FIVE-MINUTE SETTLEMENT: EXPOSURE DRAFT

PROPOSED WHOLESALE ELECTRICITY MARKET (WEM) AMENDING RULES

This exposure draft sets out proposed amendments to the WEM Rules to implement the relevant Energy Transformation Taskforce decision regarding five-minute settlement in the WEM. The amendments are proposed to commence at the start of the first Trading Week on or after 1 October 2025 ("WEM Five-Minute Settlement Commencement").

Energy Policy WA has adopted a 'minimal change' approach for the implementation of the five-minute settlement policy, to deliver the benefits of five-minute settlement as soon as practicable while avoiding inefficient implementation costs. Under this approach:

- no changes are proposed to market roles or responsibilities;
- only minimal changes are proposed to Western Power's market-facing systems, e.g. the current NEM12 file format for interval meter data will continue to be used;
- the scope of the project is limited to the meters that are currently read for settlement in the WEM, i.e. for Scheduled Facilities, Semi-Scheduled Facilities, Non-Scheduled Facilities and contestable Non-Dispatchable Loads (i.e. it excludes the meters of non-contestable customers);
- AEMO will only process five-minute Meter Data Submissions for periods falling after WEM Five-Minute Settlement Commencement; and
- the granularity of WEM settlement calculations will only be changed from the Trading Interval level to the Dispatch Interval level if the change delivers a clear benefit.

The Amending Rules include:

- changes to require Meter Data Submissions for the relevant meters to be provided at the five-minute level;
- a requirement for AEMO to determine Metered Schedules for each Dispatch Interval and each Trading Interval;
- changes to calculate Energy Trading Amounts by Dispatch Interval;
- removal of the Reference Trading Price concept;
- changes to calculate Energy Uplift Payments using Dispatch Interval Metered Schedules;
- changes to calculate ESS amounts at the Dispatch Interval level; and
- new transitional rules.

The draft rules in this exposure draft are pending legal review, and may also require minor changes to ensure alignment with the Amending Rules currently under development to support implementation of the new WEM and the outcomes of the Cost Allocation Review. Following industry consultation and legal review, the proposed Amending Rules will be submitted to the Minister for Energy for making and gazettal in late 2023.

Energy Policy WA is seeking stakeholder feedback on this exposure draft by 5:00 PM on Monday 7 August 2023. Feedback can be sent to energymarkets@dmirs.wa.gov.au.

Mark-up Colour guide:

Text in black	Rules that are in force
Text in green	Amending Rules that have been made and will commence on a specified date
Text in blue	Amending Rules that have been made and are expected to commence on New WEM Commencement Day
Text in red - underlined and strikethrough	New amendments proposed

1.XX. Transitional Provisions – Five-Minute Settlement

1.XX.1. In this section 1.XX:

WEM Five-Minute Settlement Commencement: Means the date and time specified by the Minister as WEM Five-Minute Settlement Commencement, as published in the Government Gazette.

Post-Amended Rules: Means the WEM Rules as in force immediately after WEM Five-Minute Settlement Commencement.

Pre-Amended Rules: Means the WEM Rules as in force immediately before WEM Five-Minute Settlement Commencement.

1.XX.2. Subject to clause 1.XX.3, from WEM Five-Minute Settlement Commencement, notwithstanding that the Post-Amended Rules require Meter Data Submissions and settlement to be on a Dispatch Interval basis:

(a) Metering Data Agents must make Meter Data Submissions for Trading Intervals that fall before WEM Five-Minute Settlement Commencement in accordance with the Pre-Amended Rules; and

(b) AEMO must continue to settle Trading Intervals that fall before WEM Five-Minute Settlement Commencement under the Pre-Amended Rules.

1.XX.3. For the eight-hour period immediately prior to WEM Five-Minute Settlement Commencement:

(a) Metering Data Agents may make Meter Data Submissions for Dispatch Intervals in that period under the Post-Amended Rules; and

(b) AEMO must determine Metered Schedules and Sent Out Metered Schedules for the Trading Intervals within that period using the Meter Data Submissions made under clause 1.XX.3(a).

1.XX.4. If a Metering Data Agent is non-compliant with its Metering Protocol under the Post-Amended Rules due to a meter which records interval meter data for 30-minute periods instead of five-minute periods, then, for the purpose of clause 8.6.1(c)(ii) of the Post-Amended Rules, the Metering Data Agent must use an

estimate equal to the MWh quantity it would have used for the meter and the relevant Trading Interval under the Pre-Amended Rules for the purpose of clause 8.6.1(c)(ii), divided by six.

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2.16. Monitoring the Effectiveness of the Market

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> **Explanatory Note**
>
> Clause 2.16.7 is updated to confirm that the ERA has authority to collect data at the Dispatch Interval level to support its investigations.

2.16.7. Without limitation, additional information that can be collected by the Coordinator or the Economic Regulation Authority (as applicable) includes:

    (a)   cost data for Synergy, including actual fuel costs by ~~Trading Interval~~ Dispatch Interval;

    (b)   AEMO's operational records (whether held by AEMO or which AEMO may require from another person under these WEM Rules), including SCADA records, of the level of utilisation and fuel related data for each of Synergy's Registered Facilities by ~~Trading Interval~~ Dispatch Interval; and

    (c)   the terms of Bilateral Contracts entered into by Synergy.

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2.16C. Market Power Test

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> **Explanatory Note**
>
> Clause 2.16C.9 is updated to replace references to the Reference Trading Price with references to the Final Energy Market Clearing Price.

2.16C.9. In conducting an investigation under clause 2.16C.7, the Economic Regulation Authority:

    (a)   must consider any changes to:

        i.   a STEM Clearing Price or ~~Reference Trading Price~~ Final Energy Market Clearing Price;

        ii.   Energy Uplift Payments; or

        iii.   the quantities of energy scheduled in respect of Market Participants in the STEM Auction, or the dispatch of Facilities in the Real-Time Market,

    that are likely to have occurred as a result of the Irregular Price Offer; and

(b)   may consider any other matters it considers relevant.

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2.26.   Economic Regulation Authority Reviews of Market Price Limits and the Methodology for Setting the Benchmark Reserve Capacity Price

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Review of Energy Offer Price Floor

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Explanatory Note

Section 2.26 is updated to replace references to the Reference Trading Price with references to the Final Energy Market Clearing Price.

2.26.2D.   In conducting a review required by clause 2.26.2C, the Economic Regulation Authority must apply the following principles:

(a)   the Economic Regulation Authority must only revise the value of the Energy Offer Price Floor if it determines that the current value of the Energy Offer Price Floor is not appropriate under clause 2.26.2E;

(b)   if the Economic Regulation Authority determines that the current Energy Offer Price Floor is not appropriate under clause 2.26.2E, the revised value for the Energy Offer Price Floor must:

i.   allow for the Real-Time Market for energy to clear without the Final Energy Market Clearing Price Reference Trading Price being equal to the Energy Offer Price Floor in most circumstances; and

ii.   subject to clause 2.26.2D(b)(i), limit the exposure of Market Participants to Final Energy Market Clearing Prices Reference Trading Prices that are reasonably likely to materially adversely affect the financial viability of a prudent Market Participant.

