn at the later of the

time of issue and the ending time. Such Dispatch Advisories may also be withdrawn by issuing a withdrawal notification; or

- (c) Dispatch Advisory notices issued in circumstances not covered above are issued when required and expire automatically at the ending time unless withdrawn earlier.

## 4.11. Pre-issuing of Dispatch Instructions

- 4.11.1. Where AEMO determines that a specific Facility is required to operate in a particular way in a future period for the maintenance of Power System Security, AEMO may issue Dispatch Instructions to the required Facility in accordance with the WEM Rules.
- 4.11.2. Where the Facility referred to in step 4.11.1 would be required to be dispatched under clause 7.6.1C(c) of the WEM Rules, AEMO must:
  - (a) observe the Facility's Standing Data minimum response time when issuing Dispatch Instructions to that Facility;
  - (b) if Dispatch Instructions for the Facility are issued via AEMO's portal, also provide the Dispatch Instruction using voice communication; and
  - (c) AEMO must specify in its Dispatch Instruction that the Dispatch Instruction is being issued under clause 7.6.1C(c) of the WEM Rules.
- 4.11.3. Where AEMO determines that a Non-Balancing Facility is required to operate in a future period for the maintenance of Power System Security, AEMO must issue Dispatch Instructions to the required Facility in accordance with that Facility's notice period. A Dispatch Advisory must be issued at least two hours before a Dispatch Instruction issued to a Demand Side Programme under clause 7.10.1C(d) comes into effect [**Clause 7.6.1F**].
- 4.11.4. AEMO may issue new Dispatch Instructions to replace Dispatch Instructions issued pursuant to step 4.11.1 or step 4.11.3 if required.

## 5. POST GATE CLOSURE

### 5.1. Bona fide changes to physical status of Facilities

- 5.1.1. The WEM Rules require a Market Participant, except Synergy in respect of the Balancing Portfolio, to update its Balancing Submission if after Balancing Gate Closure it becomes aware that the Balancing Submission is inaccurate due to an Internal Constraint, an External Constraint or an Operating Instruction [**Clause 7A.2.10**].
- 5.1.2. If the circumstances described in step 5.1.1 occur, and reflect a reduction or expected reduction in the capability of the Market Participant's Facility or Facilities, the affected Market Participant must also advise AEMO in writing as soon as practicable the nature written details of the nature of the Internal Constraint or External Constraint, when it occurred and its duration . This notification must initially be by telephone or other voice communication but then followed as soon as practicable on AEMO's market system [**Clause 7A.2.11**].
- 5.1.3. When advised in accordance with step 5.1.2, AEMO must for any Trading Intervals for which it expects to receive no further updates to the Forecast BMO:
- assess power system security in accordance with the Power System Operation Procedure: Power System Security and take any required actions resulting from that assessment;
  - immediately issue a Dispatch Advisory notice specifying the extent of the reduction in capacity and whether the affected Facility is marginal, above or below the balancing point; and
  - if required to issue a Dispatch Instruction to the affected Facility take the notification in step 5.1.2 to be an advice given under step 5.6.6.
- 5.1.4. If a Market Participant receives a Dispatch Instruction in accordance with the Non-Balancing Dispatch Merit Order and becomes aware that its forecasted consumption profile is no longer a reasonable forecast of its consumption profile for the relevant Trading Interval, then it must notify AEMO by phone or as agreed between the parties of the revised good faith forecast as soon as reasonably practicable [**Clause 7.7.6C**].

### 5.2. Commitment and de-commitment of generating Facilities

- 5.2.1. The obligations of AEMO and Market Participants in respect of commitment and de-commitment of generating Facilities are set out in the WEM Rules [**Clauses 3.21B and 7.9**].
- 5.2.2. A Market Participant, except Synergy with respect to the Balancing Portfolio, must communicate confirmation of expected time of synchronisation and de-synchronisation when required to do so under the WEM Rules via telephone or other voice communication [**Clause 7.9.1**], unless it is exempt from doing so in accordance with the WEM Rules [**Clause 7.9.14**].



- 5.2.3. The WEM Rules set out the circumstances where a Market Participant intending to put a Scheduled Generator holding Capacity Credits into a state where it will take more than four hours to re-synchronise is not required to seek permission from AEMO **[Clause 3.21B.1]**. Where these exceptions do not apply, the Market Participant must seek approval and the request must be communicated via telephone or other voice communication, and include the information required by the WEM Rules **[Clause 3.21B.2]**.

*A Market Participant is required by the WEM Rules **[Clause 3.21B.2]** to include in the request for permission the following information:*

- “(a) the identity of the Scheduled Generator;*
- (b) the time at which the Market Participant wants to have the Scheduled Generator enter a state where it will take more than four hours to re-synchronise; and*
- (c) the first time after that in (b) at which the Scheduled Generator will be able to be resynchronised with four hours’ notice.”*

- 5.2.4. AEMO will assess the request made under step 5.2.3 to determine if permission should be withheld in accordance with the WEM Rules **[Clause 3.21B.5]**.

*The WEM Rules **[Clause 3.21B.5]** provide that System Management may only withhold permission if:*

- “(a) the request for that permission is not in accordance with clause 3.21B.2 or the Power System Operation Procedure; or*
- (b) granting permission would mean that System Management would be incapable of maintaining the Ready Reserve Standard”.*

- 5.2.5. Where AEMO approves or rejects the request for permission, AEMO must inform the Market Participant of its decision as soon as practicable by telephone or other voice communication in accordance with the WEM Rules **[Clause 3.21B.4]**.

