MARKET SUSPENSION: EXPOSURE DRAFT

PROPOSED WHOLESALE ELECTRICITY MARKET (WEM) AMENDING RULES

3.4. Satisfactory and Secure Operating States

3.4.1. The SWIS is in a Satisfactory Operating State when the SWIS is operating in accordance with all relevant requirements of the Technical Envelope.

3.4.2. The SWIS is in a Secure Operating State when the SWIS is able to return to a Satisfactory Operating State following a Credible Contingency Event in accordance with the Power System Security Principles and the requirements of the Technical Envelope.

3.4.3. The Power System Security Principles are:

(a) the power system should be operated such that it is and will remain in a Secure Operating State to the extent practicable;

(b) following a Contingency Event, AEMO should take all reasonable actions to return to a Secure Operating State as soon as possible, and in any case within 30 minutes, other than during a Low Reserve Condition or when in an Emergency Operating State;

(c) sufficient Inertia should be available to meet applicable Inertia Requirements; and

(d) sufficient capability should be maintained at applicable locations in the SWIS to meet the applicable Power System Stability Requirements, including any System Strength Requirements.

Explanatory Note

Clause 3.4.4 is amended to ensure AEMO is able to direct Facilities that do not have Registered Generator Performance Standards, or where the Registered Generation Performance Standards do not contain information relevant to the direction (e.g. Standing Data). In instances such as a market suspension, AEMO may be required to direct Facilities for extended periods using this information. This is particularly important to cover in situations where directions are being used frequently (e.g. WEMDE failure, or market suspension).

3.4.4. In order to restore and maintain Power System Security or Power System Reliability, AEMO may, in addition to the provisions specified in Chapter 7:

(a) reject Planned Outages that have not yet commenced;

(b) issue Outage Recall Directions;

(c) utilise the overload capacity of Scheduled Facilities (as indicated in Standing Data);

(d) direct Facilities to adjust output or operate in a particular way, in accordance with the Registered Generator Performance Standards applicable to the Facility where relevant, and otherwise in accordance with information available to AEMO;

(e) direct a Network Operator, in which case AEMO must first consult with the relevant Network Operator, to operate network equipment, or equipment under a Network Operator's control or direction, in specific ways; or

(f) direct a Network Operator, in which case AEMO must first consult with the relevant Network Operator, to disconnect generating equipment, load and/or other equipment connected to the Network Operator's network.

3.4.5. AEMO may take any other actions it considers are required, consistent with good electricity industry practice, in order to maintain Power System Security or Power System Reliability, having regard to the provisions specified in Chapter 7.

3.4.5A. Where AEMO issues a direction under clauses 3.4.4(d), 3.4.4(e) or 3.4.4(f) or takes any other action under clause 3.4.5, AEMO must record:

(a) the date and time of the direction or action;

(b) the name of the Registered Facility or relevant equipment impacted by the direction or action;

(c) the nature of the direction or action; and

(d) the reasons for the direction or action.

3.4.6. Rule Participants must:

(a) subject to clause 3.4.7, comply with directions issued by AEMO in accordance with clause 3.4.4; and

(b) use reasonable endeavours to assist AEMO to ensure the SWIS remains in a Satisfactory Operating State or Secure Operating State, including providing information and coordinating with AEMO on directions as required by AEMO.

3.4.7. A Rule Participant is not required to comply with a direction issued by AEMO, in accordance with clause 3.4.4, if such compliance would endanger the safety of any person, damage equipment, or breach any applicable law.

3.4.8. Where a Rule Participant cannot comply with a direction issued by AEMO in accordance with clause 3.4.4 it must notify AEMO immediately and provide the reasons why it cannot comply with the direction.

3.5. Emergency Operating State

3.5.1. The SWIS is in an Emergency Operating State when AEMO considers that circumstances exist on the SWIS that impact the ability of AEMO to operate the SWIS as intended in accordance with these WEM Rules.

3.5.1A. AEMO must develop a WEM Procedure which sets out conditions under which AEMO may declare an Emergency Operating State. To avoid doubt, the WEM Procedure referred to in this clause 3.5.1A does not limit the ability of AEMO to declare an Emergency Operating State.

3.5.2. An Emergency Operating State as defined in these WEM Rules does not necessarily correspond to a civil emergency, or emergencies as defined in legislation but may commence as a result of these.

3.5.3. AEMO must ensure that when it becomes aware of any actions by a Rule Participant that in AEMO's opinion would be reasonably likely to lead to an Emergency Operating State, AEMO takes all actions necessary and within its control to prevent the Rule Participant engaging in such actions.

3.5.4. When the SWIS is in an Emergency Operating State, AEMO must not require Registered Facilities to operate inconsistently with their Equipment Limits for the Emergency Operating State.

3.5.5. When the SWIS is in an Emergency Operating State, AEMO may in addition to any other ability AEMO has:

(a) direct any Rule Participant to provide Essential System Services where they are capable of doing so;

(b) issue directions to Rule Participants to operate Registered Facilities at a particular level or in a particular way; and

(c) take other actions as considered necessary, consistent with good electricity industry practice, in order to return the SWIS from the Emergency Operating State.

3.5.6. AEMO must ensure the SWIS returns from an Emergency Operating State as soon as possible.

3.5.7. Subject to clause 3.5.6, while operating under an Emergency Operating State, AEMO must attempt to ensure the SWIS operates according to the principles set out in clause 7.2.4, to the extent that is reasonably practicable to do so in the circumstances.

3.5.8. When the SWIS is in an Emergency Operating State, Rule Participants must:

(a) subject to clause 3.5.9, comply with directions issued by AEMO in accordance with clauses 3.4.4 and 3.5.5; and

(b) otherwise, use their best endeavours to assist AEMO to ensure the SWIS returns from the Emergency Operating State.

3.5.9. A Rule Participant is not required to comply with any directions issued by AEMO, in accordance with clause 3.5.5, if such compliance would endanger the safety of any person, damage equipment, or breach any applicable law.

3.5.10. Where a Rule Participant cannot comply with a direction issued by AEMO in accordance with clause 3.5.5, it must notify AEMO immediately and provide AEMO with the reasons why it cannot comply with the direction.

…

4.26. Financial Implications of Failure to Satisfy Reserve Capacity Obligations

…

> **Explanatory Note**
>
> Clause 4.26.1D is amended to negate this refund calculation when AEMO suspends the Real-Time Market as Market Participant submissions will form part of the AEMO dispatch plan in a suspended market, however AEMO will not have the detailed forecasting provided by the Dispatch Algorithm available for Market Participants to respond to changes in the market.

4.26.1D. AEMO must calculate the Not In-Service Capacity Refund Quantity for each Scheduled Facility or Semi-Scheduled Facility f for each Trading Interval t in which AEMO considers the Facility to have been in Commercial Operation as:

$$\text{NISCRQ(f,t)} = \frac{\sum_{DI \in t}(\min(RCOQ(f,DI) - CAFO(f,DI),\ NISCap(f,DI)))}{6}$$

$$\text{NISCRQ(f,t)} = \frac{5}{30} \times \sum_{DI \in t} \begin{cases} 0, if\ RTMSuspFlag(DI)\ is\ 1, otherwise \\ \min(RCOQ(f,DI) - CAFO(f,DI),\ NISCap(f,DI)) \end{cases}$$

where:

(a) RCOQ(f,DI) is the Reserve Capacity Obligation Quantity determined for Facility f in Dispatch Interval DI;

(b) CAFO(f,DI) is the Capacity Adjusted Forced Outage Quantity determined for Facility f in Dispatch Interval DI under clause 3.21.7C;

(c) NISCap(f,DI) is the Not In-Service Capacity quantity determined for Facility f in Dispatch Interval DI under clause 7.13A.1; ~~and~~

(d) ~~DI∈t denotes all Dispatch Intervals DI in Trading Interval t.~~

(d) RTMSuspFlag(DI) has a value of one if AEMO has suspended the Real-Time Market under clause 7.11D.1 for Dispatch Interval DI, and a value of zero otherwise; and

(e) DI∈t denotes all Dispatch Intervals DI in Trading Interval t.

4.26.1E. AEMO must calculate the ESR Charge Shortfall for each Scheduled Facility or Semi-Scheduled Facility f for each Trading Interval t in which AEMO considers the Facility to have been in Commercial Operation as:

$$ESRChargeShortfall(f,t) = \frac{\sum_{DI \in t} \sum_{c \in f} ESRCSF(c,DI)}{6}$$

where:

(a) ESRCSF(c,DI) is the capacity shortfall in MW determined for Separately Certified Component c in Dispatch Interval DI under clause 4.26.1F;

(b) DI∈t denotes all Dispatch Intervals DI in Trading Interval t; and

(c) c∈f denotes all Separately Certified Components c of Facility f that are Electric Storage Resources.

> **Explanatory Note**
>
> Clause 4.26.1F is amended to prevent Market Participants from incurring any ESR charge shortfall refunds when AEMO suspends the Real-Time Market as AEMO may provide Dispatch Instructions to the ESR during the period in order to maintain Power System Security.

4.26.1F. ESRCSF(c,DI) for Separately Certified Component c (which is an Electric Storage Resource) for Dispatch Interval DI is:

$$\sout{ESRCSF(c,DI) = max(0, RCOQ(c,DI) - CAFO(c,DI) - 12 \times max(0, ChargeLevel(c,DI) - MinChargeLevel(c,DI)))}$$

$$ESRCSF(c,DI) = \begin{cases} 0, if\ RTMSuspFlag(DI)\ is\ 1, otherwise \\ max\left(\dfrac{0, RCOQ(c,DI) - CAFO(c,DI) -}{12 \times max(0, ChargeLevel(c,DI) - MinChargeLevel(c,DI))}\right) \end{cases}$$

where:

(a) RCOQ(c,DI) is the Reserve Capacity Obligation Quantity determined for Separately Certified Component c in Dispatch Interval DI;

(b)   CAFO(c,DI) is the Capacity Adjusted Forced Outage Quantity determined for Separately Certified Component c in Dispatch Interval DI under clause 3.21.7;

(c)   ChargeLevel(c,DI) is the Charge Level in MWh, or alternative estimate from AEMO where the Charge Level is not available, of Separately Certified Component c determined at the start of Dispatch Interval DI; ~~and~~

(d)   MinChargeLevel(c,DI) is the minimum Charge Level capability in MWh as specified in Standing Data for Separately Certified Component c in Dispatch Interval DI~~.~~; and

(e)   RTMSuspFlag(DI) has a value of one if AEMO has suspended the Real-Time Market under clause 7.11D.1 for Dispatch Interval DI, and a value of zero otherwise.

4.26.1G.   AEMO must determine the shortfall in Reserve Capacity offered into the Real-Time Market ("Real-Time Market Offer Shortfall") for each Scheduled Facility or Semi-Scheduled Facility f for each Trading Interval t in which AEMO considers the Facility to have been in Commercial Operation as:

$$RTMOSF(f,t) = max\left(0, \frac{\sum_{\text{DI}\in t} RTMOSF(f, \text{DI})}{6} - CAFO(f,t) - NISCRQ(f,t) - ESRCSF(f,t)\right)$$

where:

(a)   RTMOSF(f,DI) is the shortfall in Reserve Capacity offered into the Real-Time Market determined for Facility f in Dispatch Interval DI under clause 4.26.1H;

(b)   CAFO(f,t) is the Capacity Adjusted Forced Outage Quantity determined for Facility f in Trading Interval t under clause 3.21.7B;

(c)   NISCRQ(f,t) is the Not In-Service Capacity Refund Quantity determined for Facility f in Trading Interval t under clause 4.26.1D; and

(d)   ESRCSF(f,t) is the ESR Charge Shortfall determined for Facility f in Trading Interval t under clause 4.26.1E.

Explanatory Note

Clause 4.26.1H is amended to negate this refund calculation when AEMO suspends the Real-Time Market as Market Participants may not be able to update Real-Time Market offers in the event of a failure of AEMOs IT systems.

4.26.1H.   RTMOSF(f,DI) for Facility f in Dispatch Interval DI is:

$$RTMOSF(f,DI) = max(0, RCOQ(f,DI) - OfferAvail(f,DI))$$

$$RTMOSF(f,DI) = \begin{cases} 0 \text{ if } RTMSuspFlag(DI) \text{ is } 1, otherwise \\ (max(0, RCOQ(f,DI) - OfferAvail(f,DI)) \end{cases}$$

where:

(a) RCOQ(f,DI) is the Reserve Capacity Obligation Quantity determined for Facility f in Dispatch Interval DI; and

(b) OfferAvail(f,DI) is the total MW quantity included in Real-Time Market Offers for energy from Facility f in Dispatch Interval DI (whether offered as Available Capacity or In-Service Capacity) that were used to calculate Dispatch Instructions and Market Clearing Prices for that Dispatch Interval.; and

(c) RTMSuspFlag(DI) has a value of one if AEMO has suspended the Real-Time Market under clause 7.11D.1 for Dispatch Interval DI, and a value of zero otherwise.

4.26.1I. AEMO must calculate the Generation Reserve Capacity Deficit Refund for each Market Participant for each Trading Interval as the sum of the Facility Reserve Capacity Deficit Refunds for the Trading Interval for each Facility with a Facility Class (or, for an unregistered Facility, an indicative Facility Class) of Scheduled Facility, Semi-Scheduled Facility or Non-Scheduled Facility, for which the Market Participant holds Capacity Credits in the Trading Interval.

Explanatory Note

Clause 4.26.1J is amended to ensure Market Participants do not have to submit Forced Outages where directed to vary from their Dispatch Instructions, including during a suspension of the Real-Time Market where a previously issued Dispatch Instruction would otherwise remain in force.

4.26.1J. Where a Scheduled Facility or a Semi-Scheduled Facility that has a Reserve Capacity Obligation Quantity greater than zero for a Dispatch Interval:

(a) has been issued a Dispatch Target or a Dispatch Cap less than or equal to its Reserve Capacity Obligation Quantity and did not Inject at a level of the Dispatch Cap or Dispatch Target during the Dispatch Interval; or

(b) has been issued a Dispatch Target or a Dispatch Cap greater than its Reserve Capacity Obligation Quantity and did not Inject at least at a level of the Reserve Capacity Obligation Quantity during the Dispatch Interval,

and AEMO has not otherwise directed the Market Participant to vary the operation of the Facility away from its Dispatch Instruction, the Market Participant for the Facility must, as soon as practicable at the end of the Dispatch Interval, or in any event, within 24 hours of the end of the Dispatch Interval, submit a Forced Outage in accordance with the WEM Procedure specified in clause 3.21.10.

…

6.3A. Information to Support the Bilateral and STEM Submission Process

…

6.3A.2A.   AEMO must make available to each Market Participant, by 8:00 AM on each Scheduling Day, for each Trading Interval in the Trading Day for the Scheduling Day~~, the Forecast Operational Demand and Forecast Operational Withdrawal as determined from the most recent Pre-Dispatch Schedule that AEMO has made available to Market Participants.~~:

(a)   the most recent Forecast Unscheduled Operational Demand; and

(b)   subject to clause 7.11D.5, the Forecast Operational Demand and Forecast Operational Withdrawal from the most recently determined Pre-Dispatch Schedule or Week-Ahead Schedule containing that Trading Interval which AEMO has made available to Market Participants.

…

6.4.   The STEM Auction Timetable and Process

…

6.4.6.   In the event of a failure of AEMO's software systems or supporting infrastructure, or any delay in AEMO publishing a Pre-Dispatch Schedule which includes all Trading Intervals in the relevant Trading Day, or AEMO preparing information under clauses 6.2.3, 6.3.1, 6.3A.1, 6.3A.2, 6.3A.2A, 6.3A.3, 6.3A.5 or 6.3B.4, which prevents AEMO from completing the relevant processes, AEMO may extend one or more of the timelines prescribed in sections 6.2, 6.3, 6.3A, 6.3B and this section 6.4, subject to any such extension:

(a)   not resulting in more than a two-hour delay to any of the timelines prescribed in sections 6.2, 6.3, 6.3A, 6.3B and this section 6.4;

(b)   maintaining a window of at least 120 minutes between AEMO making available the data referred to in clause 6.3A.2 and the Bilateral Submission Cutoff;

(c)   maintaining a window of at least 50 minutes between AEMO making available the data referred to in clause 6.3A.2A and the Bilateral Submission Cutoff;

(d)   maintaining a window of at least 20 minutes between AEMO making available the data referred to in clause 6.3A.5 and the Bilateral Submission Cutoff; and

(e)   maintaining a window of at least 110 minutes between each of the following events and the STEM Submission Cutoff:

  i.   AEMO making available to Market Participants the first Pre-Dispatch Schedule that includes all Trading Intervals in the relevant Trading Day;

  ii.   AEMO making available to Market Participants the data referred to in clause 6.2.3 as at the Bilateral Submission Cutoff; and

  iii.   AEMO making available to Market Participants the data referred to in clauses 6.3A.2A and 6.3A.5.