2.26.2E.   In determining whether the current value of the Energy Offer Price Floor is not appropriate for the purposes of clause 2.26.2D(a), the Economic Regulation Authority must consider, without limitation, if, since the previous review of the value of the Energy Offer Price Floor under this section 2.26:

(a)   the Real-Time Market for energy has cleared at the Energy Offer Price Floor in one or more Dispatch Intervals due to, in the Economic Regulation Authority's reasonable opinion, the Energy Offer Price Floor being too high; and

(b)   there has been a change in the generation fleet in the SWIS that, in the Economic Regulation Authority's reasonable opinion, is likely to result in:

i.   the current Energy Offer Price Floor being materially lower than necessary to achieve the criterion in clause 2.26.2D(b)(i), including,

<blockquote>
but not limited to, an upgrade or the retirement of a Facility with high cycling costs; or

    ii.   the current Energy Offer Price Floor being too high to achieve the criterion in clause 2.26.2D(b)(i), including, but not limited to, the increase of cycling costs due to deterioration or ageing of a Facility.
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2.26.2F.   When reviewing the Energy Offer Price Floor in accordance with this section 2.26, if the Economic Regulation Authority determines under clause 2.26.2E that the Energy Offer Price Floor is not appropriate, the Economic Regulation Authority must:

    (a)   determine for credible scenarios of low demand, the price at which the operator of the Facility with the highest cycling costs per MW in the SWIS in the scenario would, acting reasonably, decommit the Facility should the ~~Final Energy Market Clearing Price~~ <u>Reference Trading Price</u> equal or fall below that price for a single ~~Trading Interval~~ <u>Dispatch Interval</u>;

    (b)   revise the Energy Offer Price Floor to be the highest price determined under the scenarios in clause 2.26.2F(a) that is lower than 95 percent of all of the prices determined under clause 2.26.2F(a); and

    (c)   determine whether an indexation process should apply to the Energy Offer Price Floor to reflect movements in input costs and, if so, determine the formula for the indexation calculation and the frequency at which indexation will apply.

2.26.2G.   When determining the credible scenarios of low demand for the purpose of clause 2.26.2F(a), the Economic Regulation Authority may use historic scenarios but must also account for any changes expected in the SWIS that would take effect prior to the time that the Energy Offer Price Floor would apply and that are likely to have an effect on the ~~Reference Trading Price~~ <u>Final Energy Market Clearing Price</u>. The changes include, but are not limited to:

    (a)   expected changes in system demand;

    (b)   any expected entrance of a new Facility that will participate in the Real-Time Market;

    (c)   expected changes to an existing Facility; and

    (d)   any expected permanent exit of a Facility from the Real-Time Market.

2.26.2H.   When determining the cycling costs of a Facility under clause 2.26.2F(a), the Economic Regulation Authority must consider:

    (a)   the factors that a Market Participant acting reasonably would consider in making a decommitment decision for the Facility with the highest cycling costs in the SWIS, assuming that all energy sent out by the Facility is settled at the ~~Reference Trading Price~~ <u>Final Energy Market Clearing Price</u>, including:

      i.   the cost to decommit and recommit within the timeframe specified under clause 2.26.2H(a)(iii), including start-related fuel costs and variable operating and maintenance costs of the Facility;

      ii.   the minimum stable level of operation of the Facility;

      iii.   the minimum time the Facility must remain out of service once decommitted before recommitment is possible; and

      iv.   any expected losses or gains, opportunity costs and cost savings that the Market Participant would incur as a result of decommitment for the duration of the minimum time the Facility must remain out of service before recommitment is possible; and

  (b)   any other matters that the Economic Regulation Authority considers relevant.

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2.30B. Intermittent Load

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> **Explanatory Note**
>
> Clauses 2.30B.10 and 2.30B.11 are amended to calculate Intermittent Load Metered Schedules at Dispatch Interval level.

2.30B.10. Where the Load was deemed to be an Intermittent Load under clause 1.48.2, for the purpose of defining Metered Schedules associated with the interval meter measuring the Facility containing the Intermittent Load, the following methodology is to apply:

  (a)   define for each ~~Trading Interval~~ Dispatch Interval:

      i.   NMQ to be the net metered energy measured by the meter where a positive amount indicates supply and a negative amount indicates consumption;

      ii.   NS to be the net supply (supply as a positive value plus consumption as a negative value) measured by the Intermittent Load meter which corresponds to supply and consumption, excluding consumption by Intermittent Loads, by Market Participants, and by Market Participant Facilities which are separately metered for the purpose of settlement under these WEM Rules. This may have a positive or negative value;

      iii.   NL to be the maximum possible consumption behind that meter due to consumption which is not Intermittent Load but which is measured only by the meter which also measures the Intermittent Load. This has a negative value;

      iv.   [Blank]

v. if the Load is part of a Registered Facility, MSG to be the greater of zero and the maximum energy output from the Registered Facility in excess of that required to supply the Intermittent Load based on Standing Data and measured only by the Intermittent Load meter. This has a positive value; and

vi. AMQ to be the adjusted meter quantity which equals NMQ less NS;

(b) if the Load is not part of a Registered Facility then:

i. if AMQ is less than or equal to NL then:

1. for the purpose of defining its Metered Schedule the metered quantity associated with the Intermittent Load is AMQ minus NL; and

2. for the purpose of defining its Metered Schedule the metered quantity associated with non-Intermittent Loads only measured by the Intermittent Load meter is NL;

ii. if AMQ is greater than NL but less than zero then:

1. for the purpose of defining its Metered Schedule the metered quantity associated with the Intermittent Load is zero; and

2. for the purpose of defining its Metered Schedule the metered quantity associated with non-Intermittent Loads only measured by the Intermittent Load meter is AMQ; and

iii. if AMQ is greater than or equal to zero then:

1. for the purpose of defining its Metered Schedule the metered quantity associated with the Intermittent Load is AMQ; and

2. for the purpose of defining its Metered Schedule the metered quantity associated with non-Intermittent Loads only measured by the Intermittent Load meter is zero; and

(c) if the Load is part of a Registered Facility then:

i. if AMQ is less than or equal to NL then:

1. for the purpose of defining its Metered Schedule the metered quantity associated with the Intermittent Load is AMQ minus NL;

2. for the purpose of defining its Metered Schedule the metered quantity associated with non-Intermittent Loads measured only by the meter that also measures the Intermittent Load is NL; and

3. for the purpose of defining its Metered Schedule the metered quantity associated with the Registered Facility

> measured only by the meter that also measures the Intermittent Load is zero;

    ii.   if AMQ is greater than NL but less than or equal to zero then:

        1.   for the purpose of defining its Metered Schedule the metered quantity associated with the Intermittent Load is zero;