- 5.2.6. Where AEMO has notified the Market Participant of its decision to reject the request for permission in accordance with step 6.2.4, AEMO and the Market Participant must use best endeavours to find an alternative time for the Scheduled Generator to be put into a state where it will take more than four hours to re-synchronise in accordance with the WEM Rules **[Clause 3.21B.6]**.

- 5.2.7. AEMO must log the reasons when permission to synchronise or de-synchronise is refused.

### **5.3. Creation of Dispatch Instructions and Dispatch Orders**

- 5.3.1. AEMO must create Dispatch Instructions and Dispatch Orders in such a way as to ensure the Dispatch Criteria in the WEM Rules **[Clause 7.6.1]** are met at all times.
- 5.3.2. AEMO must, wherever practicable, create Dispatch Instructions and Dispatch Orders using a mathematical program.



- 5.3.3. The WEM Rules [**Clauses 7.6.1A, 7.6.1B, 7.6.1C, 7.6.1D and 7.6.1E**] stipulate the priority rules that AEMO must follow in formulating Dispatch Instructions.
- 5.3.4. AEMO must [**Clause 7.6.1A**] give priority to the dispatch of a Registered Facility under a Network Control Service Contract if doing so would assist AEMO to meet the Dispatch Criteria. AEMO must consider that a Network Control Service Contract would assist it to meet the Dispatch Criteria if AEMO considers that:
- (a) the dispatch of the power system without calling upon the Network Control Service Contract would adversely affect Power System Security; and
  - (b) dispatching the Facilities covered by the NCS Contract according to the terms of the contract would prevent the circumstances described in step 5.3.4(a) from arising or alleviate them if they have already arisen.
- 5.3.5. AEMO may [**Clause 7.6.1B**] give priority to the issuing of Operating Instructions that call on Ancillary Services, Network Control Service or Supplementary Capacity Contracts, or enable a Test. AEMO must, as far as possible without breaching its obligations in relation to maintaining Power System Security, apply its discretion in the following manner:
- (a) Network Control Service Contracts must be called upon in accordance with step 5.3.4 or as otherwise specified in the WEM Rules;
  - (b) Ancillary Services Contracts must be called upon in accordance with the terms of the contract in accordance with AEMO's approved Ancillary Services Plan and in a way that at all times meets the Ancillary Services Standards;
  - (c) Supplementary Capacity Contracts must be called upon in accordance with the terms of the contract; and
  - (d) Tests must be scheduled in accordance with the Power System Operation Procedure: Commissioning and Testing.
- 5.3.6. AEMO must [**Clause 7.6.1C**] take into account Ramp Rate Limits when formulating Dispatch Instructions in accordance with the Balancing Merit Order. For the avoidance of doubt:
- (a) a Facility that is below the balancing point in the BMO and is not dispatched for its full offered quantity, but that is dispatched for the maximum quantity its Ramp Rate Limit implies it is capable of achieving in the Trading Interval, must be considered to have been dispatched "in merit"; or
  - (b) a Facility that is above the balancing point in the BMO and is dispatched for a non-zero quantity, being the minimum quantity its Ramp Rate Limit implies it is capable of achieving, must be considered to have been dispatched "in merit".

*AEMO will not consider Standing Data minimum generation constraints when formulating Dispatch Instructions in accordance with the BMO. Market Participants must prepare their Balancing Submissions in such a way as to achieve either dispatch above minimum generation, or de-commitment. When AEMO issues Out of Merit Dispatch Instructions in accordance with Market Rule 7.6.1C(b), it will however observe minimum generation constraints.*

- 5.3.7. Where AEMO determines in accordance with the WEM Rules **[Clause 7.7.4A]** that dispatch of a Non-Balancing Facility is required, AEMO must apply the following process to select the Non-Balancing Facility or Facilities from the Dispatch Merit Order while acting in accordance with the WEM Rules **[Clause 7.6.1C]**:
- (a) exclude from selection any Non-Balancing Facility that could not offer the required response inside its specified minimum response time or for any other Standing Data limitation;
  - (b) exclude from selection any Non-Balancing Facility that AEMO reasonably believes, on the basis of the Pre-Dispatch Plan described in step 4.1, will be required to be dispatched at some later time within the Balancing Horizon so that its dispatch at that later time would provide a larger benefit in terms of system security than its dispatch to meet immediate system needs and that the Standing Data limitations under which the Facility may be dispatched preclude it from being dispatched on both occasions;
  - (c) exclude from selection any Non-Balancing Facility that AEMO reasonably believes will be required to be dispatched at some later time (or times) outside of the Balancing Horizon so that its dispatch at that later time (or times) would provide a larger benefit in terms of system security than its dispatch to meet immediate system needs and that the Standing Data limitations under which the Facility may be dispatched may preclude it from being dispatched on all occasions;
  - (d) as in the Pre-Gate Closure actions (step 4.8.2), Dispatch Non-Balancing Facilities according to the Non Balancing Dispatch Merit Order using best endeavours to maximise the extent to which the resulting Non-Balancing Facility Dispatch Instruction Payments are zero **[Clause 6.17.6C]** in preference to causing any Tranche 2 DSM Dispatch Payments or Tranche 3 DSM Dispatch Payments to be payable; and
  - (e) AEMO may request the Market Participant to provide the relevant current consumption **[Clause 7.6.10A]** in a manner agreed to between the parties in accordance with step 4.8.1.

## 5.4. Creation of Operating Instructions

5.4.1. AEMO must issue Operating Instructions to:

- (a) call on services provided by Facilities (other than Facilities in the Balancing Portfolio) under a Network Control Service Contract, an Ancillary Service Contract, or a Supplementary Capacity Contract; or
- (b) call on Stand Alone Facilities to provide Ancillary Services other than LFAS but including LFAS Backup Enablement; or
- (c) in connection with a Test.