6.4.6A.   If AEMO becomes aware of an error in any of the information contained in a Pre-Dispatch Schedule or made available to Market Participants under clauses 6.2.3, 6.3A.1, 6.3A.2, 6.3A.2A, 6.3A.5 or 6.3B.4 at any time before the publication of the relevant STEM Auction results under clause 6.4.3 or a suspension of the STEM under clause 6.10.1, AEMO may:

(a)   publish or release (as applicable) corrected or updated versions of the information it has published or released under clauses 6.2.3, 6.3A.1, 6.3A.2, 6.3A.2A, 6.3A.5 or 6.3B.4; and

(b)   extend any of the relevant timelines prescribed in sections 6.2, 6.3, 6.3A, 6.3B and this section 6.4 to address the error, subject to any such extension:

  i.   not resulting in more than a two-hour delay to any of the timelines prescribed in sections 6.2, 6.3, 6.3A, 6.3B and this section 6.4;

  ii.   maintaining a window of at least 120 minutes between AEMO making available to Market Participants the data referred to in clause 6.3A.2 and the Bilateral Submission Cutoff;

  iii.   maintaining a window of at least 50 minutes between AEMO making available to Market Participants the data referred to in clause 6.3A.2A and the Bilateral Submission Cutoff;

  iv.   maintaining a window of at least 20 minutes between AEMO making available to Market Participants the data referred to in clause 6.3A.5 and the Bilateral Submission Cutoff; and

  v.   maintaining a window of at least 110 minutes between each of the following events and the STEM Submission Cutoff:

1. AEMO making available to Market Participants the first error-free Pre-Dispatch Schedule that includes all Trading Intervals in the relevant Trading Day;

2. AEMO making available to Market Participants the data referred to in clause 6.2.3 as at the Bilateral Submission Cutoff; and

3. AEMO making available to Market Participants the data referred to in clauses 6.3A.2A and 6.3A.5.

…

7 Real-Time Market Operation and Dispatch

7.1. Real-Time Market

> **Explanatory Note**
> Clause 7.1.1 is amended to clarify that AEMO is not required to operate the Real-Time Market when it has been suspended.

7.1.1.   Subject to clause 7.11D.5, AEMO must establish and operate the Real-Time Market.

7.1.2.   AEMO must:

(a)   document the Real-Time Market Timetable in a WEM Procedure; and

(b)   operate the Real-Time Market according to the Real-Time Market Timetable.

7.1.3.   The Real-Time Market Timetable must include:

(a)   timelines for:

i.   the submission of Real-Time Market Submissions and DSP Withdrawal Profile Submissions, including any subsequent or replacement submissions;

ii.   the calculation and provision to Market Participants of the following information in a Dispatch Interval for the next Dispatch Interval:

1.   Market Clearing Prices;

2.   Dispatch Targets;

3.   Dispatch Caps; and

4.   Essential System Service Enablement Quantities;

iii.   the calculation and provision to Market Participants of a Dispatch Schedule at least once each Dispatch Interval;

iv.   the calculation and provision to Market Participants of a Pre-Dispatch Schedule at least once each Pre-Dispatch Interval;

v.   the calculation and provision to Market Participants of a DSP Pre-Dispatch Schedule at least once each Pre-Dispatch Interval;

vi.   the calculation and provision to Market Participants of a Week-Ahead Schedule at least once each Trading Day;

vii.   the calculation and provision to Market Participants of a DSP Week-Ahead Schedule at least once each Trading Day; and

viii.   the publication of the information referred to in clauses 7.1.3(a)(ii) to 7.1.3(a)(vii) on the WEM Website; and

(b)   any other information that AEMO considers relevant to the operation of the Real-Time Market Timetable.

7.2.   Central Dispatch Process

7.2.1.   AEMO must establish and operate the Central Dispatch Process to dispatch Registered Facilities in order to balance electricity supply and demand, using its reasonable endeavours to maintain Power System Security and Power System Reliability in accordance with Chapter 3.

Explanatory Note

Clause 7.2.2 is amended to clarify that AEMO is not required to comply with the clause if the Real-Time Market is suspended.

7.2.2.   Subject to clause 7.11D.5, AEMO must use its reasonable endeavours to maximise the value of Real-Time Market trading:

(a)   within the parameters for maintaining Power System Security and Power System Reliability in accordance with Chapter 3; and

(b)   on the basis of Real-Time Market Submissions.

7.2.3.   Where AEMO reasonably determines that an urgent change to the Dispatch Algorithm is required to maintain Power System Security and Power System Reliability in accordance with Chapter 3, AEMO may implement the change. Where AEMO makes a change to the Dispatch Algorithm in accordance with this clause 7.2.3, AEMO must:

(a)   publish the change on the WEM Website, and the reasons the change was required in order for AEMO to maintain Power System Security and Power System Reliability in accordance with Chapter 3; and

(b)   if the Power System Security and Power System Reliability issue that is being addressed by the change is not temporary, AEMO must as soon as practicable, submit a Procedure Change Proposal for revisions to the WEM Procedure referred to in clause 7.2.5.

7.2.4.   ~~The~~ Subject to clause 7.11D.5, the Dispatch Algorithm must seek to maximise the value of Real-Time Market trading by maximising:

(a)   the value of dispatched Load based on Real-Time Market Bids; less

(b)   the cost of dispatched energy and Frequency Co-optimised Essential System Services based on Real-Time Market Offers,

subject to:

(c)   respecting the quantities, Ramp Rate Limits and other limits specified in Real-Time Market Submissions;

(cA)   the Unconstrained Injection Forecasts and Unconstrained Withdrawal Forecasts specified in Real-Time Market Submissions, or any alternative forecast quantities determined by AEMO under clause 7.2.4A;

(d)   dispatching sufficient energy to meet the Forecast Unscheduled Operational Demand, Unconstrained Withdrawal Forecast quantities for Non Scheduled Facilities and scheduled Withdrawal quantities for Scheduled Facilities and Semi-Scheduled Facilities;

(e)   respecting Network Constraints, as reflected in the Constraint Equations developed by AEMO in accordance with section 2.27A;

(f)   meeting Power System Security and Power System Reliability requirements as reflected in Constraint Equations developed by AEMO having regard to the WEM Procedures referred to in clauses 3.2.7 and 3.3.2, including any limits on maximum ramp rates;

(g)   Transmission Loss Factors and Distribution Loss Factors;

(h)   current levels of Injection and Withdrawal;

(i)   meeting the Essential System Service Standards as reflected in the Essential System Service requirements determined by AEMO in accordance with the WEM Procedure referred to in clause 3.11.7 and in Constraint Equations developed by AEMO having regard to that WEM Procedure;

(iA)   implementing the terms of NCESS Contracts as reflected in Constraint Equations formulated by AEMO under clause 5.7.3;

(j)   energy Injection and Withdrawal capabilities as they vary by Charge Level;

(k)   respecting Oscillation Control Constraint Equations;

(l)   accounting for all relevant Contingency Lower Offsets, Contingency Raise Offsets and Facility Performance Factors in determining scheduled and dispatched quantities of Contingency Reserve;

(m)   accounting for all Facilities that are Inflexible;

(n)   taking into account the Largest Credible Supply Contingency relative to the scheduled or dispatched quantity of Contingency Reserve Raise; and

(o)   arrangements for dispatch of tied Real-Time Market Bids and tied Real-Time Market Offers.

7.2.4A.   AEMO may determine and use as an input to the Dispatch Algorithm alternative forecast quantities to the Unconstrained Injection Forecast and Unconstrained Withdrawal Forecast provided in a Real-Time Market Submission if AEMO reasonably considers that the alternative forecast quantities are likely to be more accurate.

7.2.5.   AEMO must develop and document in a WEM Procedure:

(a)   the Dispatch Algorithm used by AEMO for the purpose of the Central Dispatch Process and setting Market Clearing Prices and the mathematical formulation of the Dispatch Algorithm, including:

   i.   the conversion of Facility Speed Factors into Facility Performance Factors;

   ii.   the calculation of Minimum RoCoF Control Requirement and Additional RoCoF Control Requirement;

   iii.   the calculation of the required quantity of Contingency Reserve Raise; and

   iv.   the maximum number of Price-Quantity Pairs that may be included in a Real-Time Market Submission for a Dispatch Interval for each Market Service,

   in a form that:

   v.   sets out the form, scope and construction of each type of Constraint Equation;

   vi.   describes and quantifies the mechanism by which different Constraints are taken into account and prioritised, including in accordance with clauses 3.12.2 and 7.6.25; and

   vi   AEMO reasonably considers will enable a third party, such as the Market Auditor or the Economic Regulation Authority, to replicate the results of the Dispatch Algorithm by using the same inputs;

(b)   the methodology it uses to determine:

   i.   Contingency Raise Offsets;

   ii.   Contingency Lower Offsets;

   iii.   Facility Performance Factors;

   iv.   the Minimum RoCoF Control Requirement;

   v.   the Additional RoCoF Control Requirement;

vi.　　the RoCoF Control Requirement; and

　　　　vii.　　the RoCoF Upper Limit;

　　(c)　　the processes to be followed by AEMO and Market Participants in accounting for Inflexible Facilities; and

　　(d)　　any methodology for replacement of erroneous input data or substitution for missing input data.

7.2.6.　　AEMO may relax the Constraints referred to in clause 7.2.4 in order to resolve infeasible dispatch solutions provided that any relaxation of a Constraint:

　　(a)　　achieves a feasible dispatch outcome;

　　(b)　　meets AEMO's obligations to maintain Power System Security and Power System Reliability in accordance with the WEM Rules;

　　(c)　　would not endanger the safety of any person, damage equipment, or breach any applicable law;

　　(d)　　meets the pricing principles listed in clause 7.11A.1; and

　　(e)　　meets AEMO's obligations to maximise the value of Real-Time Market trading under clause 7.2.4.

7.2.7.　　AEMO must:

　　(a)　　as soon as practicable after the start of the Dispatch Interval, publish on the WEM Website details of any Constraints relaxed under clause 7.2.6 for that Dispatch Interval; and

　　(b)　　as soon as practicable after the end of each quarter, publish on the WEM Website a report summarising the total number, frequency and type of Constraints that were relaxed under clause 7.2.6 during that quarter.

7.2.8.　　AEMO must document in a WEM Procedure the processes to be followed by AEMO for the relaxation of Constraints under clause 7.2.6.

7.3.　　Forecast Unscheduled Operational Demand

7.3.1.　　AEMO must prepare a Forecast Unscheduled Operational Demand for:

　　(a)　　each Pre-Dispatch Interval within each Week-Ahead Schedule Horizon; and

　　(b)　　each Dispatch Interval within each Dispatch Schedule Horizon.

7.3.2.　　The Forecast Unscheduled Operational Demand must represent AEMO's best estimate of the total demand, in MW, to be served in the Pre-Dispatch Interval or Dispatch Interval, excluding:

　　(a)　　any Withdrawal by Non-Scheduled Facilities; and

　　(b)　　any Withdrawal quantities scheduled by the Dispatch Algorithm for Scheduled Facilities or Semi-Scheduled Facilities.

7.3.3.   [Blank]

7.3.4.   AEMO must document in a WEM Procedure the methodology and processes it
follows for determining and publishing the Forecast Unscheduled Operational
Demand under this section 7.3.

7.4.   Real-Time Market Submissions

…

7.4A.   DSP Withdrawal Profile Submissions

…

7.5.   Dispatch Algorithm

…

Essential System Services Constraints

7.5.5.   AEMO must include Constraint Equations for the dispatch of Essential System
Services in the Dispatch Algorithm.

Explanatory Note

Clause 7.5.6 is amended to clarify that the condition relates to whether the quantity is to be
determined outside or inside the Dispatch Algorithm, not the broader Central Dispatch Process.

7.5.6.   Where the WEM Procedure referred to in clause 3.11.7 provides that the quantity
of a Frequency Co-optimised Essential System Service is to be determined
outside the ~~Central Dispatch Process~~ Dispatch Algorithm, AEMO must include
Constraint Equations in the Dispatch Algorithm that, subject to clause 7.4.5(b),
ensure the exogenously determined quantity of that Frequency Co-optimised
Essential System Service is procured from the Real-Time Market.

Explanatory Note

Clause 7.5.7 is amended to clarify that the condition relates to whether the quantity is to be
determined outside or inside the Dispatch Algorithm, not the broader Central Dispatch Process.

7.5.7.   Where the WEM Procedure referred to in clause 3.11.7 provides that the quantity
of a Frequency Co-optimised Essential System Service is dependent on factors
within the ~~Central Dispatch Process~~ Dispatch Algorithm, AEMO must include
Constraint Equations in the Dispatch Algorithm that, subject to clauses 3.12.2 and
7.2.4(e), ensure that a sufficient quantity of that Frequency Co-optimised Essential
System Service is procured to meet the Essential System Service Standards.

7.5.8.   Where a Real-Time Market Submission for a Registered Facility specifies non-
zero quantities in its Price-Quantity Pairs for any Frequency Co-optimised
Essential System Service, then:

(a)   if the Registered Facility is operating between its Enablement Limits at the beginning of a Dispatch Interval or a Pre-Dispatch Interval, AEMO may, in accordance with the WEM Procedure referred to in clause 7.2.5, include Constraint Equations in the Dispatch Algorithm to ensure the Energy Dispatch Target for that Registered Facility will not be less than the Minimum Enablement Limit, and not more than the Maximum Enablement Limit; or

(b)   if the Registered Facility is not operating between its Enablement Limits at the beginning of a Dispatch Interval or a Pre-Dispatch Interval, AEMO may, in accordance with the WEM Procedure referred to in clause 7.2.5, exclude the Real-Time Market Offers to provide any Frequency Co-optimised Essential System Service specified in the Real-Time Market Submission for the Registered Facility from the Dispatch Algorithm.

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7.6.   Dispatch

Explanatory Note

Clauses 7.6.1 and 7.6.2 are amended to negate the clauses during a Real-Time Market suspension.

Clause 7.6.1 is further amended to reflect that during times where the Dispatch Algorithm fails, while AEMO will try to align dispatch with the forecast determined from Bids and Offers it may also be required to direct facilities otherwise.

Dispatch Instructions

7.6.1.   Subject to clauses 7.7.1 and 7.11D.5, AEMO must centrally dispatch Scheduled Facilities, Semi-Scheduled Facilities and Interruptible Loads based on their Real-Time Market Bids and Real-Time Market Offers using the Dispatch Algorithm.

7.6.2.   Subject to clause 7.11D.5, AEMO must use the Dispatch Algorithm to set Dispatch Targets, Dispatch Caps and Essential System Service Enablement Quantities for each Scheduled Facility, Semi-Scheduled Facility and Interruptible Load for each Dispatch Interval.

7.6.3.   AEMO must document in a WEM Procedure the processes to be followed by AEMO and Market Participants for the dispatch of Registered Facilities where the Dispatch Algorithm is not able to be successfully run for a Dispatch Interval, including:

(a)   where a previous Market Schedule will be used as the basis for issuing Dispatch Instructions; and

(b)   where a previous Market Schedule will not be used as the basis for issuing Dispatch Instructions, the basis for dispatch and issuing Dispatch Instructions in those circumstances.

7.6.4.   AEMO must ~~use the Central Dispatch Process to~~ set:

(a)   the Market Clearing Prices for each Dispatch Interval in accordance with sections 7.11A, 7.11B~~, and~~ 7.11C and 7.11E; and

(b)   the Reference Trading Prices for each Trading Interval in accordance with clause 7.11A.1(b).

7.6.5.   A Dispatch Instruction is an instruction issued by AEMO to a Market Participant in respect of a Registered Facility, directing the Market Participant to:

(a)   vary the Injection or Withdrawal of the Registered Facility; or

(b)   enable the Registered Facility to provide a quantity of a Frequency Co-optimised Essential System Service.

7.6.5A.   AEMO may issue Dispatch Instructions to a Demand Side Programme where AEMO reasonably considers that the dispatch of a Demand Side Programme is required to restore or maintain Power System Security or Power System Reliability.

7.6.5B.   AEMO must issue Dispatch Instructions to Demand Side Programmes in accordance with the following principles:

(a)   AEMO must not issue Dispatch Instructions to a Demand Side Programme that restrict the absolute value of Withdrawal below the Facility's Relevant Level by more than the Facility's Reserve Capacity Obligation Quantity in a Dispatch Interval, except with the prior agreement of the Market Participant; and

(b)   when selecting Demand Side Programmes for dispatch to meet a potential energy shortfall, AEMO must:

i.   take into account Market Schedules and any information provided by Market Participants in response to a Market Advisory issued under clause 7.11.5(gA) for the relevant period;

ii.   avoid the dispatch of Demand Side Programmes beyond the extent that AEMO considers may reasonably be necessary to restore or maintain Power System Security and Power System Reliability;

iii.   where a Demand Side Programme has an Associated Load which is also an Associated Load of an Interruptible Load, and that Interruptible Load is expected to provide an Essential System Service during the relevant period, prefer dispatch of other Demand Side Programmes; and

        iv.   only discriminate between Demand Side Programmes based on response time and availability, except where required under clause 7.6.5B(b)(iii).

7.6.5C.   AEMO must document in a WEM Procedure:

    (a)   how AEMO will determine that the dispatch of Demand Side Programmes under clause 7.6.5A may be required; and

    (b)   the process that AEMO will use to select Demand Side Programmes for dispatch, which must be consistent with the principles specified in clause 7.6.5B.

7.6.6.   AEMO is not required to issue a Dispatch Instruction for Automatic Generator Control movements where:

    (a)   AEMO is adjusting the provision of Regulation within the quantity of Regulation enabled;

    (b)   AEMO has direct control of a Registered Facility under clause 7.6.30 and the adjustments relate to implementation of a previously recorded Dispatch Instruction; or

    (c)   the Facility is providing a System Restart Service.

7.6.7.   AEMO may direct a Network Operator to do, or not do, an act, matter or thing, if it reasonably determines the act, matter or thing is required to support or enable AEMO's operation of the Central Dispatch Process.

7.6.7A.   A Network Operator is not required to comply with a direction referred to in clause 7.6.7 if such compliance would endanger the safety of any person, damage equipment, or breach any applicable law.

Explanatory Note

Clause 7.6.8 is amended to restrict the scope of the clause to Dispatch Instructions determined by the Dispatch Algorithm.

7.6.8.   For each Dispatch Instruction determined by the Dispatch Algorithm for a Scheduled Facility, Semi-Scheduled Facility or Interruptible Load, AEMO must record:

    (a)   details of the Registered Facility to which the Dispatch Instruction relates;

    (b)   the time the Dispatch Instruction was issued;

    (c)   the Dispatch Interval to which the Dispatch Instruction applies;

    (d)   for a Scheduled Facility or Semi-Scheduled Facility:

        i.   the Dispatch Target or Dispatch Cap for the Dispatch Interval, as applicable, under clause 7.6.10 or 7.6.11;

        ii.   where the Registered Facility is a Semi-Scheduled Facility, the Dispatch Forecast for the Dispatch Interval;

iii. where AEMO has agreed to process Dispatch Targets or Dispatch Caps for the Registered Facility on an as-generated basis, the equivalent as-generated values for the Dispatch Target, Dispatch Cap or Dispatch Forecast as applicable; and

iv. Essential System Service Enablement Quantities; and

(e) for an Interruptible Load:

i. Essential System Service Enablement Quantities.