        2.   for the purpose of defining its Metered Schedule the metered quantity associated with non-Intermittent Loads measured only by the meter that also measures the Intermittent Load is AMQ; and

        3.   for the purpose of defining its Metered Schedule the metered quantity associated with the Registered Facility measured only by the meter that also measures the Intermittent Load is zero;

    iii.   if AMQ is greater than zero but less than or equal to MSG then:

        1.   for the purpose of defining its Metered Schedule the metered quantity associated with the Intermittent Load is zero;

        2.   for the purpose of defining its Metered Schedule the metered quantity associated with non-Intermittent Loads measured only by the meter that also measures the Intermittent Load is zero; and

        3.   for the purpose of defining its Metered Schedule the metered quantity associated with the Registered Facility measured only by the meter that also measures the Intermittent Load is AMQ; and

    iv.   if AMQ is greater than MSG then:

        1.   for the purpose of defining its Metered Schedule the metered quantity associated with the Intermittent Load is AMQ minus MSG;

        2.   for the purpose of defining its Metered Schedule the metered quantity associated with non-Intermittent Loads measured only by the meter that also measures the Intermittent Load is zero; and

        3.   for the purpose of defining its Metered Schedule the metered quantity associated with the Registered Facility measured only by the meter that also measures the Intermittent Load is MSG.

2.30B.11   Where an application for a Load or part of a Load to be treated as an Intermittent Load was accepted by AEMO under clause 2.30B.6 on or after the New WEM

Commencement Day, for the purpose of defining Metered Schedules associated with the interval meter measuring the Facility containing the Intermittent Load, the following methodology is to apply:

(a) define for each ~~Trading Interval~~ Dispatch Interval:

    i. NMQ to be the net metered energy measured by the meter in Meter Data Submissions where a positive amount indicates supply and a negative amount indicates consumption;

    ii. NS to be the net supply (supply as a positive value plus consumption as a negative value) measured by the Intermittent Load meter which corresponds to supply and consumption, excluding consumption by Intermittent Loads, by Market Participants, and by Market Participant Facilities which are separately metered in Meter Data Submissions for the purpose of settlement under these WEM Rules. This may have a positive or negative value; and

    iii. AMQ to be the adjusted meter quantity which equals NMQ less NS;

(b) where the Intermittent Load is part of a Registered Facility:

    i. where AMQ is positive, indicating supply:

        1. the Metered Schedule for the Registered Facility is AMQ; and

        2. the Metered Schedule for the Non-Dispatchable Load is zero; or

    ii. where AMQ is negative, indicating consumption:

        1. the Metered Schedule for the Registered Facility is zero; and

        2. the Metered Schedule for the Non-Dispatchable Load is AMQ; or

(c) where the Intermittent Load is not part of a Registered Facility, the Metered Schedule for the Non-Dispatchable Load is AMQ.

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7.6. Dispatch

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Explanatory Note

Clause 7.6.4 is updated to remove the requirement for AEMO to determine Reference Trading Prices.

7.6.4. AEMO must use the Central Dispatch Process to set the Market Clearing Prices for each Dispatch Interval in accordance with sections 7.11A, 7.11B and 7.11C.~~.~~

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7.11A.   Price Determination Principles

> **Explanatory Note**
>
> Clause 7.11A.1 is updated to:
>
> - remove the requirement for AEMO to determine Reference Trading Prices;
> - replace the Reference Trading Price with the Energy Market Clearing Price in settlement.

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

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

(b)   [Blank]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, 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 Energy 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 Energy Market Clearing Price ~~Reference Trading Price~~ to both sales and purchases of energy in the relevant Dispatch Interval ~~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.

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7.11C. Corrections to Price Determinations and Intervention Pricing

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Explanatory Note

Clause 7.11C.2 is updated to remove the requirement for AEMO to replace Reference Trading Prices in relation to an Affected Dispatch Interval.

7.11C.2. Where AEMO determines that a Dispatch Interval is an Affected Dispatch Interval, and no more than 30 minutes have passed since the publication of the Market Clearing Prices for the Affected Dispatch Interval, AEMO must replace all Market Clearing Prices with the corresponding prices for the Last Correct Dispatch Interval.~~:~~

~~(a) replace all Market Clearing Prices with the corresponding prices for the Last Correct Dispatch Interval; and~~

~~(b) if AEMO has already calculated the relevant Reference Trading Price, recalculate and adjust the Reference Trading Price, in accordance with clause 7.11A.1(b).~~

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7.13.   Settlement and Monitoring Data

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> **Explanatory Note**
>
> Section 7.13 is updated to remove the requirement for AEMO to determine revised Reference Trading Prices.

7.13.1C.   [Blank]~~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; and

(b)   [Blank]~~determine the revised Reference Trading Price for the relevant Trading Interval; and~~

(c)   make the revised prices referred to in clause~~s~~ 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; and

(b)   [Blank]~~determine the revised Reference Trading Price for each relevant Trading Interval; and~~

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

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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.

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8.6. Format of Meter Data Submissions

8.6.1. A Meter Data Submission must comprise:

(a) the identity of the Metering Data Agent;

(b) the Trading Week to which the meter data relates;

(c) for each interval meter and each ~~Trading Interval~~ <u>Dispatch Interval</u> in the Trading Week in the Meter Data Submission described in paragraph (b):

    i. the identity of the meter;

    ii. the MWh quantity measured by the meter; and

    iii. whether the quantity described in paragraph (ii) is based on an actual meter reading or an estimate, and if based on an estimate, the applicable code describing the reason for the estimate;

(d) [Blank]; and

(e) meter adjustments that stem from actual or revised meter data becoming available or from the resolution of a dispute concerning meter data ("Meter Dispute") in accordance with the dispute resolution process in the applicable Metering Protocol, including:

    i. for each interval meter and each ~~Trading Interval~~ <u>Dispatch Interval</u> in the Trading Week to which a Meter Dispute has resulted in changes to meter data:

        1. the MWh quantity for that meter;

        2. whether the quantity described in paragraph (1) is based on an actual meter reading or an estimate, and if based on an estimate, the applicable code describing the reason for the estimate; and

        3. the applicable code describing the reason for the change in the MWh quantity relative to the previously stated value.

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8.7. Metering Protocol Requirements

8.7.1. A Metering Data Agent must operate in accordance with a Metering Protocol. As a minimum a Metering Protocol must prescribe:

(a) that the Metering Data Agent maintains a Meter Registry tracking a unique identifying number for each meter and the location of that meter, and indicating which Market Participant, if any, is associated with that meter;

(b)   that interval meter data is recorded for a ~~5-minute~~ <s>30 minute</s> period starting ~~on~~ at 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 or 55 minutes past the hour <s>and on the half-hour</s>;

(c)   a process for replacing missing or inaccurate metering data with estimated data to be included in Meter Data Submissions;

(d)   a process for addressing metering data errors stemming from errors in meter reading, failure to read a meter and falsification;

(e)   a dispute resolution process pertaining to actions taken in accordance with that Metering Protocol; and

(f)   a process for modification of the Metering Protocol in the event of changes to the WEM Rules.