5.4.2. Where AEMO identifies, based on the BMO or Forecast BMO, that a Facility's Balancing Submission is inconsistent with an Operating Instruction to that Facility, AEMO may send a warning to the Market Participant.

*The obligation to ensure dispatch consistent with Operating Instructions remains with the Market Participant. Any warning from System Management is provided for information only.*

- 5.4.3. Where a Market Participant with a contract to provide Ancillary Services or a Network Control Service provides the contracted service automatically and in accordance with the terms of the contract, AEMO must communicate the Operating Instruction to the relevant Market Participant as early as practicable.

*Where AEMO is required to call on a Network Control Service from a Facility whose Standing Data notice period is less than gate closure, AEMO will issue the Operating Instruction immediately after gate closure based on the Forecast BMO. The Network Control Service Facility may then update its Balancing Submission after gate closure, as allowed under the WEM Rules **[Clause 7A.2.10]**.*

*Note the above only applies where the Network Control Service is for the provision of real power. Calling a Network Control Service Contract for reactive power will be done by a direction, i.e. outside the market.*

## 5.5. Issuing of Dispatch Instructions and Dispatch Orders

- 5.5.1. The WEM Rules detail the requirements for Dispatch Instructions **[Clauses 7.7.1, 7.7.2 and 7.7.3]** and Dispatch Orders.
- 5.5.2. All Dispatch Instructions and Dispatch Orders for a Facility remain in force until superseded by a new Dispatch Instruction or Dispatch Order.
- 5.5.3. Dispatch Instructions to Demand Side Programmes will be expressed in terms of quantity of curtailment. The Dispatch Instruction will consider the amount of load indicated to be available for curtailment as per the latest Non-Balancing Dispatch Merit Order as well as the number of hours for which this reduction is possible.
- 5.5.4. AEMO must issue Dispatch Instructions and Dispatch Orders electronically via one of the following methods (in order of preference):
- (a) SCADA, if available; or
  - (b) AEMO's interface to its market system; or
  - (c) email (SMS may be used as an adjunct to email); or
  - (d) telephone (or other voice communication), with subsequent confirmation by one of the means above.
- 5.5.5. Other than for Facilities over which AEMO has direct control and so the Facility is capable of responding faster, when dispatching Facilities in merit **[Clause 7.6.1C(a)]** or Out of Merit **[Clause 7.6.1C(b)]** AEMO must provide at least 5 minutes between the issuing and commencement time of Dispatch Instructions and Dispatch Orders.
- 5.5.6. AEMO must respect Standing Data minimum response times when issuing Dispatch Instructions or Dispatch Orders to Facilities Out of Merit for system security reasons under clause 7.6.1C(c) of the WEM Rules, unless advised otherwise by the Market Participant concerned.
- 5.5.7. Where it is not practicable for AEMO to issue Dispatch Instructions or Dispatch Orders in the manner described in step 5.5.4, AEMO may use such other means as it deems best suited to the circumstances and the requirements of step 5.5.4 shall be deemed to have been fulfilled.

5.5.8. If :

- (a) the system frequency moves above 50.025Hz or below 49.975Hz; and
- (b) the governor of a generator facility which does not carry an obligation to provide a Spinning Reserve Service or Load Following Service automatically moves the generator away from its most recent Dispatch Instruction to a point outside its Tolerance Range in a manner that assists reducing the frequency deviation,

then, when advising the Economic Regulation Authority of a breach by the relevant Market Participant of the WEM Rules **[Clause 7.10.1]**, AEMO must indicate that the deviation was due to an automatic governor response. To ensure a controlled restoration of the frequency back to 50Hz, AEMO may issue Dispatch Instructions or Dispatch Orders to hold some Facilities at levels they have stabilised at after the frequency disturbance.

*The Technical Rules requires that each generating unit operating in parallel with the SWIS must have its governor enabled and governor response set at 4% droop, and have governor frequency dead band of less than 0.05 Hz. Refer to clauses 3.3.4.4(d) and (e) of the Technical Rules.*

*The above step is included to ensure that penalties are not imposed upon Market Generators that respond to assist in the event of a system emergency.*

## 5.6. Response to Dispatch Instructions and Dispatch Orders

5.6.1. Where AEMO has operational control of a Facility, AEMO must deem any Dispatch Instruction or Dispatch Order issued to that Facility to have been accepted.

*For the avoidance of doubt, System Management is still required to issue Dispatch Instructions to Facilities under its operational control **[Clause 7.8.2]**.*

5.6.2. Where AEMO issues a Dispatch Instruction to a Market Participant by telephone or other voice communication, the Market Participant must advise AEMO during that conversation if it cannot comply with the Dispatch Instruction and if so advise the extent and nature of its non-compliance.

5.6.3. Where AEMO issues a Dispatch Instruction or Dispatch Order via telephone or other voice communication and subsequently provides a confirmation of the Dispatch Instruction or Dispatch Order via AEMO's interface to its market system, the Market Participant is not required to provide a response to this subsequent electronic notification, unless there has been a change in circumstances and the Market Participant cannot comply with the Dispatch Instruction or Dispatch Order.

5.6.4. A Market Participant must confirm receipt of a Dispatch Instruction or Dispatch Order issued via SCADA within 30 seconds of receipt. If the Facility is unable to comply with the Dispatch Instruction or Dispatch Order, the Market Participant must also advise AEMO by telephone or other voice communication that it cannot comply and the nature and extent of its non-compliance.