7.6.8A. AEMO may record, for a Dispatch Instruction to a Scheduled Facility or Semi-Scheduled Facility, the ramp rate to be maintained by the Registered Facility until the Dispatch Target is reached, which must not exceed the Maximum Upwards Ramp Rate or the Maximum Downwards Ramp Rate of the Registered Facility, as applicable.

7.6.9. At the same time as, or as soon as practicable after, AEMO issues a Dispatch Instruction for a Registered Facility, AEMO must make the information recorded in accordance with clauses 7.6.8 or 7.6.11A available to the Market Participant for the Registered Facility.

7.6.10. Each Dispatch Instruction for a Scheduled Facility must include a Dispatch Target.

7.6.11. Each Dispatch Instruction for a Semi-Scheduled Facility must include:

(a) a Dispatch Cap; or

(b) a Dispatch Target, where the Registered Facility has a non-zero Essential System Service Enablement Quantity for Contingency Reserve or Regulation.

7.6.11A. For each Dispatch Instruction issued for a Demand Side Programme, AEMO must record:

(a) details of the Demand Side Programme to which the Dispatch Instruction relates;

(b) the time the Dispatch Instruction was issued;

(c) the Dispatch Interval from which the Dispatch Instruction applies, where this must be the first Dispatch Interval of a Trading Interval;

(d) the MW quantity representing the required Withdrawal restriction, where:

i. a non-zero MW quantity represents a required reduction in the absolute value of Withdrawal from the Relevant Demand for the Demand Side Programme; and

ii. a zero MW quantity indicates that the Demand Side Programme is no longer required to restrict its Withdrawal; and

(e)   if a non-zero MW quantity is specified, the estimated Dispatch Interval from which the Dispatch Instruction may no longer apply, where this must be the first Dispatch Interval of a Trading Interval.

7.6.12.   AEMO must not issue Dispatch Instructions to Non-Scheduled Facilities, but must:

(a)   use the Real-Time Market Submissions of Non-Scheduled Facilities as input to the Dispatch Algorithm;

(b)   treat Non-Scheduled Facilities as Inflexible for the purposes of the Dispatch Algorithm; and

(c)   record the Dispatch Forecast determined by the Dispatch Algorithm for each Non-Scheduled Facility for each Dispatch Interval.

7.6.13.   Where AEMO has issued a Dispatch Instruction with a non-zero MW quantity to a Demand Side Programme, the Market Participant must maintain an absolute MW level of Withdrawal from the Demand Side Programme less than or equal to the level required in the Dispatch Instruction from the start of the Dispatch Interval specified under clause 7.6.11A(c) until the start of the Dispatch Interval specified under clause 7.6.11A(c) for the next Dispatch Instruction issued to the Demand Side Programme.

7.6.13A. Where AEMO has issued a Dispatch Instruction with a zero MW quantity to a Demand Side Programme, the Market Participant may, from the start of the Dispatch Interval specified under clause 7.6.11A(c) for the Dispatch Instruction, increase the absolute MW level of Withdrawal of the Demand Side Programme above the level specified in the previous Dispatch Instruction.

Explanatory Note

Clause 7.6.14 is amended to include AEMO's powers of direction during a Real-Time Market suspension.

7.6.14.   Subject to clause 7.10.14, unless the Dispatch Instruction is issued to implement a direction under clauses 3.4.4, or 3.5.5 or 7.11D.2A or section 7.7, AEMO must determine the ramp rate in a Dispatch Instruction for a Scheduled Facility or Semi-Scheduled Facility using a linear profile between the Registered Facility's estimated Injection or Withdrawal at the start of the Dispatch Interval and at the end of the Dispatch Interval covered by the Dispatch Instruction.

7.6.15.   AEMO must issue a Dispatch Instruction to a Demand Side Programme before the Dispatch Interval from which the Dispatch Instruction applies, in accordance with the minimum response time specified for the Facility under Appendix 1(f)(iv).

7.6.16.   [Blank]

7.6.17.   Where AEMO issues a Dispatch Instruction to a Demand Side Programme, AEMO must review and if necessary adjust the Forecast Unscheduled Operational

Demand for the relevant period to account for any expected changes to the Withdrawal of the Demand Side Programme's Associated Loads.

7.6.18. AEMO must document in a WEM Procedure:

(a) the processes AEMO and Market Participants must follow in issuing, recording, receiving, confirming and responding to Dispatch Instructions; and

(b) the methodology and data requirements for conversion of sent-out figures to as-generated figures where AEMO agrees to convert sent-out figures to as-generated figures for the purposes of implementing Dispatch Instructions for a Registered Facility.

7.6.19. Where a Market Participant is required to confirm the receipt of a Dispatch Instruction, AEMO must ensure that the communication methods used for issuing Dispatch Instructions allow the Market Participant to confirm the receipt of the Dispatch Instruction before the start of the Dispatch Interval to which the Dispatch Instruction relates in accordance with clause 7.6.20.

7.6.20. A Market Participant must confirm receipt of a Dispatch Instruction that was not issued by AEMO electronically via the Automatic Generation Control System for the Registered Facility in accordance with the WEM Procedure referred to in clause 7.6.18.

Explanatory Note

Clause 7.6.21 is amended to allow for retrospective Dispatch Instructions recorded under new clause 7.7.8A.

7.6.21. Subject to clause 7.7.8A, AEMO must not issue a Dispatch Instruction for a Dispatch Interval that has already ended.

7.6.22. AEMO must maintain a record of:

(a) each Dispatch Instruction;

(b) each confirmation of receipt of a Dispatch Instruction, where confirmation is required; and

(c) each notification from a Market Participant under clause 7.6.31,

in a consolidated electronic form which enables the Market Auditor to audit the information, and is sufficient for use in settlement.

Tiebreaking

7.6.23. Where the Dispatch Algorithm determines a Degenerate Solution, AEMO may issue Dispatch Instructions that override the output of the Dispatch Algorithm to the extent required to adjust the Dispatch Target of one or more Registered Facilities with tied Price-Quantity-Pairs, and in doing so must seek to, in the following priority order:

(a) ensure that Dispatch Targets can be met by Registered Facilities; and

(b) ensure pro-rata loading of tied Price-Quantity Pairs.

7.6.24. AEMO may include Oscillation Control Constraint Equations in the Dispatch Algorithm to reduce the occurrence of:

(a) Degenerate Solutions that result in inconsistent Dispatch Targets between Dispatch Intervals; and

(b) significant changes in Essential System Services Enablement Quantities between Dispatch Intervals.

7.6.25. Where AEMO includes Oscillation Control Constraint Equations in the Dispatch Algorithm in accordance with clause 7.6.24, AEMO must ensure that:

(a) the Dispatch Algorithm firstly takes into account all Constraint Equations other than Constraint Equations used to avoid Degenerate Solutions;

(b) the Dispatch Algorithm violates an Oscillation Control Constraint Equation only in order to take into account other Constraints (according to the formulation specified under clauses 7.2.4(e) and 7.2.4(f)); and

(c) the Constraint Relaxation process in clause 7.2.6 is applied when the Dispatch Algorithm determines that it is necessary to violate an Oscillation Control Constraint Equation.

7.6.26. When setting the parameters of Oscillation Control Constraint Equations, which determine the extent to which Oscillation Control Constraint Equations will bind, AEMO must consider the historic cost of binding Oscillation Control Constraint Equations as published in the Congestion Information Resource and the benefits to Power System Security and Power System Reliability of those Oscillation Control Constraint Equations.

7.6.27. AEMO must document in a WEM Procedure:

(a) the process to be followed by AEMO when issuing Dispatch Instructions that override the output of the Dispatch Algorithm for Dispatch Intervals where the Dispatch Algorithm determines a Degenerate Solution pursuant to clause 7.6.23; and

(b) situations that are deemed to be significant for the purposes of clause 7.6.24(b).

AEMO Control of Registered Facilities

7.6.28. AEMO may, where required for a Registered Facility or equipment to participate in the Central Dispatch Process, or to provide an Essential System Service, or otherwise by agreement with a Market Participant, control specified operations of a Registered Facility or equipment, including:

(a) the starting, loading and stopping of one or more of the Market Participant's Scheduled Facilities; and

(b)   limiting the Injection or Withdrawal of one or more of the Market
       Participant's Semi-Scheduled Facilities.

7.6.29.   The operational control of a Registered Facility by AEMO pursuant to an
           agreement referred to in clause 7.6.28:

    (a)   does not remove AEMO's obligation to record Dispatch Instructions for
           those Registered Facilities; and

    (b)   does not affect or modify a Market Participant's rights and obligations in
           respect of a Registered Facility under these WEM Rules. To avoid doubt,
           notwithstanding AEMO's operational control, a Market Participant must
           comply with the obligations in section 7.10.

7.6.30.   Where AEMO maintains operational control over a Registered Facility, AEMO
           must operate the Registered Facility in compliance with Dispatch Instructions
           recorded for the Registered Facility.

Dispatch Inflexibilities

7.6.31.   Where a Market Participant reasonably expects that its Registered Facility will be
           unable to comply with a Dispatch Instruction for the Registered Facility in a future
           Dispatch Interval, the Market Participant must immediately:

    (a)   amend its Real-Time Market Submission for the Registered Facility by
           specifying:

        i.   the Registered Facility is Inflexible in the relevant Dispatch Interval;
               and

        ii.   a single offer tranche which specifies the fixed level of Injection,
               Withdrawal, or Frequency Co-optimised Essential System Service
               enablement, at which the Registered Facility must be operated in
               the Dispatch Interval;

    (b)   provide AEMO with a reason why the Registered Facility is Inflexible which
           must be able to be independently verified; and

    (c)   if required, submit any Outages for the Registered Facility in accordance
           with section 3.21.

7.6.32.   AEMO must use reasonable endeavours to issue Dispatch Instructions consistent
           with:

    (a)   a Real-Time Market Submission that specifies a Registered Facility as
           Inflexible; and

    (b)   a Registered Facility's Dispatch Inflexibility Profile.

7.6.33.   AEMO must document in a WEM Procedure the forms of independent verification
           to be used to support a reason given under clause 7.6.31(b).

7.7. Scarcity and Intervention

7.7.1. To support the Central Dispatch Process, AEMO may direct a Market Participant to vary the reactive power output of provide a service or operate a Registered Facility in a particular way in accordance with Chapter 3A Chapters 3 or 7.

7.7.2. Where AEMO has entered into a Supplementary Capacity Contract, AEMO may direct the relevant resource to provide an Eligible Service in accordance with the terms of the Supplementary Capacity Contract.

7.7.2A. In the event of a system shutdown or major supply disruption, AEMO may dispatch System Restart Service Providers to provide System Restart Services, and must dispatch facilities in accordance with the System Restart Plan and Local Black Start Procedures.

7.7.3. Where AEMO has issued a Low Reserve Condition Declaration relating to an actual or projected shortfall in Essential System Services, AEMO may direct a Market Participant to make a Real-Time Market Submission for a Registered Facility that has been accredited to provide an Essential System Service in accordance with section 2.34A, that requires a quantity specified by AEMO of Essential System Service to be offered up to the maximum accredited quantity, or the lowest Remaining Available Capacity under any Outage, applying to the Registered Facility for that Frequency Co-optimised Essential System Service in any of the Dispatch Intervals covered by the Low Reserve Condition Declaration.

7.7.4. Where AEMO has issued a Low Reserve Condition Declaration relating to an actual or projected shortfall in energy and the Short Term PASA, Medium Term PASA or the Reference Scenario for the Pre-Dispatch Schedule projects that a Registered Facility will be needed to provide energy, AEMO may, as applicable:

(a) where the projected energy shortfall will occur within four weeks of the date of the notice:

i. reject one or more Planned Outages for the Registered Facility; or

ii. issue an Outage Recall Direction to the Registered Facility; or

(b) where the projected energy shortfall will occur within one week of the date of the notice, direct the relevant Market Participant to make a Real-Time Market Submission for a Registered Facility offering its full Reserve Capacity Obligation Quantity as In-Service Capacity.

7.7.5.   Where AEMO has issued a Low Reserve Condition Declaration and the Short Term PASA or the Reference Scenario for the Pre-Dispatch Schedule projects that a Registered Facility will be needed to provide an Essential System Service, AEMO may direct a Market Participant to synchronise the Registered Facility to provide the Essential System Service.

7.7.6.   Following a Contingency Event that results in a SWIS Frequency outside the Normal Operating Frequency Excursion Band, AEMO may adjust Essential System Service requirements to allow for an orderly transition back to full Essential System Service Enablement Quantities.

7.7.7.   Following a Contingency Event that results in a SWIS Frequency outside the Normal Operating Frequency Excursion Band, if AEMO reasonably determines that the Dispatch Algorithm is not appropriately scheduling Registered Facilities for Essential System Services, AEMO may reduce the quantity of one or more Frequency Co-optimised Essential System Service requirement, including to zero, to reflect the activation of enabled Registered Facilities.

7.7.8.   Where AEMO issues a direction to a Market Participant in accordance with this section 7.7 or under clauses 3.4.4, 3.4.5 or 3.5.5, AEMO must, as soon as practicable, input appropriate Constraint Equations in the Dispatch Algorithm to ensure that the Dispatch Algorithm generates Dispatch Targets that will allow the Registered Facility to comply with those directions.

Explanatory Note

New clause 7.7.8A requires AEMO to record 'retrospective' Dispatch Instructions if it issues certain directions.

7.7.8A.   Where AEMO issues a direction to a Scheduled Facility, Semi-Scheduled Facility, or Interruptible Load in accordance with this section 7.7 or under clauses 3.4.4, 3.4.5 or 3.5.5, to vary injection or withdrawal, or enable a Frequency Controlled Essential System Service it must, as soon as practicable, record a retrospective Dispatch Instruction containing the following information:

(a)   details of the Registered Facility to which the retrospective Dispatch Instruction relates;

(b)   the time the direction was given;

(c)   the Dispatch Interval for which the retrospective Dispatch Instruction applies;

(d)   for a Scheduled Facility or Semi-Scheduled Facility:

i.   the Dispatch Target or Dispatch Cap for the Dispatch Interval, as applicable, under clause 7.6.10 or 7.6.11; and

ii.   Essential System Service Enablement Quantities; and

(e)   for an Interruptible Load:

i.   Essential System Service Enablement Quantities.

7.7.9. A Dispatch Instruction issued by AEMO as a result of a direction issued by AEMO in accordance with this section 7.7 or under clauses 3.4.4, 3.4.5, or 3.5.5 or 7.11D.2A, must be consistent with the Registered Facility's data held by AEMO, including Standing Data, at the time the Dispatch Instruction is determined.

7.7.10. Where AEMO directs a Market Participant to vary the operation of a Registered Facility in a way that is not fully set out in a Dispatch Instruction, AEMO must record:

(a) the date, time, and duration of the direction;

(b) the name of the Registered Facility;

(c) the nature of the direction (for example, commitment, fuel choice, reactive power output); and

(d) the reason for the direction.

7.7.11. Subject to clause 7.7.12, Market Participants must comply with directions given by AEMO in accordance with this section 7.7.

7.7.12. A Market Participant is not required to comply with a direction referred to in clause 7.7.11 if it would endanger the safety of any person, damage equipment, or breach any applicable law.

7.7.13. Where a Market Participant cannot, in accordance with clause 7.7.12, comply with a direction from AEMO under this section 7.7, the Market Participant must notify AEMO as soon as possible and provide the reasons why it cannot comply, which must be one or more of the reasons specified in clause 7.7.12.

7.7.14. AEMO must document in a WEM Procedure the process it will use to determine which Registered Facility to direct under clauses 7.7.3, 7.7.4 or 7.7.5.

7.8. Market Schedules

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7.8A. DSP Schedules

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7.9. Commitment

…

Dispatch Compliance

Explanatory Note

Section 7.10 is amended to provide clarity to Market Participants in regards to compliance with a direction or Dispatch Instruction. The changes allow for AEMO to direct a facility to operate in a way not covered by the definition of a Dispatch Instruction (as per section 7.6) or to override a Dispatch Instruction previously issued by AEMO where that Dispatch Instruction may have been issued incorrectly or is required to be superseded by a retrospective Dispatch Instruction.

7.10. Compliance with Dispatch Instructions

7.10.1.   A Unless otherwise directed by AEMO, a Market Participant must comply with the following in the most recently issued Dispatch Instruction applicable to its Scheduled Facility, Semi-Scheduled Facility or Interruptible Load for the Dispatch Interval:

(a)   the Dispatch Target or Dispatch Cap as applicable;

(b)   Essential System Service Enablement Quantities; and

(c)   Ramp Rate.

7.10.1A.   A Market Participant must comply with the most recently issued Dispatch Instruction applicable to its Demand Side Programme in a Dispatch Interval.

7.10.1B.   For the purposes of clause 7.10.1, a Dispatch Instruction issued retrospectively under clause 7.7.8A does not supersede a Dispatch Instruction issued under section 7.6 that contains a more recent Dispatch Interval.