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Explanatory Note

Section 9.5 is updated to require AEMO to determine Metered Schedules and Consumption Shares for each Dispatch Interval and each Trading Interval.

9.5.   The Metered Schedule

9.5.1.   For each <s>Trading Interval</s> Dispatch Interval AEMO must determine the Metered Schedule in accordance with clause 9.5.2 for each:

(a)   Scheduled Facility;

(b)   Semi–Scheduled Facility;

(c)   Non-Scheduled Facility; and

(d)   Non-Dispatchable Load.

9.5.2.   Subject to clauses 2.30B.10 and 2.30B.11, the Metered Schedule for <s>Trading Interval</s> Dispatch Interval for each:

(a)   Scheduled Facility;

(b)   Semi-Scheduled Facility;

(c)   Non-Scheduled Facility; and

(d)   Non-Dispatchable Load, excluding Non-Dispatchable Loads referred to in clause 9.5.3,

is the net quantity of energy generated and sent out into the relevant Network or consumed by the Facility during that <s>Trading Interval</s> Dispatch Interval, Loss Factor adjusted to the Reference Node, and determined from Meter Data Submissions received by AEMO in accordance with section 8.4 or SCADA data maintained by AEMO in accordance with clause 7.13.1E(a)(i) where interval meter data is not available.

9.5.3.   AEMO must determine a single Metered Schedule for a ~~Trading Interval~~ Dispatch Interval for those Non-Dispatchable Loads without interval meters or with meters not read as interval meters that are served by Synergy where:

(a)   the Metered Schedule equals the Notional Wholesale Meter value for that ~~Trading Interval~~ Dispatch Interval;

(b)   the Notional Wholesale Meter value for a ~~Trading Interval~~ Dispatch Interval equals negative one multiplied by:

i.   the sum of the Metered Schedules with positive quantities for that ~~Trading Interval~~ Dispatch Interval; plus

ii.   the sum of the Metered Schedules with negative quantities for that ~~Trading Interval~~ Dispatch Interval,

where the Metered Schedules referred to in clauses 9.5.3(b)(i) and 9.5.3(b)(ii) exclude the Metered Schedule for the Notional Wholesale Meter.

9.5.3A.   The Metered Schedule for a Trading Interval for:

(a)   a Scheduled Facility;

(b)   a Semi-Scheduled Facility;

(c)   a Non-Scheduled Facility;

(d)   a Non-Dispatchable Load, excluding Non-Dispatchable Loads referred to in clause 9.5.3; or

(e)   the Notional Wholesale Meter,

is the sum of the Metered Schedules determined by AEMO for the Facility under clause 9.5.2 or the Notional Wholesale Meter under clause 9.5.3 (as applicable) for each Dispatch Interval in the Trading Interval.

9.5.4.   AEMO must determine the Demand Side Programme Load for a Demand Side Programme for a Trading Interval as the total net MWh quantity of energy consumed by the Associated Loads of that Demand Side Programme during the Trading Interval, determined from Meter Data Submissions and expressed as a positive non-Loss Factor adjusted value.

9.5.5.   For the purpose of clauses 9.5.2 and 9.5.3, a quantity of energy generated and sent out into the relevant Network has a positive value and a quantity of energy consumed has a negative value.

9.5.6.   AEMO must calculate for each Market Participant the Consumption Share for a Trading Interval. The Consumption Share for Market Participant p in Trading Interval t is:

$$\text{ConsumptionShare}(p,t) = \frac{\text{ConsumptionContributingQuantity}(p,t)}{\text{TotalConsumptionContributingQuantity}(t)}$$

where:

(a) ConsumptionContributingQuantity(p,t) is the Consumption Contributing Quantity for Market Participant p in Trading Interval t as determined in clause 9.5.7; and

(b) TotalConsumptionContributingQuantity(t) is the total Consumption Contributing Quantity for all Market Participants in Trading Interval t as determined in clause 9.5.8.

9.5.6A. AEMO must calculate for each Market Participant the Consumption Share for a Dispatch Interval. The Consumption Share for Market Participant p in Dispatch Interval DI is:

$$\text{ConsumptionShare}(p,DI) = \frac{\text{ConsumptionContributingQuantity}(p,DI)}{\text{TotalConsumptionContributingQuantity}(DI)}$$

where:

(a) ConsumptionContributingQuantity(p,DI) is the Consumption Contributing Quantity for Market Participant p in Dispatch Interval DI as determined in clause 9.5.7A; and

(b) TotalConsumptionContributingQuantity(DI) is the total Consumption Contributing Quantity for all Market Participants in Dispatch Interval DI as determined in clause 9.5.8A.

9.5.7. AEMO must calculate for each Market Participant the Consumption Contributing Quantity for a Trading Interval. The Consumption Contributing Quantity for Market Participant p in Trading Interval t is:

$$\text{ConsumptionContributingQuantity}(p,t) = \sum_{f \in p} \min(0, \text{MeteredSchedule}(f,t))$$

where:

(a) f∈p denotes all Scheduled Facilities, Semi-Scheduled Facilities, Non-Scheduled Facilities and Non-Dispatchable Loads registered to or associated with Market Participant p (including Synergy's Notional Wholesale Meter where Synergy is Market Participant p) in Trading Interval t; and

(b) MeteredSchedule(f,t) is the Metered Schedule for facility f for Trading Interval t as calculated in accordance with ~~clause 9.5.2 and~~ clause 9.5.3A.

9.5.7A. AEMO must calculate for each Market Participant the Consumption Contributing Quantity for a Dispatch Interval. The Consumption Contributing Quantity for Market Participant p in Dispatch Interval DI is:

$$\text{ConsumptionContributingQuantity}(p,DI) = \sum_{f \in p} \min(0, \text{MeteredSchedule}(f,DI))$$

where:

(a)   f∈p denotes all Scheduled Facilities, Semi-Scheduled Facilities, Non-Scheduled Facilities and Non-Dispatchable Loads registered to or associated with Market Participant p (including Synergy's Notional Wholesale Meter where Synergy is Market Participant p) in Dispatch Interval DI; and

(b)   MeteredSchedule(f,DI) is the Metered Schedule for facility f for Dispatch Interval DI as calculated in accordance with clauses 9.5.2 or 9.5.3 (as applicable).

9.5.8.   AEMO must calculate the total Consumption Contributing Quantity for all Market Participants for a Trading Interval. The TotalConsumptionContributingQuantity(t) for all Market Participants in Trading Interval t is:

TotalConsumptionContributingQuantity(t) =

$$\sum_{p \in P} ConsumptionContributingQuantity(p,t)$$

where:

i.   ConsumptionContributingQuantity(p,t) is the Consumption Contributing Quantity for Market Participant p in Trading Interval t as determined in clause 9.5.7; and

ii.   p∈P denotes all Market Participants.