- 5.6.5. A Market Participant must confirm receipt of a Dispatch Instruction or Dispatch Order issued via AEMO's secure business-to-business gateway within 1 minute. If the Facility is unable to comply with the Dispatch Instruction or Dispatch Order, the Market Participant must also advise AEMO by telephone or other voice communication that it cannot comply and the nature and extent of its non-compliance.
- 5.6.6. Where a Market Participant receives Dispatch Instructions or Dispatch Orders for a Facility via AEMO's portal, and the Market Participant receives one or more Dispatch Instructions or Dispatch Orders for the Facility and a Trading Interval over the period ending 5 minutes before the start of the Trading Interval, the Market Participant must, by no later than 3 minutes before the start of the Trading Interval:
- identify the most recent Dispatch Instruction or Dispatch Order received for the Facility and Trading Interval in the period ending 5 minutes before the start of the Trading Interval;
  - if the Facility is unable to comply with this Dispatch Instruction or Dispatch Order, advise AEMO by telephone or other voice communication that it cannot comply and the nature and extent of its non-compliance; and
  - confirm receipt of this Dispatch Instruction or Dispatch Order via AEMO's portal.

*The Market Participant may, but is not required to respond to any earlier Dispatch Instructions or Dispatch Orders received for the Facility and Trading Interval in this period.*

- 5.6.7. Where a Market Participant advises AEMO that it cannot comply with its Dispatch Instruction or Dispatch Order, AEMO must:
- issue a new Dispatch Instruction or Dispatch Order to the Market Participant consistent with their advised capability, and record an alleged breach of the original Dispatch Instruction or Dispatch Order;

*If, under clause 7.7.6B, a Market Participant notifies AEMO that its Facility cannot meet a Dispatch Instruction and advises a reduced quantity or Ramp Rate, AEMO is obliged to use the generator to the maximum of that reduced quantity or Ramp Rate possible. For example, if a Dispatch Instruction was to move from 20 MW to 60 MW at a Ramp Rate of 6 MW/minute, and the Market Participant advises that it can only deliver 40 MW, then System Management must issue a second Dispatch Instruction to move to 40 MW. Alternatively, if the Market Participant advises that it can reach 60 MW but only at a Ramp Rate of 4 MW/minute, then AEMO must issue a Dispatch Instruction to move to 60 MW at 4 MW/minute.*

- issue Dispatch Instructions or Dispatch Orders to other Facilities as required; and
- issue a Dispatch Advisory notice to advise the market of dispatch Out of Merit (where applicable).

- 5.6.8. Where AEMO does not receive confirmation that a Dispatch Instruction or Dispatch Order has been received within 3 minutes of the start of the Trading Interval to which the Dispatch Instruction relates, AEMO must deem the Dispatch Instruction or Dispatch Order to have been refused. AEMO must then:
- send the Market Participant concerned a new Dispatch Instruction or Dispatch Order instructing them to stay at the output specified on their last accepted Dispatch Instruction or Dispatch Order;
  - record an alleged breach of the Dispatch Instruction or Dispatch Order to which the Facility did not respond;
  - issue Dispatch Instructions or Dispatch Orders to other Facilities as required; and
  - issue a Dispatch Advisory notice to advise the market of dispatch Out of Merit (where applicable).

## 5.7. Issuing of and response to Operating Instructions

- 5.7.1. The WEM Rules detail the requirements for Operating Instructions **[Clause 7.7.3A]**.
- 5.7.2. AEMO must issue Operating Instructions electronically via one of the following methods (in order of preference):
- email (SMS may be used as an adjunct to email); or
  - telephone (or other voice communication), with subsequent confirmation by email.
- 5.7.3. A Market Participant must confirm receipt of an Operating Instruction by email as soon as practicable. If the Market Participant cannot comply with the Operating Instruction, then the email must advise that the Market Participant cannot comply and the nature and extent of the non-compliance.
- 5.7.4. If, after issuing an Operating Instruction for the provision of an Ancillary Service, Network Control Service or service provided under a Supplementary Capacity Contract, AEMO requires the service provision to be extended beyond the estimated end time provided in the Operating Instruction, AEMO must issue another Operating Instruction for the expected period of the extension.

*For the avoidance of doubt, a Market Participant must not modify the output level of its Balancing Facility simply because it has received an Operating Instruction for that Facility, but only in response to a Dispatch Instruction. AEMO will issue any required Dispatch Instructions to the Balancing Facility as appropriate.*

## 5.8. Dispatch of generating Facility for system security

- 5.8.1. AEMO may issue a Dispatch Instruction or Dispatch Order requiring a Facility to move from zero generation to positive generation, or vice versa, where doing so is necessary to maintain Power System Security.

*Dispatch Instructions/Dispatch Orders referred to in step 5.8.1 are implicitly instructions to synchronise and operate (commit) or de-synchronise (de-commit). The Dispatch Instruction protocol does not allow for explicit commit/de-commit instructions.*



- 5.8.2. When the system is forecast to move into a High Risk Operating State, AEMO must observe as far as practicable the BMO or Forecast BMO for the Trading Intervals in which the threat to Power System Security occurs when selecting the Facility or Facilities to commit.
- 5.8.3. AEMO may select the Facility or Facilities to commit that provide the most flexibility for AEMO to deal with current or potential threats to Power System Security when the system is:
- (a) in a High Risk Operating State;
  - (b) in an Emergency Operating State; or
  - (c) forecast to move into an Emergency Operating State.

*In general, step 5.8.3 will result in the preferential commitment of large, fast-moving and/or flexible generating units.*

## 5.9. Activation of Load Following Ancillary Service

- 5.9.1. AEMO must activate Load Following Ancillary Service from units scheduled to provide the service via AEMO's AGC system.