7.10.2.   A Market Participant is not required to comply with clause 7.10.1 if:

(a)   such compliance would endanger the safety of any person, damage equipment or breach any applicable law;

(b)   the actual Injection or Withdrawal of the Registered Facility does not, at any time the Dispatch Instruction applies:

i.   vary, by more than the applicable Tolerance Range or Facility Tolerance Range, from a linear profile between the Injection or Withdrawal of the Facility at the start of the Dispatch Interval and the Dispatch Target at:

1.   the time at which the Dispatch Target would be reached by ramping at the ramp rate specified in the Dispatch Instruction; or

2.   if no ramp rate is specified in the Dispatch Instruction, the end of the Dispatch Interval;

ii.   exceed by more than the applicable Tolerance Range or Facility Tolerance Range a linear profile between the Injection or Withdrawal of the Facility at the start of the Dispatch Interval and the Dispatch Cap at:

1. the time at which the Dispatch Cap would be reached by ramping at the ramp rate specified in the Dispatch Instruction; or

2. if no ramp rate is specified in the Dispatch Instruction, the end of the Dispatch Interval;

(c) both of the following apply:

i. the Market Participant notifies AEMO, in accordance with clause 3.21.2(a), that its Registered Facility has been affected by or will be affected by a Forced Outage; and

ii. the quantity of the relevant Remaining Available Capacity for the Forced Outage notified is consistent with the extent to which the Market Participant did not comply with the most recently issued Dispatch Instruction applicable to its Registered Facility for the Dispatch Interval;

(d) the Registered Facility has been granted permission under clause 7.10.14 to ramp at a fixed rate, complies with the Dispatch Target or Dispatch Cap, as relevant, and ramps at the ramp rate specified in the Real-Time Market Submission for the Registered Facility;

(e) AEMO was unable to issue Dispatch Instructions to a Fast Start Facility in accordance with clause 7.6.32(b), and that Facility is responding according to its Dispatch Inflexibility Profile; or

(f) the Market Participant was conducting a Commissioning Test on a Facility as part of an approved Commissioning Test Plan, and was unable to comply with clause 7.10.1 in a Dispatch Interval due to a failure of the Facility's equipment.

7.10.2A. A Market Participant is not required to comply with clause 7.10.1A if such compliance would endanger the safety of any person, damage equipment or breach any applicable law.

7.10.3. Notwithstanding clause 7.10.2(b), a Market Participant must not consistently operate its Registered Facility at the extremes of the Tolerance Range or Facility Tolerance Range applicable to the Registered Facility.

Explanatory Note

Clauses 7.10.4 and 7.10.6 have been amended to clarify that a Market Participant must not operate any part of a Semi-Scheduled Facility in a manner that would deviate the injection or withdrawal away from the Dispatch Forecast unless directed by AEMO. This is required to ensure Market Participants can remain compliant following the receipt of the Dispatch Instruction issued as a result of a direction under clause 7.7.8A, which does not contain a Dispatch Forecast.

7.10.4. ~~Where~~ Unless otherwise required as a result of a direction from AEMO, if a Semi-Scheduled Facility contains an Electric Storage Resource, a Market Participant must not operate the Electric Storage Resource to increase the deviation of the

Semi-Scheduled Facility's Injection or Withdrawal from the Semi-Scheduled Facility's Dispatch Forecast, unless the deviation is:

(a) instructed as part of the delivery of one or more Essential System Services; or

(b) to provide a required response as part of the Facility's Registered Generator Performance Standard.

7.10.5. AEMO must document in a WEM Procedure the method for calculating an Electric Storage Resource's contribution to the relevant Semi-Scheduled Facility's deviation from its Dispatch Forecast for the purposes of clause 7.10.4.

7.10.6. ~~Where~~ Unless otherwise required as a result of a direction from AEMO, if a Market Participant can control the Injection or Withdrawal of a Semi-Scheduled Facility, it must not exercise that control so as to increase the deviation of the Semi-Scheduled Facility's Injection or Withdrawal from the Semi-Scheduled Facility's Dispatch Forecast, unless this deviation is:

(a) instructed as part of the delivery of one or more Essential System Services; or

(b) to provide a required response as part of the Facility's Registered Generator Performance Standard.

…

Market Advisories

7.11. Market Advisories

…

Price Determination

7.11A. Price Determination Principles

> **Explanatory Note:**
>
> Clause 7.11A.1 is amended to:
>
> - extend the list of sections containing exceptions to the calculation of Market Clearing Prices using the Dispatch Algorithm in clause 7.11A.1(a); and
>
> - use the correct defined term in clause 7.11A.1(d).

7.11A.1. The principles applying to the determination of prices in the Real-Time Market are:

(a) subject to this section 7.11A and sections 7.11B and 7.11E, a Market Clearing Price at the Reference Node is determined by AEMO using the ~~Central Dispatch Process~~ Dispatch Algorithm for each Dispatch Interval;

(b)   a Reference Trading Price is determined by AEMO as the time-weighted average of the Market Clearing Prices for energy for each Dispatch Interval in a Trading Interval;

(c)   Registered Facilities which operate in accordance with a direction in the Central Dispatch Process are to be taken into account by AEMO, but AEMO must not use the applicable Real-Time Market Offers or Real-Time Market Bids for those Registered Facilities in the calculation of the Market Clearing Price for the relevant Market Service in the relevant Dispatch Interval;

(d)   where a Registered Facility is Inflexible, AEMO must take the Inflexibility of the Registered Facility into account in the ~~Central Dispatch Process~~ Dispatch Algorithm, but must not use the price in the Real-Time Market Offer or Real-Time Market Bid for that Registered Facility for the applicable Market Service in the calculation of the Market Clearing Price for that Market Service in the relevant Dispatch Interval;

(e)   Loss Factors and Constraint Equations are to be taken into account by AEMO in the calculation of Market Clearing Prices;

(f)   where the Injection or Withdrawal of a Registered Facility is limited above or below the level at which it would otherwise have been dispatched by AEMO on the basis of its Real-Time Market Offer or Real-Time Market Bid for energy due to a Constraint Equation included in the Dispatch Algorithm under clause 7.5.8(a):

    i.   the Registered Facility's Real-Time Market Offer or Real-Time Market Bid for energy, as applicable, is to be taken into account by AEMO in the determination of dispatch, but the Real-Time Market Offer or Real-Time Market Bid, as applicable, is not to be used by AEMO in the calculation of the Market Clearing Price for energy in the relevant Dispatch Interval; and

    ii.   the Registered Facility's Real-Time Market Submissions for other Frequency Co-optimised Essential System Services are to be used by AEMO in the determination of dispatch and taken into account in determining the Market Clearing Prices for those Market Services;

(g)   subject to section 9.9, AEMO must apply the Reference Trading Price to both sales and purchases of energy in the relevant Trading Interval;

(h)   when a Market Clearing Price is determined for a Frequency Co-optimised Essential System Service, AEMO must apply that price to purchases of that Frequency Co-optimised Essential System Service in the relevant Dispatch Interval; and

(i)   where there is a shortfall in a Frequency Co-optimised Essential System Service, AEMO must set the Market Clearing Price for that service to the difference between the Energy Offer Price Ceiling and the Energy Offer Price Floor.

7.11B.   Determination of Market Clearing Prices

7.11B.1.   Subject to section 7.11C, where AEMO runs the Dispatch Algorithm, AEMO must determine a Market Clearing Price for each Market Service for a Dispatch Interval.

Explanatory Note

In the event that AEMO's Dispatch Algorithm fails to run for the Central Dispatch Process the information published under 7.13 and used in settlement in chapter 9 is unable to be determined. Section 7.11B is amended to enable AEMO to determine values that can be used as substitute values in such an event.

Clause 7.11B.1A is amended to clarify that the clause does not apply when the Real-Time Market is suspended, and that the Market Clearing Prices used are those determined for the Reference Scenario of the Dispatch Schedule.

New clause 7.11B.1B has also been included to ensure AEMO is able to provide the specified information to Market Participants and publish on the AEMO website.

Clause 7.11B.2 is amended to reflect the removal of the duplicate clause 7.11B.5 and to include the Market Clearing Price determined as a result of a suspension of the Real-Time Market.

7.11B.1A. ~~If~~ Subject to clause 7.11D.5, if AEMO fails to run the Dispatch Algorithm to determine Market Clearing Prices for any Dispatch Interval, then the Market Clearing Prices for that Dispatch Interval are:

(a)   if the Dispatch Interval has been included in a previous Dispatch Schedule, the Market Clearing Prices determined in the Reference Scenario for the Dispatch Interval in the most recent Dispatch Schedule that includes the Dispatch Interval; or

(b)   if the Dispatch Interval has not been included in a previous Dispatch Schedule, the Market Clearing Prices determined for the Pre-Dispatch Interval containing the Dispatch Interval in the Reference Scenario for the most recent Pre-Dispatch Schedule that includes the Dispatch Interval.

7.11B.1B. Subject to clause 7.11D.5, if AEMO fails to run the Dispatch Algorithm for the purposes of the Central Dispatch Process for any Dispatch Interval, then AEMO must determine the information identified in clauses 7.13.1B, 7.13.1D and 7.13.1EA as follows:

(a)   if the Dispatch Interval has been included in a previous Dispatch Schedule, the information determined in the Reference Scenario for the Dispatch Interval in the most recent Dispatch Schedule that includes the Dispatch Interval; or

(b)   if the Dispatch Interval has not been included in a previous Dispatch Schedule, the information determined for the Pre-Dispatch Interval containing the Dispatch Interval in the Reference Scenario for the most recent Pre-Dispatch Schedule that includes the Dispatch Interval.

7.11B.2.   Subject to clauses 7.11B.3, 7.11B.4 and ~~7.11B.5~~ 7.13.1CB, the Market Clearing Price for a Market Service represents the marginal value of that Market Service at the Reference Node at that time, which is calculated as the cost of meeting an

incremental change in the requirement for the Market Service at that time in accordance with clause 7.6.4.

> **Explanatory Note:**
>
> Clause 7.11B.3 is amended to:
>
> - note AEMO does not adjust the Energy Market Clearing Price when the specific conditions are met if AEMO has suspended the Real-Time Market; and
>
> - clarify that the Dispatch Algorithm must be used in the Central Dispatch Process in order for this clause to take effect.
>
> Clauses 7.11B.3A and 7.11B.3B are amended to reflect that both conditions of the clauses cannot be true at the same time.
>
> Clause 7.11B.5 is deleted because it is a duplicate of clause 7.11B.3B(b).

7.11B.3. ~~If,~~ Subject to clause 7.11D.5, if, for any Dispatch Interval:

    (a)   the ~~Market Clearing Prices for the Dispatch Interval have not already been determined by~~ Dispatch Interval has not already been subject to the Central Dispatch Process;

    (b)   AEMO reasonably determines that the Dispatch Algorithm used for the Central Dispatch Process may determine that there is insufficient capacity to meet all load; and

    (c)   AEMO has issued a manual load shed direction to a Network Operator under clause 3.4.4,

then AEMO must set the Energy Market Clearing Price for the Dispatch Interval to equal the Energy Offer Price Ceiling.

7.11B.3A. If, for any Dispatch Interval, the Energy Market Clearing Price determined using the Dispatch Algorithm is:

    (a)   greater than the Energy Offer Price Ceiling, then AEMO must set the Energy Market Clearing Price in that Dispatch Interval to equal the Energy Offer Price Ceiling; ~~and~~ or

    (b)   less than the Energy Offer Price Floor, then AEMO must set the Energy Market Clearing Price in that Dispatch Interval to equal the Energy Offer Price Floor.

7.11B.3B. If, for any Dispatch Interval, the Market Clearing Price for a Frequency Co-optimised Essential System Service determined using the Dispatch Algorithm is:

    (a)   greater than the applicable FCESS Clearing Price Ceiling, then AEMO must set the Market Clearing Price for the Frequency Co-optimised Essential System Service in that Dispatch Interval to equal the applicable FCESS Clearing Price Ceiling; ~~and~~ or

(b)   less than zero, then AEMO must set the Market Clearing Price for the Frequency Co-optimised Essential System Service in that Dispatch Interval to equal zero.

7.11B.4.   If, for any Dispatch Interval, AEMO has determined that the Dispatch Interval is an Affected Dispatch Interval under clause 7.11C.1A, then AEMO must set the Market Clearing Prices for the Dispatch Interval in accordance with section 7.11C.

7.11B.4A. If, for any Dispatch Interval, AEMO has not determined that the Dispatch interval is an Affected Dispatch Interval, and AEMO has declared the Dispatch Interval to be an Intervention Dispatch Interval under clause 7.11C.6, then AEMO must set the Market Clearing Prices for the Dispatch Interval in accordance with clauses 7.11C.7, 7.11C.8, 7.11C.9 and 7.11C.10.

7.11B.5.   If, for any Dispatch Interval, the Market Clearing Price for a Frequency Co-optimised Essential System Service determined using the Dispatch Algorithm is less than zero, then AEMO must set the Market Clearing Price for the Frequency Co-optimised Essential System Service in that Dispatch Interval to zero.

7.11C.   Corrections to Price Determinations and Intervention Pricing

…

Real-Time Market Suspension and Administered Pricing

Explanatory Note:

Section 7.11D includes various provisions relating to suspension of the Real-Time Market.

Changes to section 7.11D include:

- updating the determination for AEMO to suspend the Real-Time Market under clause 7.11D.1(c) to include an assessment of AEMO's actions against the impact to market settlement; and

- clarifying the actions AEMO performs when suspending the Real-Time Market and ceasing the suspension:

    o   a Real-Time Market suspension will occur from the commencement of a Dispatch Interval in the future;

    o   a Market Advisory will be issued to notify of suspension, the reason for the suspension and any specific actions for participants not already captured in the WEM Procedure; and

    o   AEMO will determine when to resume the operation of the Real-Time Market and give participants at least 2 hours' notice before resuming from the commencement of a Trading Interval.

During a suspension, AEMO may be required to cease using the Dispatch Algorithm (if unavailable, producing incorrect solutions, or at the request of the Minister) to determine dispatch solutions and issue Dispatch Instructions to facilities. Where the Dispatch Algorithm is unavailable, or to maintain Power System Security, AEMO will direct facilities as required. AEMO will publish retrospective Dispatch Instructions where the direction to the facility is to adjust output or provide an Essential System Service.

During a suspension of the Real-Time Market, Essential System Services will be procured and dispatched using the Dispatch Algorithm, if available, or as determined by AEMO. RoCoF services will not be procured during suspension.

7.11D. Real-Time Market Suspension

7.11D.1. AEMO may suspend the Real-Time Market:

    (a)   in the event of a system shutdown or major supply disruption;

    (b)   when AEMO has been requested by the Minister, under clause 2.44.1, to suspend the market or operate all or part of the power system in connection with the exercise of emergency powers; or

    (c)   when AEMO determines ~~that it is necessary because it has become impossible to maintain Power System Security~~, in its reasonable opinion, that actions undertaken to maintain Power System Security and Power System Reliability are significantly impacting market settlement in accordance with the provisions of these WEM Rules due to:

        i.   failure of its IT systems;

        ii.   loss of communications or control systems required to maintain Power System Security; or

        iii.   any other reason as identified in the WEM Procedure published under clause 7.11D.4.

~~7.11D.2. Where AEMO deems, in its reasonable opinion, it is practicable to resume the Central Dispatch Process it must:~~

    ~~(a)   lift any suspension of the Real-Time Market at commencement of the next practicable Trading Interval, in accordance with the process described in the WEM Procedure referred to in clause 7.11D.4; and~~

    ~~(b)   resume the determination of Market Clearing Prices.~~

7.11D.2. When AEMO determines that it must suspend the Real-Time Market under clause 7.11D.1 it must:

    (a)   issue a Market Advisory which must include:

        i.   the time from which the Real-Time Market will be suspended, which must be from the commencement of a Dispatch Interval;

        ii.   the reason AEMO has been required to suspend the Real-Time Market; and

        iii.   where applicable, any additional actions to those specified in the WEM Procedure under clause 7.11D.4 required of Market Participants during the suspension period; and

    (b)   from the time specified in clause 7.11D.2(a)(i):

> > > i. where AEMO determines that the Dispatch Algorithm cannot be used, cease the use of the Dispatch Algorithm in the Central Dispatch Process;
> >
> > > ii. determine Market Clearing Prices in accordance with section 7.11E; and
> >
> > > iii. determine the Minimum RoCoF Control Requirement, Additional RoCoF Control Requirement and RoCoF Control Requirement for each Dispatch Interval when the Real-Time Market will be suspended as zero.

7.11D.2A. If AEMO has suspended the Real-Time Market in accordance with 7.11D.1, AEMO may in addition to any other ability:

> (a) direct any Rule Participant to provide Essential System Services where they are capable of doing so;
>
> (b) cease the use of the Dispatch Algorithm in the Central Dispatch Process;
>
> (c) issue directions to Rule Participants to operate Registered Facilities at a particular level or in a particular way; and
>
> (d) take other actions as considered necessary, consistent with good electricity industry practice, in order to maintain Power System Security or Power System Reliability in the SWIS.

7.11D.3. ~~AEMO must issue a Market Advisory when suspending or lifting the suspension of the Real-Time Market.~~

7.11D.3. Where AEMO determines, in its reasonable opinion, it is practicable to resume the operation of the Real-Time Market it must:

> (a) issue a Market Advisory which must include:
>
> > i. the time from which the Real-Time Market suspension will be lifted which must be the commencement of a Trading Interval and provide a notice period of not less than two hours; and
> >
> > ii. where applicable, any additional actions to those specified in the WEM Procedure under clause 7.11D.4 required of Market Participants leading up to the time of the suspension being lifted; and
>
> (b) where relevant, resume the use of the Dispatch Algorithm in the Central Dispatch Process from the time described in clause 7.11D.3(a)(i).

7.11D.4. AEMO must document in a WEM Procedure:

> (a) the process by which AEMO will determine to suspend the Real-Time Market;
>
> (b) ~~the~~ any reasons under clause 7.11D.1(c)(iii) that AEMO may suspend the Real-Time Market;

(c)   the processes which Market Participants ~~are~~ may be required to follow during the suspension; ~~and~~

(d)   the processes AEMO will follow during the suspension ~~including~~ and the process to lift the suspension ~~which must provide a notice period of not less than two hours.~~; and

(e)   any actions required of AEMO or Market Participants to resume the Real-Time Market.