9.5.8A.   AEMO must calculate the total Consumption Contributing Quantity for all Market Participants for a Dispatch Interval. The total Consumption Contributing Quantity for all Market Participants in Dispatch Interval DI is:

TotalConsumptionContributingQuantity(DI) =

$$\sum_{p \in P} ConsumptionContributingQuantity(p,DI)$$

where:

(a)   ConsumptionContributingQuantity(p,DI) is the Consumption Contributing Quantity for Market Participant p in Dispatch Interval DI as determined in clause 9.5.7A; and

(b)   p∈P denotes all Market Participants.

…

9.9.   Settlement Calculations – Real-Time Energy

Explanatory Note

Section 9.9 is updated to operate at Dispatch Interval level.

9.9.1.   AEMO must calculate for each Market Participant the Real-Time Energy settlement amount for a Trading Day.

9.9.2.   The Real-Time Energy settlement amount for Market Participant p for Trading Day d is:

$$RTE\_SA(p,d) = \sum_{t \in d} RTE\_SA(p,t)$$

where:

(a)   RTE_SA(p,t) is the Real-Time Energy settlement amount calculated for AEMO to Market Participant p for Trading Interval t in accordance with clause 9.9.2A9.9.3; and

(b)   t∈d denotes all Trading Intervals t in Trading Day d.

9.9.2A.   The Real-Time Energy settlement amount for Market Participant p for Trading Interval t is:

$$RTE\_SA(p,t) = \sum_{DI \in t} RTE\_SA(p,DI)$$

where:

(a)   RTE_SA(p,DI) is the Real-Time Energy settlement amount calculated for AEMO to Market Participant p for Dispatch Interval DI in accordance with clause 9.9.3; and

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

9.9.3.   The Real-Time Energy settlement amount for Market Participant p for Dispatch Interval DI Trading Interval t is:

RTE_SA(p,t) = EnergyTradingAmount(p,t) + EnergyUplift_Payable(p,t) - EnergyUplift_Recoverable(p,t)

RTE_SA(p,DI) = EnergyTradingAmount(p,DI) + EnergyUplift_Payable(p,DI) − EnergyUplift_Recoverable(p,DI)

where:

(a)   EnergyTradingAmount(p,DIt) is the energy trading amount calculated for AEMO to Market Participant p for Dispatch Interval DI Trading Interval t in accordance with clause 9.9.4;

(b)   EnergyUplift_Payable(p,DIt) is the energy uplift amount payable to Market Participant p for Dispatch Interval DI Trading Interval t as calculated in accordance with clause 9.9.6; and

(c)   EnergyUplift_Recoverable(p,DIt) is the energy uplift recoverable from Market Participant p for Dispatch Interval DI Trading Interval t as calculated in accordance with clause 9.9.15.

9.9.4.   The energy trading amount for Market Participant p for Dispatch Interval DI Trading Interval t is:

EnergyTradingAmount(p,t) = ReferenceTradingPrice(t) × NetTradingQuantity(p,t)

$$\text{EnergyTradingAmount}(p,DI) = \text{Energy\_MCP}(DI) \times \text{NetTradingQuantity}(p,DI)$$

where:

(a) ~~ReferenceTradingPrice(t) is the Final Reference Trading Price for Trading Interval t~~Energy_MCP(DI) is the Final Energy Market Clearing Price for Dispatch Interval DI; and

(b) NetTradingQuantity(p,~~t~~DI) is the Net Trading Quantity for Market Participant p for Dispatch Interval DI ~~Trading Interval t~~ as calculated in accordance with clause 9.9.5.

9.9.5. The Net Trading Quantity for a Market Participant p in Dispatch Interval DI ~~Trading Interval t~~ is:

$$\sout{\text{NetTradingQuantity}(p,t) = \left(\sum_{f\in p} \text{MeteredSchedule}(f,t) \right) - \text{NetContractPosition}(p,t)}$$

$$\text{NetTradingQuantity}(p,DI) = \left(\sum_{f\in p} \text{MeteredSchedule}(f,DI) \right)$$
$$- \frac{5}{30} \times \text{NetContractPosition}(p,t)$$

where:

(a) MeteredSchedule(f,~~t~~DI) is the Metered Schedule for facility f for Dispatch Interval DI ~~Trading Interval t~~ as calculated in accordance with ~~clause 9.5.2 or clause 9.5.3~~ clauses 9.5.2 or 9.5.3 as the case may be;

(b) f∈p denotes all Registered Facilities f registered to Market Participant p and all Non-Dispatchable Loads associated with Market Participant p (including Synergy's Notional Wholesale Meter where Synergy is Market Participant p ~~calculated in accordance with clause 9.5.3~~); ~~and~~

(c) Net Contract Position(p,t) is the Net Contract Position for Market Participant p in Trading Interval t as calculated in accordance with clause 6.9.13~~.~~;

(d) t denotes the Trading Interval in which Dispatch Interval DI falls; and

(e) 5/30 represents the share of a Dispatch Interval in a Trading Interval.

9.9.6. The energy uplift amount payable to Market Participant p for Dispatch Interval DI ~~Trading Interval t~~ is:

$$\sout{\text{EnergyUplift\_Payable}(p,t) = \sum_{f\in p} \text{EnergyUpliftPayment}(f,t)}$$

$$\text{EnergyUplift\_Payable}(p,DI) = \sum_{f\in p} \text{EnergyUpliftPayment}(f,DI)$$

where:

(a)   EnergyUpliftPayment(f,~~t~~<u>DI</u>) is the Energy Uplift Payment in respect of Registered Facility f and <u>Dispatch Interval DI</u> ~~Trading Interval t~~ as calculated in accordance with clause <u>9.9.8</u> ~~9.9.7~~; and

(b)   f∈p denotes all Registered Facilities f registered to Market Participant p.

9.9.7.   <u>[Blank]</u>~~The Energy Uplift Payment for Registered Facility f in Trading Interval t is:~~

$$\text{EnergyUpliftPayment(f,t)} = \sum_{\text{DI} \in \text{t}} \text{EnergyUpliftPayment(f,DI)}$$

~~where:~~

~~(a)   EnergyUpliftPayment(f,DI) is the Energy Uplift Payments to that Registered Facility f in Dispatch Interval DI calculated in accordance with clause 9.9.8; and~~

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

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

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

$$\text{EnergyUpliftQuantity(f,DI)}$$

where:

(a)   IsMisPriced(f,DI) is the mispricing trigger for Registered Facility f in Dispatch Interval DI 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.

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

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

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;

(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.