## 6. TRADING INTERVAL

### 6.1. Real-time monitoring during a Trading Interval

- 6.1.1. AEMO must monitor the operation of the power system in real time and must issue Dispatch Instructions or Dispatch Orders to re-balance if it considers that it is prudent to do so.
- 6.1.2. AEMO must not re-balance during a Trading Interval (including to return LFAS Facilities to their base point prior to the end of the Trading Interval) except to the extent that re-balancing is required to maintain Power System Security and meet the Dispatch Criteria.
- 6.1.3. In determining whether it is prudent to re-balance, AEMO must consider a range of factors including but not limited to one or more of the following:
- (a) system frequency;
  - (b) position of LFAS Facilities relative to their AGC control target;
  - (c) any reduction in Spinning Reserve;
  - (d) the behaviour of Balancing Facilities, in particular Facilities outside their Tolerance Range or, if applicable, Facility Tolerance Range;
  - (e) significant changes in load or wind forecasts;
  - (f) the behaviour of generators involved in commissioning activities or undergoing a Commissioning Test; or
  - (g) the time remaining until the end of the Trading Interval.

*System Management will establish a Tolerance Range [Clause 2.13.6D] and Facility Tolerance Ranges [Clause 2.13.6E] according to the requirements of the WEM Rules.*

- 6.1.4. AEMO must create and issue any Dispatch Instructions or Dispatch Orders required to re-balance in accordance with the priority rules stipulated in the WEM Rules **[Clauses 7.6.1A, 7.6.1B, 7.6.1C 7.6.1D and 7.6.1E]**.
- 6.1.5. If a Facility is outside its Tolerance Range or, if applicable, Facility Tolerance Range and AEMO determines it is prudent to re-balance, AEMO must:
- (a) record an alleged breach of the relevant Dispatch Instruction;
  - (b) issue the affected Facility with a new Dispatch Instruction to stay at its current output level; and
  - (c) issue new Dispatch Instructions as required in accordance with the BMO, skipping the affected Facility.
- 6.1.6. If the Facility is outside its Tolerance Range or, if applicable, Facility Tolerance Range and AEMO determines that no re-balancing is required, AEMO must record an alleged breach of the relevant Dispatch Instruction.

*System Management may follow up verbally with the Market Participant but will take no further action for so long as re-balancing is not required.*

## **6.2. Formulation and issuing of intermediate Dispatch Instructions and Dispatch Orders**

- 6.2.1. AEMO may issue one or more Dispatch Instructions to a single Facility within a Trading Interval.
- 6.2.2. AEMO must provide voice communications as well as electronic notifications for Dispatch Instructions whose response time is in the same Trading Interval as its issued time, unless:
- (a) AEMO has operational control of the Facility; or
  - (b) Dispatch Instructions are issued to the Facility via SCADA or AEMO's secure business-to-business gateway.

*AEMO will need to issue intermediate Dispatch Instructions and Dispatch Orders to manage intra-period changes in ramp rate, contingency events, fluctuations in net system load outside the Load Following range, and for other reasons.*

- 6.2.3. If, in the opinion of AEMO, a Facility providing LFAS is not adequately complying with its performance requirements, AEMO should investigate the reasons for non-performance and may at its discretion initiate the disabling of the non-performing LFAS Facility and enabling of a Synergy Registered Facility to provide some or all of the LFAS that was meant to be provided by the disabled LFAS Facility as backup LFAS **[Clause 7B.3.8]**. The performance requirements for an LFAS Facility are documented in the Power System Operating Procedure: Ancillary Services.



- 6.2.4. AEMO may enable one or more Synergy Registered Facilities to provide backup LFAS if the quantity of LFAS required by AEMO in a Trading Interval is greater than the most recent LFAS Quantity published for the Trading Interval.

### 6.3. Constrained operation of a Non-Scheduled Generator

- 6.3.1. AEMO may issue a Dispatch Instruction to a Market Participant with a Non-Scheduled Generator to restrict the MW or MWh output of the Non-Scheduled Generator over specified Trading Intervals where the Dispatch Criteria are not being met, to restrict the variability that is occurring in the MW output from the Facility, if a High Risk Operating State or Emergency Operating State exists, or if adherence to the Balancing Merit Order requires it.
- 6.3.2. The reasons for non-observance of the limits of SWIS operation as defined in the Technical Envelope may include, but are not limited to one or more of the following:
- the Ancillary Service Requirements are not being satisfied; or
  - operation of the Non-Scheduled Generator is causing voltage swings in the region of the Facility's connection to the Network to exceed the range permitted by the Technical Rules or Security Limits; or
  - operation of the Non-Scheduled Generator is causing Equipment Limits or Security Limits to be exceeded; or
  - operation of the Non-Scheduled Generator is causing frequency deviations to exceed the normal frequency operating range.
- 6.3.3. In determining whether to constrain the operation of a Non-Scheduled Generator, AEMO may take account of the extent of any difference between the current operation of the generator, and any forecast of that generator's operation used to set the requirement for LFAS.

*Except where required by the BMO, AEMO will generally only constrain Non-Scheduled Generator operation if the intermittency of that generator significantly exceeds what was planned for when setting the LFAS requirement.*

*Turn-down price, except for a marginal Non-Scheduled Generator being dispatched in accordance with the BMO, plays no role in AEMO's decisions with respect to constraining Non-Scheduled Generators.*

### 6.4. Voltage control

- 6.4.1. AEMO may, in accordance with the Technical Rules, direct a Facility to change its reactive power output to assist with voltage control on the SWIS.