7.11D.5.   Where AEMO suspends the Real-Time Market under clause 7.11D.1, clauses 6.3A.2A(b), 7.1.1, 7.2.2, 7.2.4, 7.6.1, 7.6.2, 7.11B.1A, 7.11B.1B, 7.11B.3, 7.13.1, 7.13.1A, 7.13.1C, 7.13.1D, 7.13.1DA, 7.13.1EA, 7.13.1G, 7.13A.1 and 7.14.1 do not apply.

7.11E.   Administered Pricing in the Event of Market System Failure

7.11E.1.   If the Real-Time Market is suspended under clause 7.11D.1(a), AEMO must set the final Market Clearing Prices for each Market Service in any Dispatch Interval during the suspension as follows:

(a)   the Final Energy Market Clearing Price is to equal the Energy Offer Price Ceiling;

(b)   the Final Regulation Raise Market Clearing Price is to equal zero and the Essential System Service Enablement Quantity for each Registered Facility accredited for Regulation Raise for the Dispatch Interval is zero;

(c)   the Final Regulation Lower Market Clearing Price is to equal zero and the Essential System Service Enablement Quantity for each Registered Facility accredited for Regulation Lower for the Dispatch Interval is zero;

(d)   the Final Contingency Reserve Raise Market Clearing Price is to equal zero and the Essential System Service Enablement Quantity for each Registered Facility accredited for Contingency Reserve Raise for the Dispatch Interval is zero;

(e)   the Final Contingency Reserve Lower Market Clearing Price is to equal zero and the Essential System Service Enablement Quantity for each Registered Facility accredited for Contingency Reserve Lower for the Dispatch Interval is zero; and

(f)   the Final RoCoF Control Service Market Clearing Price is to equal zero and the RoCoF Control Service requirements for the Dispatch Interval is zero.

7.11E.2.   If the Real-Time Market is suspended under clause 7.11D.1(b), AEMO must set the final Market Clearing Prices for each Market Service in any Dispatch Interval during the suspension as requested by the Minister.

7.11E.3.   If the Real-Time Market is suspended under clause 7.11D.1(c), AEMO must set the final Market Clearing Prices for each Market Service in any Dispatch Interval during the suspension as the average final Market Clearing Price for that Market

Service in the equivalent intervals in the four most recent completed Trading Weeks.

7.11E.4. Where, for the purposes of clause 7.11E.3, a Market Clearing Price is not available for a Market Service for an equivalent Dispatch Interval in the four most recent completed Trading Weeks referred to in clause 7.11E.3, AEMO must set the final Market Clearing Prices for each Market Service as follows:

(a) where there is no Final Energy Market Clearing Price available for the equivalent Dispatch Interval, AEMO must set the Final Energy Market Clearing Price as the average price for energy from the most recently published price for energy for 28 consecutive Trading Days for the equivalent Dispatch Interval;

(b) where there is no Final Regulation Raise Market Clearing Price available for the equivalent Dispatch Interval, AEMO must set the Final Regulation Raise Market Clearing Price as the average price for Regulation Raise, or equivalent service, from the most recently published price for the service for 28 consecutive Trading Days for the equivalent Dispatch Interval;

(c) where there is no Final Regulation Lower Market Clearing Price available for the equivalent Dispatch Interval, AEMO must set the Final Regulation Lower Market Clearing Price as the average price for Regulation Lower, or equivalent service, from the most recently published price for the service for 28 consecutive Trading Days for the equivalent Dispatch Interval;

(d) where there is no Final Contingency Reserve Raise Market Clearing Price available for the equivalent Dispatch Interval, AEMO must set the Final Contingency Reserve Raise Market Clearing Price as:

$$\text{Margin(di)} \times \text{Energy\_Price(di)}$$

where:

i. Margin is the Spinning Reserve margin price as the most recent determination by the Economic Regulation Authority for the equivalent Dispatch Interval; and

ii. Energy_Price is the average price for energy from the most recently published energy prices for 28 consecutive Trading Days for the equivalent Dispatch Interval;

(e) where there is no Final Contingency Reserve Lower Market Clearing Price available for the equivalent Dispatch Interval, AEMO must set the Final Contingency Reserve Lower Price Market Clearing Price using an estimation method that takes into account the quantum and price set by the Economic Regulation Authority for load rejection reserve; and

(f) where there is no Final RoCoF Control Service Market Clearing Price available for the equivalent Dispatch Interval, AEMO must set the RoCoF Control Service requirements for the Dispatch Interval to zero and set the Final RoCoF Control Service Market Clearing Price to zero.

7.11E.5. All administered prices set under clauses 7.11E.3 and 7.11E.4 will be subject to a floor of $0.

7.11E.6. To avoid doubt, and without limiting clause 1.55.9, for the purposes of the time periods specified in clauses 7.11E.3 and 7.11E.4, AEMO may, to the extent it considers necessary to set the final Market Clearing Prices specified in those clauses, use any data and information under the Pre-Amended Rules (as defined in clause 1.55.9) that it considers reasonable to use in the circumstances.

7.12. [Blank]

Settlement and Monitoring Data

7.13. Settlement and Monitoring Data

Explanatory Note

Section 7.13 is amended to identify information that will be made available and/or published when the Dispatch Algorithm has failed to determine a Market Schedule or AEMO has suspended the Real-Time Market.

The information in clauses 7.13.1 and 7.13.1A is only available when the Dispatch Algorithm has successfully completed its determination of the Market Schedule. This information will not be replaced through clause 7.11B.1B in the event the Dispatch Algorithm fails to run.

Clause 7.11B.1B identifies which of these clauses will have the information apply from previous forecast Market Schedules to the interval used for Central Dispatch Process and to be made available and published to the WEM Website through these clauses in section 7.13.

Clause 7.11D.5 identifies which of these clauses do not apply as AEMO has suspended the Real-Time Market.

7.13.1. Subject to clause 7.11D.5, AEMO must make available to Market Participants, where the Dispatch Algorithm has successfully determined the Market Schedule:

(a) for each Pre-Dispatch Interval of each Pre-Dispatch Schedule or Week-Ahead Schedule, within 30 minutes of determining that Market Schedule; and

(b) for each Dispatch Schedule, within 5 minutes of determining that Dispatch Schedule,

the following information:

(c) total quantity of Real-Time Market Offers for In-Service Capacity for each Market Service;

(d) total quantity of Real-Time Market Offers for Available Capacity for each Market Service;

(e) total quantity of Real-Time Market Bids for In-Service Capacity for energy;

(f) total quantity of Real-Time Market Bids for Available Capacity for energy; and

(g) Intervention Constraints.

7.13.1A. <u>Subject to clause 7.11D.5,</u> AEMO must make available to Market Participants<u>, where the Dispatch Algorithm has successfully determined the Market Schedule</u>:

    (a)   for each Pre-Dispatch Interval in each Scenario of each Pre-Dispatch Schedule or Week-Ahead Schedule, within 30 minutes of determining that Market Schedule; and

    (b)   for each Scenario of each Dispatch Schedule, within 5 minutes of determining that Dispatch Schedule,

the following information:

    (c)   the Forecast Unscheduled Operational Demand or, where applicable, the alternative forecast used for the Scenario;

    (cA)   the Forecast Operational Demand or, where applicable, the equivalent forecast determined for the Scenario;

    (cB)   the Forecast Operational Withdrawal or, where applicable, the equivalent forecast determined for the Scenario;

    (d)   the projected total quantity required of each Frequency Co-optimised Essential System Service;

    (e)   projected shortfalls in each Market Service;

    (f)   projected Dispatch Targets, Dispatch Caps and Dispatch Forecasts as applicable for each Registered Facility. To avoid doubt, AEMO must identify which Facility each quantity is associated with;

    (g)   projected Essential System Service Enablement Quantities as applicable for each Registered Facility. To avoid doubt, AEMO must identify which Facility each quantity is associated with;

    (h)   binding Constraint Equations;

    (i)   Near Binding Constraint Equations;

    (j)   projected Market Clearing Prices for each Market Service;

    (k)   the Minimum RoCoF Control Requirement;

    (l)   the Additional RoCoF Control Requirement;

    (m)   the RoCoF Control Requirement;

    (n)   the Contingency Raise Offset;

    (o)   the Contingency Lower Offset;

    (p)   Facility Performance Factors; and

    (q)   the identity of each Registered Facility that was subject to a Commissioning Test or a Reserve Capacity Test.

7.13.1B. Within 5 minutes of each time AEMO uses the Dispatch Algorithm for the purposes of the Central Dispatch Process, and no later than the end of the

relevant Dispatch Interval, AEMO must make available to Market Participants, subject to clauses 7.11B.1A and 7.11B.1B:

(a)   Dispatch Targets, Dispatch Caps, Dispatch Forecasts as issued by AEMO and recorded under clause 7.6.8, applicable for each Facility;

(b)   Essential System Service Enablement Quantities as applicable for each Registered Facility and each Frequency Co-optimised Essential System Service;

(c)   the Market Clearing Price for each Market Service for the relevant Dispatch Interval;

(d)   binding Constraint Equations;

(e)   Near Binding Constraint Equations;

(f)   the Minimum RoCoF Control Requirement;

(g)   the Additional RoCoF Control Requirement;

(h)   the RoCoF Control Requirement;

(i)   the Contingency Raise Offset;

(j)   the Contingency Lower Offset;

(k)   Facility Performance Factors; and

(l)   the AEMO estimated quantity of Not In-Service Capacity for each Scheduled Facility or Semi-Scheduled Facility for which a Market Participant holds Capacity Credits, in each Dispatch Interval.

7.13.1C.   Within Subject to clauses 7.13.1CB and 7.13.1K, within 5 minutes of the end of a Trading Interval, AEMO must make available to Market Participants the Reference Trading Price for that Trading Interval.

7.13.1CA.   Where a Market Clearing Price has been impacted by an Affected Dispatch Interval or AEMO Intervention Event, AEMO must:

(a)   determine revised Market Clearing Prices for each Market Service for the relevant Dispatch Interval;

(b)   determine the revised Reference Trading Price for the relevant Trading Interval; and

(c)   make the revised prices referred to in clauses 7.13.1CA(a) and 7.13.1CA(b) available to Market Participants as soon as practicable.

7.13.1CB.   Where a Market Clearing Price has been impacted by a suspension of the Real-Time Market under clause 7.11D.1, AEMO must, based on the final Market Clearing Prices for each Market Service for each Dispatch Interval during the suspension as determined by AEMO in accordance with section 7.11E:

(a)   determine revised Market Clearing Prices for each Market Service for each relevant Dispatch Interval;

(b)   determine the revised Reference Trading Price for each relevant Trading Interval; and

(c)   make the revised prices referred to in clauses 7.13.1CB(a) and 7.13.1CB(b) available to Market Participants as soon as practicable.

7.13.1D. For Subject to clause 7.11D.5, for each Pre-Dispatch Interval or Dispatch Interval in each Scenario in each Market Schedule, where the Dispatch Algorithm has successfully determined the Market Schedule, AEMO must, within 30 minutes of the completion of the Market Schedule (or within 5 minutes of completion for the Dispatch Schedule), make available to each Market Participant:

(a)   which of its Registered Facilities clause 7.5.8(a) applies to;

(b)   which of its Registered Facilities clause 7.5.8(b) applies to; and

(c)   the Estimated FCESS Uplift Payment for each of its Scheduled Facilities and Semi-Scheduled Facilities.

7.13.1DA. Subject to clause 7.11D.5, if AEMO fails to run the Dispatch Algorithm for the purposes of the Central Dispatch Process, AEMO must make the information in clause 7.13.1D, determined in accordance with 7.11B.1B, available to each Market Participant in accordance with clause 7.13.1K.

Explanatory Note:

Clause 7.13.1E is amended to:

- remove all information that is considered an output of the Dispatch Algorithm for active dispatch purposes (covered in a separate clause); and

- revise the quantity of FCESS scheduled by a Facility during the Dispatch Interval, which may not be the same as that assigned by the Dispatch Algorithm when:

  o   the facility determined by the Central Dispatch Process is unable to provide the service and AEMO has to procure from another during the interval;

  o   AEMO procures additional ESS from a Facility additional to that identified by the Dispatch Algorithm;

  o   the Dispatch Algorithm has failed to generate a solution for the Dispatch Interval and AEMO directs an unforecasted facility to provide ESS; or

  o   the Real-Time Market is suspended.

New clause 7.13.1EA now contains all the information from clause 7.13.1E relating to the outputs that were generated by the Dispatch Algorithm as part of the Central Dispatch Process, or substituted under clause 7.11B.1B when the Dispatch Algorithm failed to determine an outcome in that Dispatch Interval. These are to be provided to downstream Settlement equations.

7.13.1E. AEMO must prepare and publish on the WEM Website the following data for a Trading Day by noon on the first Business Day following the day on which the Trading Day ends:

(a)   the following SCADA data for each Dispatch Interval of the Trading Day:

i.   an estimate of the MWh Injection or Withdrawal of each Scheduled Facility, Semi-Scheduled Facility or Non-Scheduled Facility monitored by AEMO's SCADA system;

ii.   [Blank]

iii.   where it ~~is~~ <u>was</u> available to AEMO for use in <u>the Dispatch Algorithm for the purposes of</u> the Central Dispatch Process, data that has been used to adjust Essential System Service submissions for each Facility;

iv.   the Charge Level immediately prior to the start of the Dispatch Interval of each Electric Storage Resource that is part of a Semi-Scheduled Facility or Scheduled Facility and monitored by AEMO's SCADA system;

v.   the MWh output or consumption of each separate electricity producing unit in each Energy Producing System supplying an Intermittent Load for which, in AEMO's reasonable opinion, the information provided under clause 2.30B.3(g) does not show that if a Contingency Event or an event behind the relevant connection point affects the Energy Producing System the net Injection or Withdrawal of the Facility will change by less than 10 MW;

vi.   the EOI Quantity of each Scheduled Facility, Semi-Scheduled Facility and Non-Scheduled Facility;

vii.   the Operational Demand;

viii. the Operational Withdrawal; and

ix.   any other SCADA data used as an input into <u>the Dispatch Algorithm and used for the purposes of</u> the Central Dispatch Process;

(aA)   for each Trading Interval of the Trading Day, an estimate, derived from SCADA data, of the MWh Injection or Withdrawal of each Scheduled Facility, Semi-Scheduled Facility or Non-Scheduled Facility monitored by AEMO's SCADA system;

(b)   the maximum daily ambient temperature at the site of each Scheduled Facility or Semi-Scheduled Facility, recorded in accordance with the method specified in Appendix 1(b)(viii) or Appendix 1(c)(viii) as applicable;

~~(c)   details of each Real-Time Market Submission used in the Central Dispatch Process for Dispatch Intervals in that Trading Day, including, as applicable:~~

~~i.   the Registered Facility ID;~~

~~iA.   the Market Service;~~

~~ii.   Price-Quantity Pairs;~~

~~iii.   In-Service Capacity for Injection;~~

~~iv.   Available Capacity for Injection;~~

~~v.   In-Service Capacity for Withdrawal;~~

~~vi.   Available Capacity for Withdrawal;~~

~~vii.   the Maximum Upwards Ramp Rate;~~

(c) for each Frequency Co-optimised Essential System Service, the Essential System Service Enablement Quantities scheduled in each Dispatch Interval of the Trading Day as applicable for each Registered Facility;

(d) where applicable, for each Trading Interval of the Trading Day, the requested decrease in absolute value of Withdrawal for each Demand Side Programme calculated under clause 7.13.5; and

(e) where applicable, for each Scheduled Facility or Semi-Scheduled Facility and each Dispatch Interval of the Trading Day, the Congestion Rental in respect of the full set of Network Constraints, calculated under clause 7.14.1;

(f) where applicable, for each Scheduled Facility or Semi-Scheduled Facility and each Dispatch Interval, the Energy Uplift Price and the Uplift Payment Mispricing Trigger;

(g) for each Dispatch Interval of the Trading Day:

i. all Facility Risks for that Dispatch Interval; and

ii. for each Network Contingency which is a Credible Contingency Event that is taken into account when setting the Contingency Reserve Raise requirement under clause 7.2.4 in that Dispatch Interval:

1. the Network Risk associated with that Network Contingency; and

2. the Registered Facilities whose Facility Risks are included in the Network Risk associated with that Network Contingency; and

(h) for each Dispatch Interval of the Trading Day, for each Semi-Scheduled Facility and Non-Scheduled Facility, any alternative forecast quantities to the Unconstrained Injection Forecast and Unconstrained Withdrawal

~~Forecast provided by the Market Participant in its Real-Time Market Submission that were determined and used by AEMO in the Central Dispatch Process under clause 7.2.4A.~~

    (e)   where applicable, the Dispatch Targets or Dispatch Caps issued under clause 7.7.8A, applicable for each Facility.