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

~~EnergyUpliftPrice(f,DI) = Max(0, (MarginalOfferPrice(f,DI) –~~

~~ReferenceTradingPrice(t))~~

EnergyUpliftPrice(f,DI) = Max(0, (MarginalOfferPrice(f,DI) –

Energy_MCP(DI)))

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; and

(b) Energy_MCP(DI) is the Final Energy Market Clearing Price for Dispatch Interval DI.~~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:

~~EnergyUpliftQuantity(f,DI) = Max(0, MeteredQuantity(f,DI))~~

EnergyUpliftQuantity(f,DI) = Max(0, MeteredSchedule(f,DI))

where:

(a)   MeteredSchedule(f,DI) is the Metered Schedule for Registered Facility f in Dispatch Interval DI calculated in accordance with clause 9.5.2.~~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.   [Blank]~~The metered quantity estimate of Injection or Withdrawal in MWh of Registered Facility f in Dispatch Interval DI is:~~

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

~~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.   [Blank]~~The total MWh Injection or Withdrawal of Registered Facility f for Trading Interval t is:~~

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

~~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.~~

9.9.14.   AEMO must calculate the total amount of energy uplift recoverable in a Dispatch Interval ~~Trading Interval~~ from all Energy Uplift Payments made to all Market Participants in that Dispatch Interval ~~Trading Interval~~ as follows:

$$\text{EnergyUplift\_Recoverable}(t) = \sum_{p \in P} \text{EnergyUplift\_Payable}(p,t)$$

$$\text{EnergyUplift\_Recoverable}(DI) = \sum_{p \in P} \text{EnergyUplift\_Payable}(p,DI)$$

where:

(a)   EnergyUplift_Payable(p,~~t~~DI) is the energy uplift amount payable to Market Participant p for Dispatch Interval DI ~~Trading Interval t~~ as calculated in accordance with clause 9.9.6; and

(b)   p∈P denotes all Market Participants.

9.9.15.   The energy uplift recoverable from Market Participant p for Dispatch Interval DI ~~Trading Interval t~~ is:

$$~~EnergyUplift\_Recoverable(p,t) = EnergyUplift\_Recoverable(t) \times~~$$

$$~~ConsumptionShare(p,t)~~$$

$$EnergyUplift\_Recoverable(p,DI) = EnergyUplift\_Recoverable(DI) \times$$

$$ConsumptionShare(p,DI)$$

where:

(a)   EnergyUplift_Recoverable(~~t~~DI) is the total amount of energy uplift recoverable in Dispatch Interval DI ~~Trading Interval t~~ from all Energy Uplift Payments made to all Market Participants in that Dispatch Interval ~~Trading Interval~~ calculated in accordance with clause 9.9.14; and

(b)   ConsumptionShare(p,~~t~~DI) is the Consumption Share for Market Participant p for Dispatch Interval DI ~~Trading Interval t~~ as calculated in accordance with clause 9.5.6A ~~9.5.6~~.

9.10.   Settlement Calculations - Essential System Services

Explanatory Note

Section 9.10 is updated to operate at Dispatch Interval level, though System Restart Services will continue to be paid and cost recovered at Trading Interval level.

9.10.1.   AEMO must calculate for each Rule Participant the Essential System Service settlement amount for a Trading Day.

9.10.2.   The Essential System Service settlement amount for Rule Participant p for Trading Day d is:

$$ESS\_SA(p,d) = ESS\_Payable(p,d) - ESS\_Recoverable(p,d)$$

where:

(a)   ESS_Payable(p,d) is the Essential System Service amount payable to Market Participant p for Trading Day d calculated in accordance with clause 9.10.3; and

(b)   ESS_Recoverable(p,d) is the Essential System Service amount recoverable from Rule Participant p for Trading Day d calculated in accordance with clause 9.10.28.

9.10.3. The Essential System Service amount payable to Market Participant p for Trading Day d is:

ESS_Payable(p,d) =
CR_Payable(p,d) + CL_Payable(p,d) +
RCS_Payable(p,d) + Regulation_Payable(p,d) +
SRS_Payable(p,d) + NCESS_Payable(p,d) +
FCESSUplift_Payable(p,d)

where:

(a)   CR_Payable(p,d) is the Contingency Reserve Raise amount payable to Market Participant p for Trading Day d calculated in accordance with clause 9.10.4;

(b)   CL_Payable(p,d) is the Contingency Reserve Lower amount payable to Market Participant p for Trading Day d calculated in accordance with clause 9.10.8;

(c)   RCS_Payable(p,d) is the RoCoF Control Service amount payable to Market Participant p for Trading Day d calculated in accordance with clause 9.10.12;

(d)   Regulation_Payable(p,d) is the Regulation amount payable to Market Participant p for Trading Day d calculated in accordance with clause 9.10.20;

(e)   SRS_Payable(p,d) is the System Restart Service amount payable to Market Participant p for Trading Day d calculated in accordance with clause 9.10.25;

(f)   NCESS_Payable(p,d) is the NCESS amount payable to Market Participant p for Trading Day d calculated in accordance with clause 9.10.27A; and

(g)   FCESSUplift_Payable(p,d) is the FCESS uplift amount payable to Market Participant p for Trading Day d calculated in accordance with clause 9.10.3A.

9.10.3A. The FCESS uplift amount payable to Market Participant p for Trading Day d is:

$$FCESSUplift\_Payable(p,d) = \sum_{f \in p} \sum_{t \in d} FCESSUpliftPayment(f,t)$$

where:

(a)   FCESSUpliftPayment(f,t) is the FCESS Uplift Payment for Registered Facility f in Trading Interval t as calculated in accordance with clause 9.10.3B;

(b)   f∈p denotes all Registered Facilities f registered to Market Participant p; and

(c)   t∈d denotes all Trading Intervals t in Trading Day d.

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9.10.11. The total cost of procuring Contingency Reserve Lower in <u>Dispatch Interval DI</u> ~~Trading Interval t~~ is:

$$\text{~~CL\_Payable(t)~~} = \sum_{f \in \text{Facilities}} \text{~~CL\_Payable(f,t)~~}$$
$$+ \sum_{f \in \text{Facilities}} \sum_{DI \in t} \text{~~FCESSUplift\_CL(f,DI)~~}$$

$$\text{CL\_Payable(DI)} = \sum_{f \in \text{Facilities}} \left(\text{CL\_Payable(f,DI)} + \text{FCESSUplift\_CL(f,DI)} \right)$$

where:

(a)   CL_Payable(f,<u>DI</u>~~t~~) is the Contingency Reserve Lower amount payable for Registered Facility f in <u>Dispatch Interval DI</u> ~~Trading Interval t~~ as calculated in accordance with clause <u>9.10.10</u> ~~9.10.9~~;

(b)   FCESSUplift_CL(f,DI) is the share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to Contingency Reserve Lower, determined under clause 9.10.3L;<u> and</u>

(c)   f∈Facilities denotes all Registered Facilities f<u>.</u>~~; and~~

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

…

9.10.18. <u>[Blank]</u>~~The cost associated with procuring the Minimum RoCoF Control Requirement component of RoCoF Control Service in Trading Interval t is:~~

$$\text{~~MinRCS\_Payable(t)~~} = \sum_{DI \in t} \text{~~MinRCS\_Payable(DI)~~}$$

~~where:~~

~~(a)   MinRCS_Payable(DI) is the cost of procuring the Minimum RoCoF Control Requirement component of RoCoF Control Service in Dispatch Interval DI as calculated in accordance with clause 9.10.16; and~~

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

9.10.19. The cost of procuring the Additional RoCoF Control Requirement component of RoCoF Control Service in Dispatch Interval DI is:

$$\text{AdditionalRCS\_Payable(DI)} = \text{RCS\_Payable(DI)} - \text{MinRCS\_Payable(DI)}$$

where:

(a)   RCS_Payable(DI) is the cost of procuring RoCoF Control Service in Dispatch Interval DI as calculated in accordance with clause 9.10.15; and

(b)   MinRCS_Payable(DI) is the cost of procuring the Minimum RoCoF Control Requirement component of RoCoF Control Service in Dispatch Interval DI as calculated in accordance with clause 9.10.16.