*The Technical Rules (current as of December 2016) require "The overriding objective of a generating unit's voltage control system is to maintain the specified voltage range at the connection point."*

*This may reduce the capacity of a Facility to a level below its Dispatch Instruction. AEMO would then have to increase MW output from the next generator on the BMO. AEMO would issue a Dispatch Advisory and Dispatch Instructions for this instance. Similarly if voltage issues on the network*

*required AEMO to modify the generation plan across the SWIS (say move MW generation from one part of the SWIS to another to remove the voltage constraint), AEMO would have to issue a Dispatch Advisory, dispatch as per BMO if the market did respond or dispatch Out of Merit as per Standing Data if the market did not respond.*

## 7. DISPATCH SETTLEMENT DATA

### 7.1. Introduction

- 7.1.1. The requirements for AEMO to prepare settlement data are specified in clause 7.13 of the WEM Rules.
- 7.1.2. If AEMO is prevented from completing the processes that enable the recording of the data it may delay the recording of the data by up to two Business Days **[Clause 7.13.1B]**.

### 7.2. Quantification of Constrained off Quantities

- 7.2.1. Where AEMO requires a Non-Scheduled Generator to reduce output in a Trading Interval, AEMO must prepare an estimate of the maximum quantity of sent out energy in MWh which the Non-Scheduled Generator would have generated in that Trading Interval had a Dispatch Instruction not been issued **[Clause 7.13.1(eF)]**.
- 7.2.2. AEMO may use, at its discretion, any of the following means to estimate the quantity referred to in step 7.2.1:
  - (a) a predictive algorithm provided by the Market Participant, providing an assessment of the Non-Scheduled Generator's MWh output from relevant independent variables over the Trading Interval;
  - (b) a predictive algorithm developed by AEMO, providing an assessment of the Non-Scheduled Generator's MWh output from relevant independent variables over the Trading Interval;
  - (c) an assessment by AEMO based on output of the Non-Scheduled Generator in a past Trading Interval under similar conditions;
  - (d) an estimate using Market Participant data provided to AEMO that uses output data from particular generating facilities that continue to operate unconstrained after the Dispatch Instruction, with the output data subsequently scaled up to represent the output from all generating facilities that otherwise would have operated.
- 7.2.3. AEMO must, from time to time, consult with the relevant Market Participant concerning the choice of option selected by AEMO in step 7.2.2.

### 7.3. Calculation of Spinning Reserve Response Quantities

- 7.3.1. Where a Facility provides a Spinning Reserve Response for a Spinning Reserve Event, AEMO must determine the response period of the Facility for the Spinning Reserve Event as the period which starts at the time of the Spinning Reserve Event and has a duration equal to the longest sustained response time of the classes of

Spinning Reserve the Facility is certified to provide (defined in the Power System Operation Procedure: Ancillary Services).

- 7.3.2. If for a Facility and a Trading Interval there is no Spinning Reserve Event for which the Facility's response period, as determined in step 7.3.1, overlaps the Trading Interval, then AEMO must determine the Spinning Reserve Response Quantity for that Facility and Trading Interval to be zero.
- 7.3.3. Where a Spinning Reserve Event has occurred, the Spinning Reserve Response Quantity of each Facility in each Trading Interval overlapping its response period must be calculated according to the formula:

$$\text{RESP} = \text{Max} (0, \text{AVG\_MW}(\text{Start\_Time}, \text{End\_Time}) - G_0) / (\text{Duration\_Mins}/60) - \text{LFAS}_{\text{up}}$$

Where:

RESP is the Spinning Reserve Response Quantity in MWh for the Facility in the Trading Interval;

AVG\_MW(Start\_Time, End\_Time) is the average MW output of the Facility over the period between Start\_Time and End\_Time, measured at the generator terminals by AEMO's SCADA system with a resolution of 4 seconds or less;

G<sub>0</sub> is the MW output of the Facility at the time of the Spinning Reserve Event, measured at the generator terminals by AEMO's SCADA system;

Start\_Time is the later of the start time of the Trading Interval and the start time of the response period determined in step 7.3.1;

End\_Time is the earlier of the end time of the Trading Interval and the end time of the response period determined in step 7.3.17.3.1;

Duration\_Mins is the time, in minutes, between Start\_Time and End\_Time.

LFAS<sub>up</sub> = the Upwards LFAS Enablement or Upwards LFAS Backup Enablement applicable for that time period

- 7.3.4. The Spinning Reserve Response Quantity for the Balancing Portfolio in a Trading Interval is the sum of the Spinning Reserve Response Quantities of the individual Facilities within the Balancing Portfolio.

## 7.4. Calculation of Load Rejection Reserve Response Quantities

- 7.4.1. Where a Facility provides a Load Rejection Reserve Response for a Load Rejection Reserve Event, AEMO must determine the response period of the Facility for the Load Rejection Reserve Event as the period which starts at the time of the Load Rejection Reserve Event and has a duration equal to the longest sustained response time of the classes of Load Rejection Reserve the Facility is certified to provide (defined in the Power System Operation Procedure: Ancillary Services).

- 7.4.2. If for a Facility and a Trading Interval there is no Load Rejection Reserve Event for which the Facility's response period, as determined in step 7.4.1, overlaps the Trading Interval then AEMO must determine the Load Rejection Reserve Response Quantity for that Facility and Trading Interval to be zero.
- 7.4.3. Where a Load Rejection Reserve Event has occurred, the Load Rejection Reserve Response Quantity of each Facility in each Trading Interval overlapping its response period must be calculated according to the formula:

$$\text{RESP} = \text{Max} (0, G0 - \text{AVG\_MW} (\text{Start\_Time}, \text{End\_Time}) / \text{Duration\_Mins}/60) - \text{LFAS}_{\text{down}}$$

Where:

RESP is the Load Rejection Reserve Response Quantity in MWh for the Facility in the Trading Interval;

AVG\_MW(Start\_Time, End\_Time) is the average MW output of the Facility over the period between Start\_Time and End\_Time, measured at the generator terminals by AEMO's SCADA system with a resolution of 4 seconds or less;

G0 is the MW output of the Facility at the time of the Load Rejection Reserve Event, measured at the generator terminals by AEMO's SCADA system;

Start\_Time is the later of the start time of the Trading Interval and the start time of the response period determined in step 7.4.1

End\_Time is the earlier of the end time of the Trading Interval and the end time of the response period determined in step 7.4.1

Durations\_Mins is the time, in minutes, between Start\_Time and End\_Time.