7.13.1EA. Subject to clause 7.11D.5, AEMO must prepare and publish on the WEM Website the following data for a Trading Day by noon on the first Business Day following the day on which the Trading Day ends:

    (a)   details of each Real-Time Market Submission used as an input to the Dispatch Algorithm for the purposes of the Central Dispatch Process, subject to 7.11B.1B, for Dispatch Intervals in that Trading Day, including, as applicable:

        i.   the Registered Facility ID;

        iA.   the Market Service;

        ii.   Price-Quantity Pairs;

        iii.   In-Service Capacity for Injection;

        iv.   Available Capacity for Injection;

        v.   In-Service Capacity for Withdrawal;

        vi.   Available Capacity for Withdrawal;

        vii.   the Maximum Upwards Ramp Rate;

        viii.   the Maximum Downwards Ramp Rate;

        ix.   Enablement Minimums;

        x.   Enablement Maximums;

        xi.   Low Breakpoints;

        xii.   High Breakpoints;

        xiii.   Dispatch Inflexibility Profiles;

        xiv.   any reasons for revisions in accordance with clauses 7.4.26(a) or 7.4.27(a);

        xv.   if the Registered Facility is Inflexible;

        xvi.   the Unconstrained Injection Forecast; and

        xvii.   the Unconstrained Withdrawal Forecast;

    (b)   where applicable, for each Scheduled Facility or Semi-Scheduled Facility and each Dispatch Interval of the Trading Day, the Congestion Rental, generated by the Dispatch Algorithm for the purposes of the Central Dispatch Process, subject to 7.11B.1B, calculated under clause 7.14.1;

(c)　　for each Dispatch Interval of the Trading Day, information used in the Dispatch Algorithm for the purposes of the Central Dispatch Process, subject to clause 7.11B.1B:

    i.　　all Facility Risks for that Dispatch Interval; and

    ii.　　for each Network Contingency which is a Credible Contingency Event that is taken into account when setting the Contingency Reserve Raise requirement under clause 7.2.4 in that Dispatch Interval:

        1.　　the Network Risk associated with that Network Contingency; and

        2.　　the Registered Facilities whose Facility Risks are included in the Network Risk associated with that Network Contingency;

(d)　　for each Dispatch Interval of the Trading Day, for each Semi-Scheduled Facility and Non-Scheduled Facility, any alternative forecast quantities to the Unconstrained Injection Forecast and Unconstrained Withdrawal Forecast provided by the Market Participant in its Real-Time Market Submission that were determined and used by AEMO as an input to the Dispatch Algorithm for the purposes of the Central Dispatch Process under clause 7.2.4A, subject to clause 7.11B.1B; and

(e)　　where applicable, for each Scheduled Facility or Semi-Scheduled Facility and each Dispatch Interval, the Energy Uplift Price and the Uplift Payment Mispricing Trigger as determined by the Dispatch Algorithm, subject to clauses 7.11B.1B.

Explanatory Note:

Further amendments include:

- Exempting clause 7.13.1G when the Real-Time Market is suspended.

- Extensions, through clause 7.13.1J, for making information available to Market Participants and to publish this information to the WEM Website where AEMO has a technical issue (e.g. Dispatch Algorithm failure) as AEMO requires the automation within the Dispatch Algorithm to generate the data.

- Clause 7.13.1J extensions also apply to the publication of data.

- Clause 7.13.1K has been deleted as the context has been subsumed into clause 7.13.1J.

- Clause 7.13.1L has been amended to allow AEMO to defer the publication of data in clause 7.13.1F when it is required to obtain information from a Rule Participant.

7.13.1F.　AEMO must prepare and publish on the WEM Website, for each Trading Interval and Dispatch Interval of a Trading Day, by noon on the first Business Day following the day on which the Trading Day ends:

(a)　　an estimate of the total quantity of energy not served (in MWh) due to involuntary load shedding (manual and automatic); and

(b)　　an estimate of the change in Withdrawal (in MWh) of any Interruptible Loads in the provision of Contingency Reserve Raise.

7.13.1G. Subject to clause 7.11D.5, AEMO must make available to Market Participants, for each Dispatch Interval of each DSP Pre-Dispatch Schedule or DSP Week-Ahead Schedule, within 30 minutes of determining that DSP Schedule, the following information:

    (a)   for each Demand Side Programme:

        i.   DSP Unconstrained Withdrawal Quantity;

        ii.   DSP Constrained Withdrawal Quantity;

        iii.   estimated Relevant Demand;

        iv.   estimated sum of the Minimum Consumption of each Associated Load of the Demand Side Programme;

        v.   estimated Reserve Capacity Obligation Quantity;

        vi.   DSP Forecast Capacity; and

        vii.   DSP Forecast Reduction;

    (b)   the sum of the DSP Forecast Capacities of each Demand Side Programme; and

    (c)   the sum of the DSP Forecast Reductions of each Demand Side Programme.

7.13.1H. Within five minutes of each time AEMO issues a Dispatch Instruction to a Demand Side Programme, AEMO must make available to Market Participants the details of that Dispatch Instruction.

7.13.1I. AEMO must publish the following information on the WEM Website as soon as practicable after it has made the information available to Market Participants:

    (a)   the information referred to in clauses 7.13.1, 7.13.1B, 7.13.1C, 7.13.1CA, 7.13.1CB, 7.13.1G and 7.13.1H; and

    (b)   the information referred to in clause 7.13.1A for the Reference Scenario of the applicable Market Schedule.

7.13.1J. ~~If AEMO is prevented by a temporary technical issue from publishing data on the WEM Website under clause 7.13.1I, AEMO may delay the publication of the data on the WEM Website by up to one Business Day.~~If AEMO is prevented from completing the relevant processes that enable the publishing of data on the WEM Website under clauses 7.13.1E, 7.13.1EA, 7.13.1F and 7.13.1I, AEMO must use reasonable endeavours to publish the data on the WEM Website as soon as practicable.

7.13.1K. ~~If AEMO is prevented from completing the relevant processes that enable the recording of the data described in clauses 7.13.1E or 7.13.1F, AEMO may delay the preparation and publication of the data on the WEM Website by up to two Business Days.~~If AEMO is prevented from completing the relevant processes that enable the provision of the data described in clauses 7.13.1B, 7.13.1C or

7.13.1DA, AEMO must use reasonable endeavours to make the information available to Market Participants as soon as practicable.

7.13.1L.   AEMO may, if it reasonably considers it is required in order to estimate, or support AEMO's estimate of, the quantity referred to in clause 7.13.1F(a), clause 7.13.1F, delay the publication of data in clause 7.13.1F by up to two Business Days and request information from Rule Participants in respect to any involuntary load shedding. A Rule Participant must comply with a request under this clause 7.13.1L within the time specified in the request.

7.13.2.   Where AEMO is required to develop estimates under clause 7.13.6, AEMO must publish those estimates as soon as practicable after the date specified in clause 4.1.11.

7.13.3.   AEMO must document in a WEM Procedure the procedure to be followed by Rule Participants in providing settlement and monitoring data to AEMO.

7.13.4.   AEMO must:

(a)   determine the Operational Demand Estimate and Operational Withdrawal Estimate from SCADA data for Registered Facilities at least once every minute; and

(b)   publish each Operational Demand Estimate and Operational Withdrawal Estimate on the WEM Website as soon as practicable after its determination under clause 7.13.4(a),

and these values are not required to be maintained on the WEM Website after their initial publication.

…

Not In-Service Capacity

7.13A.   Not In-Service Capacity

Explanatory Note

Clause 7.13A.1 is amended to clarify that the clause does not apply during a Real-Time Market suspension.

7.13A.1.   Subject to clause 7.11D.5, AEMO must determine the Not In-Service Capacity for each Scheduled Facility or Semi-Scheduled Facility f for which a Market Participant holds Capacity Credits, in the Dispatch Interval DI as either:

(a)   where AEMO has directed a Registered Facility to offer its capacity as In Service:

$$NISCap(f,DI) = Max(0, Min(RCOQ(f,DI), ReqDispEnergy(f,DI)) - Max(ISSDCEnergy(f,DI), ISDispEnergy(f,DI))$$

or

(b)   otherwise:

NISCap(f,DI) = Max(0, Min(RCOQ(f,DI), EstDispEnergy(f,DI)) –
    Max(ISSDCEnergy(f,DI), ISDispEnergy(f,DI))

where:

i.   NISCap(f,DI) is the Not In-Service Capacity quantity for the relevant
        Facility f in Dispatch Interval DI;

ii.   EstDispEnergy(f,DI) is the quantity of estimated energy dispatch
        immediately prior to the Start Decision Cutoff time for the relevant
        Facility f in Dispatch Interval DI, calculated in accordance with
        clause 7.13A.2;

iii.   ISSDCEnergy(f,DI) is the quantity of In-Service Capacity offered
        immediately after the Start Decision Cutoff time for the relevant
        Facility f in Dispatch Interval DI, calculated in accordance with
        clause 7.13A.3;

iv.   ISDispEnergy(f,DI) is the total MW quantity of In-Service Capacity
        for the relevant Facility f included in the Real-Time Market Offers for
        energy that were used to formulate Dispatch Instructions and
        calculate Market Clearing Prices for Dispatch Interval DI; and

v.   ReqDispEnergy(f,DI) is the quantity of In-Service Capacity for the
        relevant Facility f required by AEMO in Dispatch Interval DI.

Explanatory Note

Clause 7.13A.2 is amended to clarify the MW quantity of energy scheduled used in the calculation
is the quantity determined by the Dispatch Algorithm and does not incorporate any variations
resulting from directions issued by AEMO.

7.13A.2.   EstDispEnergy(f, DI) for each Scheduled Facility or Semi-Scheduled Facility f in
            Dispatch Interval DI is determined from the most recent Market Schedule made
            available to Market Participants before the Start Decision Cutoff from the Price-
            Quantity Pair for Injection for the relevant Facility f with the longest minimum time
            to synchronise, as specified in clause 7.4.40(g)(i)(3), as applicable:

(a)   where at least one Dispatch Schedule has been made available to Market
        Participants that contains Dispatch Interval DI within a Trading Interval, the
        total MW quantity of energy scheduled for dispatch by the Dispatch
        Algorithm in the Dispatch Interval DI for the relevant Facility f determined in
        the Reference Scenario of the Dispatch Schedule; or

(b)   where at least one Pre-Dispatch Schedule has been made available to
        Market Participants that contains Dispatch Interval DI within a Trading
        Interval, then the total MW quantity of energy scheduled for dispatch by the
        Dispatch Algorithm in the Trading Interval for the relevant Facility f
        determined in the Reference Scenario of the Pre-Dispatch Schedule; or

(c)   where at least one Week-Ahead Schedule has been made available to Market Participants that contains Dispatch Interval DI within a Trading Interval, then the total MW quantity of energy scheduled for dispatch by the Dispatch Algorithm in the Trading Interval for the relevant Facility f determined in the Reference Scenario of the Week-Ahead Schedule; or

(d)   otherwise, zero.

7.13A.3.   ISSDCEnergy(f,DI) for each Scheduled Facility or Semi-Scheduled Facility f in Dispatch Interval DI is determined from the most recent Market Schedule made available to Market Participants after the Start Decision Cutoff from the Price-Quantity Pair for Injection for the relevant Facility f with the longest minimum time to synchronise, as specified in clause 7.4.40(g)(i)(3), as applicable:

(a)   where at least one Dispatch Schedule has been made available to Market Participants that contains Dispatch Interval DI within a Trading Interval, the total MW quantity of In-Service Capacity included in the Real-Time Market Submission for energy from the relevant Facility f in the Dispatch Interval DI; or

(b)   where at least one Pre-Dispatch Schedule has been made available to Market Participants that contains Dispatch Interval DI within a Trading Interval, the total MW quantity of In-Service Capacity included in the Real-Time Market Submission for energy from the relevant Facility f in the Trading Interval; or

(c)   where at least one Week-Ahead Schedule has been made available to Market Participants that contains Dispatch Interval DI within a Trading Interval, the total MW quantity of In-Service Capacity included in the Real-Time Market Submission for energy from the relevant Facility f in the Trading Interval; or

(d)   otherwise, zero.

Congestion Rental

7.14.   Calculation of Congestion Rental

Explanatory Note:

Clause 7.14.1 is amended to clarify that:

- the clause does not apply during a Real-Time Market suspension; and

- the Congestion Rental is calculated in respect of the set of Network Constraints invoked in the Dispatch Algorithm, not every Network Constraint with a Constraint Equation in the Constraint Library.

7.14.1.   Subject to clause 7.11D.5, AEMO must calculate for each Registered Facility and each Dispatch Interval of a Trading Day, the Congestion Rental in respect of the full set of Network Constraints invoked in the Dispatch Algorithm. The Congestion Rental for Registered Facility f in Dispatch Interval DI is:

$$CongestionRental(f,DI)=$$
$$\sum_{n \in N} CongestionCoefficient(f,n,DI) \times MarginalConstraintValue(n,DI)$$

Where:

(a)   ConstraintCoefficient(f,n,DI) is the coefficient of Registered Facility f in respect of the cleared energy quantity of Registered Facility f in Network Constraint n in Dispatch Interval DI;

(b)   MarginalConstraintValue(n,DI) is the marginal value of Network Constraint n in Dispatch Interval DI; and

(c)   n∈N denotes all Network Constraints applied in Dispatch Interval DI.

…

9.9.   Settlement Calculations – Real-Time Energy

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Explanatory Note

AEMO must calculate the Energy Uplift Payment for Registered Facility f in Dispatch Interval DI as the product of a binary mispricing trigger, the Uplift Price and the Uplift Quantity.

However when the Real-Time Market is suspended, AEMO does not have the necessary data to determine the Mispricing Trigger without the Dispatch Algorithm. These changes are to enable Energy Uplift Payments for the energy dispatched during the suspended period to reflect the price and quantities in the P/Q pairs of the effective submissions.

To reflect that the Central Dispatch Process is suspended, the usual conditions of the Mispricing Trigger are not applicable. The changes to 9.9.8(a) enable the calculation of the Energy Uplift Payment using only the Price and Quantity as determined in 9.9.10 and 9.9.11 respectively.

9.9.8.   The Energy Uplift Payment for Registered Facility f in Dispatch Interval DI is:

$$EnergyUpliftPayment(f,DI) = IsMisPriced(f,DI) \times EnergyUpliftPrice(f,DI) \times$$

$$EnergyUpliftQuantity(f,DI)$$

where:

(a)   IsMisPriced(f,DI) is the mispricing trigger for Registered Facility f in Dispatch Interval DI which will equal 1 when AEMO has suspended the Real-Time Market under clause 7.11D.1 in the Dispatch Interval or determined as either 1 or 0 calculated in accordance with clause 9.9.9;

(b)   EnergyUpliftPrice(f,DI) is the Energy Uplift Price for Registered Facility f in Dispatch Interval DI calculated in accordance with clause 9.9.10; and

(c)   EnergyUpliftQuantity(f,DI) is the Energy Uplift Quantity for Registered Facility f in Dispatch Interval DI calculated in accordance with clause 9.9.11.

Explanatory Note

AEMO shall calculate the Mispricing Trigger for Registered Facility f in Dispatch Interval DI.

The ClearedQuantity(f,DI)>0 condition is included to ensure that the mispricing trigger is set to zero for any Registered Facility with a negative cleared quantity (e.g. a charging battery). Without this condition a battery could be charged more than the Energy Market Clearing Price for charging.

The CongestionRental(f,DI)>0 condition indicates the Registered Facility is alleviating the binding network constraint(s).

A Registered Facility is not eligible for an Energy Uplift Payment if any of the following conditions apply:

- if the Registered Facility's marginal offer price is less and/or equal to the Energy Market Clearing Price;

- if the Registered Facility appears in a binding ramp rate constraint (i.e. its down ramp rate prevents it from reducing its output compared with what it otherwise would have output if it had an infinite Downwards Ramp Rate); or

- if the Registered Facility appears in a binding ESS trapezium constraint (see clause 7.5.8(a)). This is to ensure that when a Registered Facility is generating as a result of being trapped in an ESS trapezium, it is not paid an Energy Uplift Payment unless a Congestion Rental applies even after the ESS offer has been revised to zero.

9.9.9.   The mispricing trigger for Registered Facility f in Dispatch Interval DI is:

$$
\text{IsMisPriced}(f,DI) = \begin{cases} \begin{array}{c} 1, \text{ if ClearedQuantity}(f,DI) > 0 \\ \text{and CongestionRental}(f,DI) > 0 \\ \text{and MarginalOfferPrice}(f,DI) > \text{Energy\_MCP}(DI) \\ \text{and } f \notin \text{FacilitiesInBindingDownRampRate}(DI) \\ \text{and } f \notin \text{FacilitiesInBindingESSEnablementMinimum}(DI) \\ \text{and } \forall c \, (f \notin \text{FacilitiesInBindingNCESS}(c, DI) \\ \\ 0, \text{ otherwise} \end{array} \end{cases}
$$

where:

(a)   ClearedQuantity(f,DI) is the cleared energy quantity for Registered Facility f in Dispatch Interval DI as recorded in the relevant Dispatch Instruction (where this quantity can be a Dispatch Target, Dispatch Cap or Dispatch Forecast);

(b)   CongestionRental(f,DI) is the Congestion Rental for Registered Facility f in Dispatch Interval DI in respect of a set of Network Constraints N as ~~calculated in accordance with clause 7.14.1~~ published under clause 7.13.1EA(b);

(c)   MarginalOfferPrice(f,DI) is the highest price associated with any cleared Price-Quantity Pair in respect of a Market Participant's Real-Time Market Submission for energy that was dispatched for Registered Facility f in Dispatch Interval DI;

(d)   Energy_MCP(DI) is the Final Energy Market Clearing Price for Dispatch Interval DI;

(e)   FacilitiesInBindingDownRampRate(DI) is the set of Registered Facilities whose EOI Quantity is higher than it would otherwise be in Dispatch Interval DI as a result of a binding ramp rate constraint applied under clause 7.2.4(c); and

(f)   FacilitiesInBindingESSEnablementMinimum(DI) is the set of Registered Facilities whose EOI Quantity is constrained to its Enablement Minimum value in Dispatch Interval DI, as a result of a binding Essential System Service Enablement Minimum constraint applied under clause 7.8.5(b)(i); and

(g)   FacilitiesInBindingNCESS(c,DI) is the set of Registered Facilities provided under clause 5.9.1(b) for NCESS Contract c and Dispatch Interval DI.

Explanatory Note

To enable Energy Uplift Payments during a Real-Time Market suspension, MarginalOfferPrice(f,DI) would be determined from the Facility's EOI Quantity for the Dispatch Interval, as determined from SCADA, compared to the effective submission of Energy Price/Quantity Pairs for the Facility for the Dispatch Interval, floored to 0 to prevent any negative prices.

EnergyUpliftQuantity(f,DI) is unchanged in its process even if the Real-Time Market is suspended.