9.10.20. The Regulation amount payable to Market Participant p for Trading Day d is:

$$\text{Regulation\_Payable}(p,d) = \sum_{f \in p} \sum_{t \in d} \text{Regulation\_Payable}(f,t)$$

where:

(a) Regulation_Payable(f,t) is the Regulation amount payable for Registered Facility f in Trading Interval t as calculated in accordance with clause 9.10.20A ~~9.10.21~~;

(b) f∈p denotes all Registered Facilities f registered to Market Participant p; and

(c) t∈d denotes all Trading Intervals t in Trading Day d.

9.10.20A. The Regulation amount payable for Registered Facility f in Trading Interval t is:

$$\text{Regulation\_Payable}(f,t) = \sum_{DI \in t} \text{Regulation\_Payable}(f,DI)$$

where:

(a) Regulation_Payable(f,DI) is the Regulation amount payable for Facility f in Dispatch Interval DI as calculated in accordance with clause 9.10.21; and

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

9.10.21. The Regulation amount payable for Registered Facility f in Dispatch Interval DI ~~Trading Interval t~~ is:

$$\sout{\text{Regulation\_Payable}(f,t) = \sum_{DI \in t} (\text{RR\_Payable}(f,DI) + \text{RL\_Payable}(f,DI))}$$

Regulation_Payable(f,DI) = RR_Payable(f,DI) + RL_Payable(f,DI)

where:

(a) RR_Payable(f,DI) is the Regulation Raise amount payable for Registered Facility f in Dispatch Interval DI as calculated in accordance with clause 9.10.22; and

(b) RL_Payable(f,DI) is the Regulation Lower amount payable for Registered Facility f in Dispatch Interval DI as calculated in accordance with clause 9.10.23.~~; and~~

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

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

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

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

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

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; 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 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 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.

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; 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 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 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.

9.10.24.   The total cost of procuring Regulation in ~~Trading Interval t~~ Dispatch Interval DI is:

$$\text{Regulation\_Payable(t)} = \sum_{f \in \text{Facilities}} \text{Regulation\_Payable(f,t)}$$
$$+ \sum_{f \in \text{Facilities}} \sum_{DI \in t} \text{FCESSUplift\_RR(f,DI)}$$
$$+ \sum_{f \in \text{Facilities}} \sum_{DI \in t} \text{FCESSUplift\_RL(f,DI)}$$

$$\text{Regulation\_Payable(DI)} = \sum_{f \in \text{Facilities}} \big(\text{Regulation\_Payable(f,DI)} + \text{FCESSUplift\_RR(f,DI)}$$
$$+ \text{FCESSUplift\_RL(f,DI)} \big)$$

where:

(a) Regulation_Payable(f,~~t~~DI) is the Regulation amount payable for Registered Facility f in Dispatch Interval DI ~~Trading Interval t~~ as calculated in accordance with clause 9.10.21;

(b)   FCESSUplift_RR(f,DI) is the share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to Regulation Raise, determined under clause 9.10.3N;

(c)   FCESSUplift_RL(f,DI) is the share of the FCESS Uplift Payment for Registered Facility f in Dispatch Interval DI to be allocated to Regulation Lower, determined under clause 9.10.3O; and

(d)   f∈Facilities denotes all Registered Facilities f.; and

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

9.10.25.   The System Restart Services amount payable to Market Participant p for Trading Day d is:

$$SRS\_Payable(p,d) = \sum_{t \in d} SRS\_Payable(p,t)$$

where:

(a)   SRS_Payable(p,t) is the System Restart Services amount payable to Market Participant p for System Restart Services in Trading Interval t as calculated in accordance with clause 9.10.26; and

(b)   t∈d denotes all Trading Intervals t in Trading Day d.

9.10.26.   The System Restart Services amount payable to Market Participant p for System Restart Services in Trading Interval t is:

$$SRS\_Payable(p,t) = \sum_{c \in p} SRS\_Payable(c,t)$$

where:

(a)   SRS_Payable(c,t) is the applicable dollar amount payable to Market Participant p in Trading Interval t for System Restart Services under each relevant System Restart Service Contract to which Market Participant p is a counterparty; and

(b)   c∈p denotes all System Restart Service Contracts to which Market Participant p is a counterparty.

9.10.27.   The total cost of procuring System Restart Services in Trading Interval t is:

$$SRS\_Payable(t) = \sum_{p \in P} SRS\_Payable(p,t)$$

where:

(a)   SRS_Payable(p,t) is the System Restart Services amount payable to Market Participant p for System Restart Services in Trading Interval t as calculated in accordance with clause 9.10.26; and

(b)   p∈P denotes all Market Participants.

9.10.27A. The NCESS amount payable to Market Participant p for Trading Day d is:

$$NCESS\_Payable(p,d) = \sum_{t \in d} NCESS\_Payable(p,t)$$

where:

(a) NCESS_Payable(p,t) is the NCESS amount payable to Market Participant p for NCESS in Trading Interval t as calculated in accordance with clause 9.10.27B; and

(b) t∈d denotes all Trading Intervals t in Trading Day d.

9.10.27B. The NCESS amount payable to Market Participant p for NCESS in Trading Interval t is:

$$NCESS\_Payable(p,t) = \sum_{DI \in t} NCESS\_Payable(p,DI)$$

where:

(a) NCESS_Payable(p,DI) is the applicable dollar amount payable to Market Participant p in Dispatch Interval DI for NCESS, as calculated under clause 9.10.27C; and

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

9.10.27C. The NCESS amount payable to Market Participant p for NCESS in Dispatch Interval DI is:

$$NCESS\_Payable(p,DI) = \sum_{c \in p} NCESS\_Payable(c,DI)$$

where:

(a) NCESS_Payable(c,DI) is the applicable dollar amount payable to Market Participant p in Dispatch Interval DI for NCESS under each relevant NCESS Contract which Market Participant p has entered into with AEMO as provided under clause 5.9.1; and

(b) c∈p denotes all NCESS Contracts to which Market Participant p is a counterparty.