LFAS<sub>down</sub> = the Downwards LFAS Enablement or Downwards LFAS Backup Enablement applicable for that time period

- 7.4.4. The Load Rejection Reserve Response Quantity for the Balancing Portfolio in a Trading Interval is the sum of the Load Rejection Reserve Response Quantities of the individual Facilities within the Balancing Portfolio.

## 7.5. SOI and EOI estimates

- 7.5.1. AEMO must determine the SOI Quantity for a Facility and a Trading Interval to be the EOI Quantity of the previous Trading Interval.
- 7.5.2. The EOI Quantity for a Facility and a Trading Interval will be the latest recorded value from AEMO's SCADA system within that Trading Interval.
- 7.5.3. AEMO may substitute this value if it has reason to believe it is inaccurate or if SCADA values were not recorded for the Trading Interval concerned.
- 7.5.4. Subject to step 7.5.5, where AEMO does not monitor the output of a Facility by use of SCADA, AEMO must determine the EOI Quantity for the Facility for each Trading

Interval as the MW offer quantity listed for that Facility in the BMO used by AEMO for the Trading Interval.

- 7.5.5. Where AEMO has reason to believe that an EOI Quantity determined in step 7.5.4 is inaccurate AEMO may determine and provide a substitute value.

## **7.6. Demand Side Programme curtailment request**

- 7.6.1. For the purpose of the calculation of the amount in MWh by which the Facility was requested to decrease its consumption **[Clause 7.13.5(a)]**, the following will be assumed:
- (a) If an instruction is given that the demand should be reduced by a specific time then the calculation will be done assuming a reduction starting at the necessary time to achieve the final reduction by the prescribed time according to the ramp rate included in the Dispatch Instruction **[Clause 7.6.1C(d)]**. This ramp rate will take into account the Ramp Rate Limit provided in the Standing Data.
  - (b) If an instruction is given to reduce demand as quickly as possible, then the calculation will assume the starting time as the time of the Dispatch Instruction and the ramp rate as provided in the Dispatch Instruction, to determine the instructed reduction.

## **8. ADMINISTRATION AND REPORTING IN RELATION TO SYNERGY**

### **8.1. Limitation of requirements for Synergy**

- 8.1.1. The requirements of steps 8.2, 8.3 and 8.4 apply only to steps 3 and 4.7.

### **8.2. Reporting in relation to Synergy's WEM Rules obligations**

- 8.2.1. The requirements for AEMO to report to the Economic Regulation Authority any instance where it believes that Synergy has failed to meet its obligations under this Procedure are specified in the WEM Rules **[Clauses 7.6A.5(c) and 7.6A.5(e)]**.
- 8.2.2. The reports referred to in step 8.2.1 must be submitted as soon as practicable after the occurrence of the event, or after either party becomes aware of the event.

### **8.3. Appointment of Representative**

- 8.3.1. Synergy and AEMO must:
- (a) each appoint a representative who must act as the formal point of contact with regard to the operation of this Procedure;
  - (b) provide each other and the Economic Regulation Authority with the name, title and contact details of its representative; and
  - (c) maintain the appointed representative's currency.

### **8.4. Keeping of Records**

- 8.4.1. The requirements for Synergy and AEMO to retain records created by the operation of this Procedure are specified in the WEM Rules **[Clause 7.6A.6]**.

## 8.5. Failure to Agree on an issue within the Procedure

- 8.5.1. The requirements for AEMO and Synergy to address and reach agreement on any issues arising from the application of this Procedure are specified in the WEM Rules **[Clause 7.6A.5(b)]**.
- 8.5.2. Where agreement cannot be reached and arbitration is required, the party seeking arbitration must, in good faith, seek to agree with the other party on an arbitrator.
- 8.5.3. If, within 7 days, the parties are unable to agree on an arbitrator, the Economic Regulation Authority shall be the arbitrator.
- 8.5.4. Within 7 days of the appointment of an arbitrator, the party seeking arbitration must provide the arbitrator with a report setting out:
- (a) a description of the issue in dispute;
  - (b) the background to the dispute and a description of the endeavours of the parties to resolve the issue; and
  - (c) the position of both parties on the issue, including what is required to resolve the dispute.
- 8.5.5. The party submitting the report must provide a copy of the report to the other party at the same time the report is submitted to the arbitrator.
- 8.5.6. The other party must submit its own report on the issue to the arbitrator within 2 Business Days of the receipt of the report referred to in step 8.5.5.
- 8.5.7. In reviewing the issue, the arbitrator must have regard to the following, in order of precedence:
- (a) the WEM Rules;
  - (b) this Procedure;
  - (c) other Market Procedures and Power System Operation Procedures; and
  - (d) the alignment of the above to the Wholesale Market Objectives in the context of the issue.
- 8.5.8. The arbitrator may seek further information from either party, and this information must be provided within 2 Business Days of receipt of the request.
- 8.5.9. The arbitrator must provide its draft recommendation to Synergy and AEMO within 10 Business Days of the receipt of the report in step 8.5.5. Both parties have 2 Business Days to provide the arbitrator with comments on the draft recommendation.
- 8.5.10. The arbitrator must, within 2 Business Days of receiving comments, issue a binding decision.