9.9.10.   The Energy Uplift Price for Registered Facility f in Dispatch Interval DI is:

$$\text{EnergyUpliftPrice(f,DI)} = \text{Max}(0, (\text{MarginalOfferPrice(f,DI)} -$$

$$\text{ReferenceTradingPrice(t)}))$$

where:

(a)   MarginalOfferPrice(f,DI) is ~~the highest price associated with any cleared (or scheduled) Price-Quantity Pair in respect of a Market Participant's Real-Time Market Submission for energy that was dispatched for Registered Facility f in Dispatch Interval DI;~~:

i.   the highest price associated with any cleared (or scheduled) Price-Quantity Pair in respect of a Market Participant's Real-Time Market Submission for energy that was dispatched for Registered Facility f in Dispatch Interval DI; or

ii.   if AEMO has suspended the Real-Time Market under clause 7.11D.1, the highest price Price-Quantity Pair in respect of a Market Participant's Real-Time Market Submission for energy associated with the MW Injection or Withdrawal of Registered Facility f for Dispatch Interval DI as monitored by AEMO's SCADA system as prepared under clause 7.13.1E(a)(vi); and

(b)   ReferenceTradingPrice(t) is the Final Reference Trading Price for Trading Interval t containing Dispatch Interval DI.

9.9.11.   The Energy Uplift Quantity for Registered Facility f in Dispatch Interval DI is:

$$\text{EnergyUpliftQuantity(f,DI)} = \text{Max}(0, \widehat{\text{MeteredQuantity}}(f,DI))$$

where:

(a) $\widehat{MeteredQuantity}(f, DI)$ is the estimate of Injection or Withdrawal in MWh for Registered Facility f for a Dispatch Interval calculated in accordance with clause 9.9.12.

9.9.12. The metered quantity estimate of Injection or Withdrawal in MWh of Registered Facility f in Dispatch Interval DI is:

$$\widehat{MeteredQuantity}(f,DI) = \begin{cases} \dfrac{SCADAMWh(f,DI)}{TotalSCADAMWh(f,t)} \times MeteredSchedule(f,t), \\ \qquad\qquad \text{if } TotalSCADAMWh(f,t) \neq 0 \\ \dfrac{MeteredSchedule(f,t)}{6}, \text{ if } TotalSCADAMWh(f,t) = 0 \end{cases}$$

where:

(a) SCADAMWh(f,DI) is the MWh Injection or Withdrawal of Registered Facility f for Dispatch Interval DI as monitored by AEMO's SCADA system as prepared under clause 7.13.1E(a)(i);

(b) MeteredSchedule(f,t) is the Metered Schedule for Registered Facility f for Trading Interval t as calculated in accordance with clause 9.5.2; and

(c) TotalSCADAMWh(f,t) is the total MWh Injection or Withdrawal of Registered Facility f for Trading Interval t as calculated accordance with clause 9.9.13.

9.9.13. The total MWh Injection or Withdrawal of Registered Facility f for Trading Interval t is:

$$TotalSCADAMWh(f,t) = \sum_{DI \in t} SCADAMWh(f,DI)$$

where:

(a) SCADAMWh(f,DI) is the MWh Injection or Withdrawal of Registered Facility f for Dispatch Interval DI as monitored by AEMO's SCADA system as prepared under clause 7.13.1E(a)(i); and

(b) DI∈t denotes all Dispatch Intervals DI in Trading Interval t.

…

9.10. Settlement Calculations - Essential System Services

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Explanatory Note

FCESS Uplift Payments will not be payable where the Real-Time Market has been suspended. This is because the information required to calculate the FCESS Uplift Payment is determined by the Dispatch Algorithm. These amendments in clauses 9.10.3H, and 9.10.3K to 9.10.3O will negate any FCESS Uplift payments when the Real-Time Market has been suspended.

9.10.3H. The FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI is <u>zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise</u>:

FCESSUpliftPayment(f,DI) =Max(EnablementLosses_CR(f,DI),

EnablementLosses_CL(f,DI), EnablementLosses_RCS(f,DI),

EnablementLosses_RR(f,DI), EnablementLosses_RL(f,DI))

where:

(a) EnablementLosses_CR(f,DI) is the Enablement Losses in respect of Contingency Reserve Raise for Registered Facility f in Dispatch Interval DI as calculated in accordance with clause 9.10.3C;

(b) EnablementLosses_CL(f,DI) is the Enablement Losses in respect of Contingency Reserve Lower for Registered Facility f in Dispatch Interval DI as calculated in accordance with clause 9.10.3D;

(c) EnablementLosses_RCS(f,DI) is the Enablement Losses in respect of RoCoF Control Service for Registered Facility f in Dispatch Interval DI as calculated in accordance with clause 9.10.3E;

(d) EnablementLosses_RR(f,DI) is the Enablement Losses in respect of Regulation Raise for Registered Facility f in Dispatch Interval DI as calculated in accordance with clause 9.10.3F; and

(e) EnablementLosses_RL(f,DI) is the Enablement Losses in respect of Regulation Lower for Registered Facility f in Dispatch Interval DI as calculated in accordance with clause 9.10.3G.

9.10.3I. The number of Frequency Co-optimised Essential System Services to be allocated a share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI is:

(a) if Registered Facility f is a Scheduled Facility or Semi-Scheduled Facility:

FCESSCount(f,DI)
$$= EL\_CR\_Factor(f,DI) + EL\_CL\_Factor(f,DI)$$
$$+ EL\_RCS\_Factor(f,DI) + EL\_RR\_Factor(f,DI)$$
$$+ EL\_RL\_Factor(f,DI)$$

where:

i. EL_CR_Factor(f,DI) is the quantity determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3C(a)(i);

ii. EL_CL_Factor(f,DI) is the quantity determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3D(a)(i);

iii. EL_RCS_Factor(f,DI) is the quantity determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3E(a)(i);

iv. EL_RR_Factor(f,DI) is the quantity determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3F(a)(i); and

v.   EL_RL_Factor(f,DI) is the quantity determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3G(a)(i); and

(b)   if Registered Facility f is not a Scheduled Facility or Semi-Scheduled Facility:

FCESSCount(f,DI) = 0

9.10.3J.   The share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to each applicable Frequency Co-optimised Essential System Service is:

(a)   if FCESSCount(f,DI) is greater than zero:

$$FCESSUplift\_Share(f,DI) = \frac{FCESSUpliftPayment(f,DI)}{FCESSCount(f,DI)}$$

where:

i.   FCESSUpliftPayment(f,DI) is the FCESS Uplift Payment determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3H; and

ii.   FCESSCount(f,DI) is the number of Frequency Co-optimised Essential System Services determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3I; and

(b)   otherwise:

FCESSUplift_Share(f,DI) = 0

9.10.3K.   The share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to Contingency Reserve Raise is zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise:

(a)   if Registered Facility f is a Scheduled Facility or Semi-Scheduled Facility:

$$FCESSUplift\_CR(f,DI) = FCESSUplift\_Share(f,DI) \times EL\_CR\_Factor(f,DI)$$

where:

i.   FCESSUplift_Share(f,DI) is the share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to each applicable Frequency Co-optimised Essential System Service, determined under clause 9.10.3J; and

ii.   EL_CR_Factor(f,DI) is the quantity determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3C(a)(i); and

(b)   if Registered Facility f is not a Scheduled Facility or Semi-Scheduled Facility:

FCESSUplift_CR(f,DI) = 0

9.10.3L. The share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to Contingency Reserve Lower is zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise:

(a) if Registered Facility f is a Scheduled Facility or Semi-Scheduled Facility:

$$FCESSUplift\_CL(f,DI) = FCESSUplift\_Share(f,DI) \times EL\_CL\_Factor(f,DI)$$

where:

i. $FCESSUplift\_Share(f,DI)$ is the share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to each applicable Frequency Co-optimised Essential System Service, determined under clause 9.10.3J; and

ii. $EL\_CL\_Factor(f,DI)$ is the quantity determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3D(a)(i); and

(b) if Registered Facility f is not a Scheduled Facility or Semi-Scheduled Facility:

$$FCESSUplift\_CL(f,DI) = 0$$

9.10.3M. The share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to the RoCoF Control Service is zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise:

(a) if Registered Facility f is a Scheduled Facility or Semi-Scheduled Facility:

$$FCESSUplift\_RCS(f,DI) = FCESSUplift\_Share(f,DI) \times EL\_RCS\_Factor(f,DI)$$

where:

i. $FCESSUplift\_Share(f,DI)$ is the share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to each applicable Frequency Co-optimised Essential System Service, determined under clause 9.10.3J; and

ii. $EL\_RCS\_Factor(f,DI)$ is the quantity determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3E(a)(i); and

(b) if Registered Facility f is not a Scheduled Facility or Semi-Scheduled Facility:

$$FCESSUplift\_RCS(f,DI) = 0$$

9.10.3N. The share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to Regulation Raise is zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise:

(a) if Registered Facility f is a Scheduled Facility or Semi-Scheduled Facility:

$$FCESSUplift\_RR(f,DI) = FCESSUplift\_Share(f,DI) \times EL\_RR\_Factor(f,DI)$$

where:

i.   FCESSUplift_Share(f,DI) is the share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to each applicable Frequency Co-optimised Essential System Service, determined under clause 9.10.3J; and

ii.   EL_RR_Factor(f,DI) is the quantity determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3F(a)(i); and

(b)   if Registered Facility f is not a Scheduled Facility or Semi-Scheduled Facility:

FCESSUplift_RR(f,DI) = 0

9.10.3O. The share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to Regulation Lower is zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise:

(a)   if Registered Facility f is a Scheduled Facility or Semi-Scheduled Facility:

FCESSUplift_RL(f,DI) = FCESSUplift_Share(f,DI) × EL_RL_Factor(f,DI)

where:

i.   FCESSUplift_Share(f,DI) is the share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to each applicable Frequency Co-optimised Essential System Service, determined under clause 9.10.3J; and

ii.   EL_RL_Factor(f,DI) is the quantity determined for Registered Facility f in Dispatch Interval DI under clause 9.10.3G(a)(i); and

(b)   if Registered Facility f is not a Scheduled Facility or Semi-Scheduled Facility:

FCESSUplift_RL(f,DI) = 0

…

Explanatory Note:

The Contingency Reserve Raise payable calculation has been updated to reflect the changes in this exposure draft to ensure settlement for all Dispatch Intervals, including where the Dispatch Algorithm is not available and during a Real-Time Market suspension. The changes include:

- revising the clause for the ESS quantity to clause 7.13.1E(c);

- removing the performance factor applied to the payment when the Real-Time Market is suspended as this factor is determined by the Dispatch Algorithm; and

- preventing the application of any SESSM refunds during periods where the Real-Time Market is suspended as SESSM Award holders may be unable to update submissions during this period.

9.10.6.   The Contingency Reserve Raise amount payable for Registered Facility f in Dispatch Interval DI is:

$$CR\_Payable(f,DI) = CR\_MCP(DI) \times \frac{5}{60} \times CR\_EnablementQuantity(f, DI) \times$$

$$CR\_PerformanceFactor(f, DI) + CR\_AvailabilityPayment(f,DI) - $$

$$CR\_SESSMRefund(f,DI)$$

where:

(a) CR_MCP(DI) is the Final Contingency Reserve Raise Market Clearing Price for Dispatch Interval DI;

(b) 5/60 represents the period of a Dispatch Interval in hours;

(c) CR_EnablementQuantity(f,DI) is:

    i.   subject to clause 9.10.6(c)(ii) the Essential System Service Enablement Quantity for Registered Facility f in Dispatch Interval DI for Contingency Reserve Raise as published under clause ~~7.13.1B(b)~~ <u>7.13.1E(c)</u>; or

    ii.   if Registered Facility f is subject to a Planned Outage or a Forced Outage in Dispatch Interval DI and in AEMO's view the sum of the quantities of Contingency Reserve Raise offered in the relevant Market Participant's Real-Time Market Submission in respect of Registered Facility f for Dispatch Interval DI does not accurately reflect Registered Facility f's capability to provide Contingency Reserve Raise, then AEMO's reasonable estimate of Registered Facility f's MW capability to provide Contingency Reserve Raise in Dispatch interval DI;

(d) CR_PerformanceFactor(f,DI) is <u>1 if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise</u> the relevant Facility Performance Factor for Registered Facility f in Dispatch Interval DI as published by AEMO under clause 7.13.1B(k);

(e) CR_AvailabilityPayment(f,DI) is the SESSM Availability Payment to be made for Registered Facility f under each relevant SESSM Award in Dispatch Interval DI, as calculated following the steps set out in Appendix 2C and as finally calculated in clause 2.8(a) of Appendix 2C; and

(f) CR_SESSMRefund(f,DI) is <u>zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise</u> the refund payable by Market Participant p in respect of their Registered Facility f for Registered Facility f not meeting the SESSM Availability Requirements in Dispatch Interval DI in respect of Contingency Reserve Raise set out in each relevant SESSM Award as calculated following the steps set out in Appendix 2C and as finally calculated in clause 2.8(b) of Appendix 2C.

…

Explanatory Note:

The Contingency Reserve Lower payable calculation has been updated to reflect the changes in this exposure draft to ensure settlement for all Dispatch Intervals, including during a Real-Time Market suspension. The changes include:

- revising the clause for the ESS quantity to clause 7.13.1E(c);

- removing the performance factor applied to the payment when the Real-Time Market is suspended as this factor is determined by the Dispatch Algorithm; and

- preventing the application of any SESSM refunds during periods where the Real-Time Market is suspended as SESSM Award holders may be unable to update submissions during this period.

9.10.10. The Contingency Reserve Lower amount payable for Registered Facility f in Dispatch Interval DI is:

$$\text{CL\_Payable(f,DI)} = \text{CL\_MCP(DI)} \times \frac{5}{60} \times \text{CL\_EnablementQuantity(f, DI)} \times$$

$$\text{CL\_PerformanceFactor(f, DI)} + \text{CL\_AvailabilityPayment(f,DI)} -$$

$$\text{CL\_SESSMRefund(f,DI)}$$

where:

(a) CL_MCP(DI) is the Final Contingency Reserve Lower Market Clearing Price for Dispatch Interval DI;

(b) 5/60 represents the period of a Dispatch Interval in hours;

(c) CL_EnablementQuantity(f,DI) is:

    i. subject to clause 9.10.10(c)(ii) the Essential System Service Enablement Quantity for Registered Facility f in Dispatch Interval DI for Contingency Reserve Lower as published under clause 7.13.1E(c); or

    ii. if Registered Facility f is subject to a Planned Outage or a Forced Outage in Dispatch Interval DI and in AEMO's view the sum of the quantities of Contingency Reserve Lower offered in the relevant Market Participant's Real-Time Market Submission in respect of Registered Facility f for Dispatch Interval DI does not accurately reflect Registered Facility f's capability to provide Contingency Reserve Lower, then AEMO's reasonable estimate of Registered Facility f's MW capability to provide Contingency Reserve Lower in Dispatch interval DI;

(d) CL_PerformanceFactor(f,DI) is 1 if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise the relevant Facility Performance Factor for Registered Facility f in Dispatch Interval DI as published by AEMO under clause 7.13.1B(k);

(e) CL_AvailabilityPayment(f,DI) is the SESSM Availability Payment to be made for Registered Facility f under each relevant SESSM Award in

Dispatch Interval DI, as calculated following the steps set out in Appendix 2C and as finally calculated in clause 2.8(a) of Appendix 2C; and

(f) CL_SESSMRefund(f,DI) is zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise the refund payable by Market Participant p in respect of their Registered Facility f for Registered Facility f not meeting the SESSM Availability Requirements in Dispatch Interval DI in respect of Contingency Reserve Lower set out in in each relevant SESSM Award as calculated following the steps set out in Appendix 2C and as finally calculated in clause 2.8(b) of Appendix 2C.

…

Explanatory Note:

The RoCoF Control Service payable calculation has been updated to reflect the changes in this exposure draft to ensure settlement for all Dispatch Intervals, including during a Real-Time Market suspension. The changes include:

- revising the clause for the ESS quantity to clause 7.13.1E(c); and

- when the Real-Time Market is suspended, then the RoCoF Control Requirement is zero and no payments are made for the service.

9.10.14. The RoCoF Control Service amount payable for Registered Facility f in Dispatch Interval DI is:

$$RCS\_Payable(f,DI) = RCS\_MCP(DI) \times \frac{5}{60} \times RCS\_EnablementQuantity(f, DI) \times$$

$$RCS\_PerformanceFactor(f, DI) + RCS\_AvailabilityPayment(f,DI) -$$

$$RCS\_SESSMRefund(f,DI)$$

where:

(a) RCS_MCP(DI) is the Final RoCoF Control Service Market Clearing Price for Dispatch Interval DI;

(b) 5/60 represents the period of a Dispatch Interval in hours;

(c) RCS_EnablementQuantity(f,DI) is:

i. subject to clause 9.10.14(c)(ii) the Essential System Service Enablement Quantity for Registered Facility f in Dispatch Interval DI for RoCoF Control Service as published under clause 7.13.1E(c); or

ii. if Registered Facility f is subject to a Planned Outage or a Forced Outage in Dispatch Interval DI and in AEMO's view the sum of the quantities of RoCoF Control Service offered in the relevant Market Participant's Real-Time Market Submission in respect of Registered Facility f for Dispatch Interval DI does not accurately reflect Registered Facility f's capability to provide RoCoF Control Service, then AEMO's reasonable estimate of Registered Facility f's MWs capability to provide RoCoF Control Service in Dispatch interval DI;

(d)   RCS_PerformanceFactor(f,DI) is <u>1 if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise</u> the relevant Facility Performance Factor for Registered Facility f in Dispatch Interval DI as published by AEMO under clause 7.13.1B(k);

(e)   RCS_AvailabilityPayment(f,DI) is the SESSM Availability Payment to be made for Registered Facility f under each relevant SESSM Award in Dispatch Interval DI, as calculated following the steps set out in Appendix 2C and as finally calculated in clause 2.8(a) of Appendix 2C; and

(f)   RCS_SESSMRefund(f,DI) is <u>zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise</u> the refund payable by Market Participant p in respect of their Registered Facility f for Registered Facility f not meeting the SESSM Availability Requirements in Dispatch Interval DI in respect of RoCoF Control Service set out in each relevant SESSM Award as calculated following the steps set out in Appendix 2C and as finally calculated in clause 2.8(b) of Appendix 2C.