## 9. EXEMPTIONS TO COMMITMENT AND DE-COMMITMENT NOTIFICATION REQUIREMENTS

### 9.1. Application for exemption from a Market Participant with a distribution connected Scheduled Generator

- 9.1.1. A Market Participant with a Scheduled Generator connected to a distribution network that has operating equipment and processes which enable it to synchronise and de-synchronise only when it is safe to do so, may apply in writing to AEMO for an exemption from providing notification to AEMO under clauses 7.9.1 and 7.9.5 of the WEM Rules [**Clause 7.9.13**].
- 9.1.2. The Market Participant's written application for exemption must advise that its Scheduled Generator has operating equipment and processes to enable it to synchronise and de-synchronise only when it is safe to do so. For guidance, the Scheduled Generator must meet the requirements of section 3.6 of the Technical Rules and in particular the provisions of clause 3.6.11 of the WEM Rules.

*Section 3.6 of the Technical Rules sets out the requirements for connection of small generating units to the distribution network. Clause 3.6.11 of the Technical Rules specifies "...the Network Service Provider may also require the installation of an intertripping link between the Generator's main switch(es) and the feeder circuit breaker(s) in the zone substation or other upstream protection device nominated by the Network Service Provider".*

- 9.1.3. The written application for an exemption described in step 9.1.1 must be directed to AEMO via email (wa.sm.operations@aemo.com.au) and signed by an Authorised Officer.

### 9.2. AEMO's assessment of the application

- 9.2.1. AEMO will assess a written application made under step 9.1.1 by reviewing the SCADA and protection systems to ensure that the criteria referred to in step 9.1.2 is satisfied.
- 9.2.2. Upon verification by AEMO that the Scheduled Generator satisfies the criteria set out in step 9.1.2, the Market Participant will be deemed to have operating equipment and processes which enable its distribution connected Scheduled Generator to synchronise and de-synchronise only when it is safe to do so, therefore qualifying for an exemption [**Clause 7.9.14**].
- 9.2.3. If AEMO is unable to verify that the Market Participant's distribution connected Scheduled Generator satisfies the criteria set out in step 9.1.2 then the Market Participant will not at that time be deemed to have operating equipment and processes which enable its distribution connected Scheduled Generator to synchronise and de-synchronise only when it is safe to do so, therefore not qualifying for an exemption.



### 9.3. AEMO's determination

- 9.3.1. AEMO must provide written notification to a Market Participant of the outcome of its assessment made under step 9.2 as follows:
- (a) if step 9.2.2 applies, the Market Participant will be advised that the distribution connected Scheduled Generator for which the application was made is exempt from clauses 7.9.1 and 7.9.5 of the WEM Rules, including the reasons for the decision and the effective date of the exemption; or
  - (b) if step 9.2.3 applies, the Market Participant will be advised that the distribution connected Scheduled Generator does not qualify for an exemption from clauses 7.9.1 and 7.9.5 of the WEM Rules, including the reasons for this decision.
- 9.3.2. AEMO will use best endeavours to complete its assessment under step 9.2 and provide written notice of its determination under step 9.3.1 within 10 Business Days of receiving an application under step 9.1.1.
- 9.3.3. Where written notification pursuant to step 9.3.1(b) is provided advising that the Scheduled Generator does not qualify for an exemption, the Market Participant may re-apply at any time following the steps set out in step 9.1.

### 9.4. Revocation of an exemption

- 9.4.1. A Market Participant must notify AEMO in writing via email<sup>6</sup> as soon as it becomes aware that it no longer satisfies the criteria referred to in step 9.1.2 or any other matter or thing which might prevent the exempted Scheduled Generator from synchronising or de-synchronising safely [**Clause 7.9.16**].
- 9.4.2. Upon assessing the information provided in the notification under step 9.4.1, or in the event that it becomes aware of any other information, AEMO may revoke an exemption if it is no longer satisfied that the Scheduled Generator meets the requirements assessed under step 9.4.1.
- 9.4.3. AEMO will notify the Market Participant of its decision to revoke an exemption in writing as soon as practicable after it has made its assessment under step 9.4.2. The notification will include reasons for its decision and the date and time from which the exemption will cease to apply [**Clause 7.9.17**].

### 9.5. List of exempt distribution connected Scheduled Generators

- 9.5.1. AEMO will publish and maintain a list of Scheduled Generators subject to exemptions under clauses 7.9.1 and 7.9.5 of the WEM Rules on AEMO's website [**Clause 7.9.18**].<sup>7</sup>
- 9.5.2. The published list will include the details of the Market Participant and Facility and the date on which the exemption was granted.
- 9.5.3. A Scheduled Generator will be added to the published list as soon as practicable after the granting of an exemption.

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<sup>6</sup> To [wa.sm.operations@aemo.com.au](mailto:wa.sm.operations@aemo.com.au).

<sup>7</sup> See <https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Security-and-reliability/Facility-commitment-notification-exemptions>.



- 9.5.4. Where an exemption is revoked for a Scheduled Generator, it will be removed from the list as soon as practicable after the revocation occurs.

## APPENDIX 1: LIST OF DISPATCH ADVISORY NOTICE TYPES

DA type code	Description
A	Change in Power System Operating State
B	Energy shortfall
C	Energy surplus
D	Ramp rate shortfall
E	Ancillary Service shortfall
F	Ready Reserve shortfall
G	Change in outage status
H	Out-of-merit dispatch
I	Excessive intermittency
J	Commitment risk
K	Communications / IT issue
L	Fuel management issue
M	DSP to be Dispatched
Z	Other