…

Explanatory Note:

The Regulation Raise payable calculation has been updated to reflect the changes in this exposure draft to ensure settlement for all Dispatch Intervals, including during a Real-Time Market suspension. The changes include:

- revising the clause for the ESS quantity to clause 7.13.1E(c);

- removing the performance factor applied to the payment when the Real-Time Market is suspended as this factor is determined by the Dispatch Algorithm; and

- preventing the application of any SESSM refunds during periods where the Real-Time Market is suspended as SESSM Award holders may be unable to update submissions during this period.

9.10.22.   The Regulation Raise amount payable for Registered Facility f in Dispatch Interval DI is:

$$RR\_Payable(f,DI) = RR\_MCP(DI) \times \frac{5}{60} \times RR\_EnablementQuantity(f, DI) \times$$

$$RR\_PerformanceFactor(f, DI) + RR\_AvailabilityPayment(f,DI) -$$

$$RR\_SESSMRefund(f,DI)$$

where:

(a)   RR_MCP(DI) is the Final Regulation Raise Market Clearing Price for Dispatch Interval DI;

(b)   5/60 represents the period of a Dispatch Interval in hours;

(c)   RR_EnablementQuantity(f,DI) is:

i.   subject to clause 9.10.22(c)(ii) the Essential System Service Enablement Quantity for Registered Facility f in Dispatch Interval DI for Regulation Raise <u>as published under clause 7.13.1E(c)</u>; or

ii. if Registered Facility f is subject to a Planned Outage or a Forced Outage in Dispatch Interval DI and in AEMO's view the sum of the quantities of Regulation Raise offered in the relevant Market Participant's Real-Time Market Submission in respect of Registered Facility f for Dispatch Interval DI does not accurately reflect Registered Facility f's capability to provide Regulation Raise, then AEMO's reasonable estimate of Registered Facility f's MW capability to provide Regulation Raise in Dispatch Interval DI;

(d) RR_PerformanceFactor(f,DI) is 1 if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise the relevant Facility Performance Factor for Registered Facility f in Dispatch Interval DI as published by AEMO under clause 7.13.1B(k);

(e) RR_AvailabilityPayment(f,DI) is the SESSM Availability Payment to be made for Registered Facility f under each relevant SESSM Award in Dispatch Interval DI, as calculated following the steps set out in Appendix 2C and as finally calculated in clause 2.8(a) of Appendix 2C; and

(f) RR_SESSMRefund(f,DI) is zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise the refund payable by Market Participant p in respect of their Registered Facility f for Registered Facility f not meeting the SESSM Availability Requirements in Dispatch Interval DI in respect of Regulation Raise set out in each relevant SESSM Award as calculated following the steps set out in Appendix 2C and as finally calculated in clause 2.8(b) of Appendix 2C.

Explanatory Note:

The Regulation Lower payable calculation has been updated to reflect the changes in this exposure draft to ensure settlement for all Dispatch Intervals, including during a Real-Time Market suspension. The changes include:

- revising the clause for the ESS quantity to clause 7.13.1E(c);

- removing the performance factor applied to the payment when the Real-Time Market is suspended as this factor is determined by the Dispatch Algorithm; and

- preventing the application of any SESSM refunds during periods where the Real-Time Market is suspended as SESSM Award holders may be unable to update submissions during this period.

9.10.23. The Regulation Lower amount payable for Registered Facility f in Dispatch Interval DI is:

$$RL\_Payable(f,DI) = RL\_MCP(DI) \times \frac{5}{60} \times RL\_EnablementQuantity(f, DI) \times$$

$$RL\_PerformanceFactor(f, DI) + RL\_AvailabilityPayment(f,DI) -$$

$$RL\_SESSMRefund(f,DI)$$

where:

(a)   RL_MCP(DI) is the Final Regulation Lower Market Clearing Price for Dispatch Interval DI;

(b)   5/60 represents the period of a Dispatch Interval in hours;

(c)   RL_EnablementQuantity(f,DI) is:

    i.   subject to clause 9.10.23(c)(ii) the Essential System Service Enablement Quantity for Registered Facility f in Dispatch Interval DI for Regulation Lower as published under clause 7.13.1E(c); or

    ii.   if Registered Facility f is subject to a Planned Outage or a Forced Outage in Dispatch Interval DI and in AEMO's view the sum of the quantities of Regulation Lower offered in the relevant Market Participant's Real-Time Market Submission in respect of Registered Facility f for Dispatch Interval DI does not accurately reflect Registered Facility f's capability to provide Regulation Lower, then AEMO's reasonable estimate of Registered Facility f's MW capability to provide Regulation Lower in Dispatch Interval DI;

(d)   RL_PerformanceFactor(f,DI) is 1 if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise the relevant Facility Performance Factor for Registered Facility f in Dispatch Interval DI as published by AEMO under clause 7.13.1B(k);

(e)   RL_AvailabilityPayment(f,DI) is the SESSM Availability Payment to be made for Registered Facility f under each relevant SESSM Award in Dispatch Interval DI, as calculated following the steps set out in Appendix 2C and as finally calculated in clause 2.8(a) of Appendix 2C; and

(f)   RL_SESSMRefund(f,DI) is zero if AEMO has suspended the Real-Time Market under clause 7.11D.1, otherwise the refund payable by Market Participant p in respect of their Registered Facility f for Registered Facility f not meeting the SESSM Availability Requirements in Dispatch Interval DI in respect of Regulation Lower set out in each relevant SESSM Award as calculated following the steps set out in Appendix 2C and as finally calculated in clause 2.8(b) of Appendix 2C.

…

9.10.30. The Contingency Reserve Raise amount recoverable from Market Participant p for Trading Interval t is:

$$\text{CR\_Recoverable(p,t)} = \sum_{DI \in t} \text{CR\_Payable(DI)} \times \text{TotalRunwayShare(p,DI)}$$

$$\text{CR\_Recoverable(p,t)} = \sum_{DI \in t} \begin{cases} 0, \text{ if RTMSuspFlag(DI) is 1, otherwise} \\ \text{CR\_Payable(DI)} \times \text{TotalRunwayShare(p,DI)} \end{cases}$$

$$+\, RTMSuspCRRshare(p,t) \times \sum_{DI \in t} \begin{cases} 0, \text{ if RTMSuspFlag(DI) is 0, otherwise} \\ \text{CR\_Payable(DI)} \end{cases}$$

where:

(a) CR_Payable(DI) is the total cost of procuring Contingency Reserve Raise in Dispatch Interval DI calculated in accordance with clause 9.10.7;

(b) TotalRunwayShare(p,DI) is Market Participant p's share of the total cost of procuring Contingency Reserve Raise in Dispatch Interval DI as calculated following the steps set out in Appendix 2A and as finally calculated in clause 5.3 of Appendix 2A; and

(c) DI∈t denotes all Dispatch Intervals DI in Trading Interval t.

(c) RTMSuspFlag(DI) is 1 if AEMO has suspended the Real-Time Market under clause 7.11D.1 for Dispatch Interval DI, and zero otherwise;

(d) RTMSuspCRRshare(p,t) is Market Participant p's share of the total cost of procuring Contingency Reserve Raise when AEMO has suspended the Real-Time Market under clause 7.11D.1 for Trading Interval t as calculated in clause 9.10.30A; and

(e) DI∈t denotes all Dispatch Intervals DI in Trading Interval t.

9.10.30A. Market Participant p's share of the total cost of procuring Contingency Reserve Raise when AEMO has suspended the Real-Time Market under clause 7.11D.1 for Trading Interval t is:

$$\text{RTMSuspCRRshare(p,t)} = \frac{\text{SuspCRRParticipantQuantity(p,t)}}{\text{SuspCRRParticipantQuantity(t)}}$$

where:

(a) SuspCRRParticipantQuantity(p,t) is the quantity calculated in accordance with clause 9.10.30B; and

(b) SuspCRRParticipantQuantity(t) is the quantity calculated in accordance with clause 9.10.30D.

9.10.30B. Market Participant p's contributing quantity to the total cost of procuring Contingency Reserve Raise when AEMO has suspended the Real-Time Market under clause 7.11D.1 for Trading Interval t is:

$$\text{SuspCRRParticipantQuantity(p,t)} = \sum_{SF \in p} \max(0, \text{SuspCRRFacilityQuantity}(SF, t))$$

$$+ \sum_{SSF \in p} \max(0, \text{SuspCRRFacilityQuantity}(SSF, t))$$

$$+ \sum_{EPS \in p} \left(\sum_{DI \in t} SCADASchedule(EPS, DI) \right)$$

where:

(a) SuspCRRFacilityQuantity (SF,t) is the contributing quantity of Scheduled Facility SF, calculated in accordance with clause 9.10.30C;

(b) SF∈p denotes all Scheduled Facilities SF registered to Market Participant p;

(c) SuspCRRFacilityQuantity(SSF,t) is the is contributing quantity of Semi-Scheduled Facility SSF, calculated in accordance with clause 9.10.30C;

(d) SSF∈p denotes all Semi-Scheduled Facilities SSF registered to Market Participant p;

(e) SCADASchedule(EPS,DI) is the MWh output or consumption of the electricity producing unit with the highest output in the Energy Producing System in Dispatch Interval DI as published under clause 7.13.1E(a)(v), where the output has exceeded 10 MW; and

(f) EPS∈p denotes the Energy Producing Systems registered to Market Participant p, supplying Intermittent Loads which are not part of a Facility included in the set of Facilities SF or SSF under this clause, and for which, in AEMO's reasonable opinion, the information provided under clause 2.30B.3(g) does not establish that if a Contingency Event or an event behind the relevant connection point affects the Energy Producing System the net Injection or Withdrawal of the Facility will change by less than 10 MW.

9.10.30C. The Contingency Reserve Raise contributing quantity for each Scheduled Facility and Semi-Scheduled Facility in Trading Interval t when AEMO has suspended the Real-Time Market under clause 7.11D.1 is:

$$\text{SuspCRRFacilityQuantity(f,t)} = \begin{cases} 0, if \; FacEOIQtyFlag(f,t) = 0, otherwise \\ MeteredSchedule(f,t) \end{cases}$$

where:

(a) FacEOIQtyFlag(f,t) is 1 if AEMO has suspended the Real-Time Market under clause 7.11D.1 and the Facility f's EOI Quantity is greater than 10 MW for any Dispatch Interval in the Trading Interval t; and

(b) MeteredSchedule is the Metered Schedule of Facility f in Trading Interval t;

9.10.30D. The total contributing quantity to the cost of procuring Contingency Reserve Raise when AEMO has suspended the Real-Time Market under clause 7.11D.1 for Trading Interval t is:

$$\text{SuspCRRParticipantQuantity(t)}= \sum_{p \in P} \text{SuspCRRParticipantQuantity(p,t)}$$

where:

(a) SuspCRRParticipantQuantity(p,t) is the Market Participant p's contributing quantity to the total cost of procuring Contingency Reserve Raise when AEMO has suspended the Real-Time Market under clause 7.11D.1 for Trading Interval t calculated in accordance with clause 9.10.30B; and

(b) $p \in P$ denotes all Market Participants.

…

Explanatory Note:

Clause 9.10.43 has been modified to amend the participant share used in the calculation when the Real-Time Market has been suspended. While the RoCoF enablement quantities will be 0 during a suspension, the cost of any availability payments for SESSM contracts will still need to be recovered. With the Dispatch Algorithm unavailable, AEMO will be unable to determine the runway share as defined in Appendix 2A during a suspension event. In this case, the RoCoF recoverable share is determined from the Contingency Reserve Raise recoverable share for the participant calculated when the Real-Time Market has been suspended.

9.10.43. The cost of procuring the Additional RoCoF Control Requirement component of RoCoF Control Service recoverable from Rule Participant p in Dispatch Interval DI is:

~~AdditionalRCS_Recoverable(p,DI) = AdditionalRCS_Payable(DI) ×~~

~~TotalRunwayShare(p,DI)~~

AdditionalRCS_Recoverable(p,DI) = AdditionalRCS_Payable(DI) ×

$\begin{cases} RTMSuspRoCoFshare(p, DI), \text{ if RTMSuspFlag(DI) is 1, otherwise} \\ \text{~~TotalRunwayShare(p,DI)~~} \end{cases}$

where:

(a) AdditionalRCS_Payable(DI) is the total cost of procuring the Additional RoCoF Control Requirement component of RoCoF Control Service in Dispatch Interval DI as calculated in accordance with clause 9.10.19; ~~and~~

(b) TotalRunwayShare(p,DI) is Market Participant p's share of procuring the Additional RoCoF Control Requirement component of RoCoF Control

Service in Dispatch Interval DI as calculated following the steps set out in Appendix 2A and as finally calculated in clause 5.3 of Appendix 2A.;

(c)   RTMSuspFlag(DI) is one if AEMO has suspended the Real-Time Market under clause 7.11D.1 for Dispatch Interval DI, and zero otherwise; and

(d)   RTMSuspRoCoFshare(p,DI) is Market Participant p's share of procuring the RoCoF SESSM contracts in Dispatch Interval DI where AEMO has suspended the Real-Time Market as calculated in accordance with clause 9.10.30A for the applicable Trading Interval.

…

11.   Glossary

…

Fully Co-Optimised Network Constraint Equation: A Constraint Equation formulation to address a Network Constraint that allows AEMO, through direct physical representation, to control all the variables within the Constraint Equation that can be determined through the Dispatch Algorithm as part of the Central Dispatch Process excluding variables for which control would not materially enhance the security of the power system due to the small size of their coefficients.

…

Market Clearing Price: The price for a Market Service in a Dispatch Interval as determined in accordance with section 7.11B, or section 7.11E if AEMO has suspended the Real-Time Market under clause 7.11D.1.

…

Near Binding Constraint Equation: For a Constraint Equation used in the Dispatch Algorithm as part of the Central Dispatch Process, where the absolute value of difference between the value of the left hand side and the value of the right hand side of the Constraint Equation is less than 20 times the absolute value of the largest coefficient on the left hand side of the Constraint Equation.

…

Appendix 2A: Runway share calculation method

…

Explanatory Note:

Steps 2.1(b)(ii), 2.2(a), 4.2(a) and 4.5(a) are amended to update clause references.

2.1   Determine Facilities(DI) as the set of all:

      (a)   Scheduled Facilities and Semi-Scheduled Facilities that do not contain an Intermittent Load in Dispatch Interval DI;

      (b)   Scheduled Facilities, Semi-Scheduled Facilities, Non-Scheduled Facilities and Non-Dispatchable Loads that contain an Intermittent Load in Dispatch Interval DI, where:

            i.   in AEMO's reasonable opinion, the information provided under clause 2.30B.3(g) establishes that if a Contingency Event or an event behind the relevant connection point affects the Energy Producing System supplying the Intermittent Load, the net Injection or Withdrawal of the Facility will change by less than 10 MW; or

            ii.   the Facility Risk for the Facility in Dispatch Interval DI as published under clause ~~7.13.1E(g)(i)~~ 7.13.1EA(c)(i) is greater than the highest instantaneous output (in MW) of any electricity producing unit in the Energy Producing System supplying the Intermittent Load as provided under clause 2.30B.3(h); and

      (c)   electricity producing units in Energy Producing Systems supplying Intermittent Loads which are not part of a Facility included in Facilities(DI) under clause 2.1(b) of this Appendix 2A, and for which, in AEMO's reasonable opinion, the information provided under clause 2.30B.3(g) does not establish that if a Contingency Event or an event behind the relevant connection point affects the Energy Producing System the net Injection or Withdrawal of the Facility will change by less than 10 MW.

…

2.2   For each member in Facilities(DI) or AdditionalIMLFacilities(DI), f, calculate the FacilityRisk(f,DI) to be:

      (a)   where f is a member of AdditionalIMLFacilities(DI) or was included in Facilities(DI) under clauses 2.1(a) or 2.1(b) of this Appendix 2A, the Facility Risk for f in Dispatch Interval DI as published under clause ~~7.13.1E(g)(i)~~ 7.13.1EA(c)(i); or

      (b)   where f was included in Facilities(DI) under clause 2.1(c) of this Appendix 2A, the MWh output or consumption of the electricity producing unit in the

Dispatch Interval immediately prior to Dispatch Interval DI as published under clause 7.13.1E(a)(v), multiplied by 12 to convert to MW.

…

4.2 For each member in NetworkContingencies(DI), nc, calculate NetworkRisk(nc,DI) in Dispatch Interval DI as follows:

(a) NetworkRisk(nc,DI) equals the Network Risk in Dispatch Interval DI as published by AEMO in clause ~~7.13.1E(g)(ii)(1)~~ 7.13.1EA(c)(ii)(1), if nc sets the Largest Credible Supply Contingency in Dispatch Interval DI; and

(b) NetworkRisk(nc,DI) = 0 otherwise.

…

4.5 For each member in ApplicableNetworkContingencies(DI), nc, perform the following steps:

(a) from the information published under clause ~~7.13.1E(g)(ii)~~ 7.13.1EA(c)(ii), determine the set of Registered Facilities whose Facility Risks are included in the Network Risk associated with Network Contingency nc as CauserFacilities(nc,DI), where CauserFacilities(nc,DI) is a subset of the union of ApplicableFacilities(DI) and AdditionalApplicableFacilities(DI) as defined in clauses 2.3 and 2.4 of this Appendix 2A;

…

…