9.10.27D. The total cost of procuring NCESS in <u>Dispatch Interval DI</u> ~~Trading Interval t~~ is:

$$\cancel{NCESS\_Payable(t) = \sum_{p \in P} NCESS\_Payable(p,t)}$$

$$\underline{NCESS\_Payable(DI) = \sum_{p \in P} NCESS\_Payable(p,DI)}$$

where:

(a) NCESS_Payable(p,<u>DI</u>~~t~~) is the NCESS amount payable to Market Participant p for NCESS in <u>Dispatch Interval DI</u> ~~Trading Interval t~~ as calculated in accordance with clause <u>9.10.27C</u> ~~9.10.27B~~; and

(b) p∈P denotes all Market Participants.

9.10.28. The Essential System Service amount recoverable from Rule Participant p for Trading Day d is:

$$ESS\_Recoverable(p,d) = CR\_Recoverable(p,d) + CL\_Recoverable(p,d) +$$

$$RCS\_Recoverable(p,d) + Regulation\_Recoverable(p,d) + SRS\_Rcoverable(p,d)$$
$$+NCESS\_Recoverable(p,d)$$

where:

(a) CR_Recoverable(p,d) is the Contingency Reserve Raise amount recoverable from Market Participant p for Trading Day d calculated in accordance with clause 9.10.29;

(b) CL_Recoverable(p,d) is the Contingency Reserve Lower amount recoverable from Market Participant p for Trading Day d calculated in accordance with clause 9.10.31;

(c) RCS_Recoverable(p,d) is the RoCoF Control Service amount recoverable from Rule Participant p for Trading Day d calculated in accordance with clause 9.10.33;

(d) Regulation_Recoverable(p,d) is the Regulation amount recoverable from Market Participant p for Trading Day d calculated in accordance with clause 9.10.35; and

(e) SRS_Recoverable(p,d) is the System Restart Service amount recoverable from Market Participant p for Trading Day d calculated in accordance with clause 9.10.40; and

(f) NCESS_Recoverable(p,d) is the NCESS amount recoverable from Market Participant p for Trading Day d calculated in accordance with clause 9.10.44.

9.10.29. The Contingency Reserve Raise amount recoverable from Market Participant p for Trading Day d is:

$$CR\_Recoverable(p,d) = \sum_{t \in d} CR\_Recoverable(p,t)$$

where:

(a) CR_Recoverable(p,t) is the Contingency Reserve Raise amount recoverable from Market Participant p for Trading Interval t calculated in accordance with clause 9.10.30; and

(b) t∈d denotes all Trading Intervals t in Trading Day d.

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

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

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.

9.10.31.   The Contingency Reserve Lower amount recoverable from Market Participant p for Trading Day d is:

$$CL\_Recoverable(p,d) = \sum_{t \in d} CL\_Recoverable(p,t)$$

where:

(a)   CL_Recoverable(p,t) is the Contingency Reserve Lower amount recoverable from Market Participant p for Trading Interval t as calculated in accordance with clause 9.10.31A 9.10.32; and

(b)   t∈d denotes all Trading Intervals t in Trading Day d.

9.10.31A. The Contingency Reserve Lower amount recoverable from Market Participant p for Trading Interval t is:

$$CL\_Recoverable(p,t) = \sum_{DI \in t} CL\_Recoverable(p,DI)$$

where:

(a)   CL_Recoverable(p,DI) is the Contingency Reserve Lower amount recoverable from Market Participant p for Dispatch Interval DI as calculated in accordance with clause 9.10.32; and

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

9.10.32.   The Contingency Reserve Lower amount recoverable from Market Participant p for Dispatch Interval DI Trading Interval t is:

$$CL\_Recoverable(p,t) = CL\_Payable(t) \times ConsumptionShare(p,t)$$

$$CL\_Recoverable(p,DI) = CL\_Payable(DI) \times ConsumptionShare(p,DI)$$

where:

(a)   CL_Payable(DIt) is the total cost of procuring Contingency Reserve Lower in Dispatch Interval DI Trading Interval t as calculated in accordance with clause 9.10.11; and

(b)   ConsumptionShare(p,DIt) is the Consumption Share for Market Participant p for Dispatch Interval DI Trading Interval t as calculated in accordance with clause 9.5.6A 9.5.6.

9.10.33. The RoCoF Control Service amount recoverable from Rule Participant p for Trading Day d is:

$$RCS\_Recoverable(p,d) = \sum_{t \in d} RCS\_Recoverable(p,t)$$

where:

(a) RCS_Recoverable(p,t) is the RoCoF Control Service amount recoverable from Rule Participant p for Trading Interval t as calculated in accordance with clause 9.10.33A ~~9.10.34~~; and

(b) t∈d denotes all Trading Intervals t in Trading Day d.

9.10.33A. The RoCoF Control Service amount recoverable from Rule Participant p for Trading Interval t is:

$$RCS\_Recoverable(p,t) = \sum_{DI \in t} RCS\_Recoverable(p,DI)$$

where:

(a) RCS_Recoverable(p,DI) is the RoCoF Control Service amount recoverable from Rule Participant p for Dispatch Interval DI as calculated in accordance with clause 9.10.34; and

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

9.10.34. The RoCoF Control Service amount recoverable from Rule Participant p for Dispatch Interval DI ~~Trading Interval t~~ is:

$$\cancel{RCS\_Recoverable(p,t) = MinRCS\_Recoverable(p,t) + \sum_{DI \in t} AdditionalRCS\_Recoverable(p,DI)}$$

$$RCS\_Recoverable(p,DI) = MinRCS\_Recoverable(p,DI) + AdditionalRCS\_Recoverable(p,DI)$$

where:

(a) MinRCS_Recoverable(p,DI~~t~~) is the cost of procuring the Minimum RoCoF Control Requirement component of RoCoF Control Service in Dispatch Interval DI ~~Trading Interval t~~ recoverable from Rule Participant p calculated in accordance with clause 9.10.42; and

(b) AdditionalRCS_Recoverable(p,DI) is the cost of procuring the Additional RoCoF Control Requirement component of RoCoF Control Service in Dispatch Interval DI recoverable from Rule Participant p calculated in accordance with clause 9.10.43.~~; and~~

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

9.10.35. The Regulation amount recoverable from Market Participant p for Trading Day d is:

$$Regulation\_Recoverable(p,d) = \sum_{t \in d} Regulation\_Recoverable(p,t)$$

where:

(a)   Regulation_Recoverable(p,t) is the Regulation amount recoverable from Market Participant p for Trading Interval t as calculated in accordance with clause 9.10.35A 9.10.36; and

(b)   t∈d denotes all Trading Intervals t in Trading Day d.

9.10.35A. The Regulation amount recoverable from Market Participant p for Trading Interval t is:

$$Regulation\_Recoverable(p,t) = \sum_{DI \in t} Regulation\_Recoverable(p,DI)$$

where:

(a)   Regulation_Recoverable(p,DI) is the Regulation amount recoverable from Market Participant p for Dispatch Interval DI as calculated in accordance with clause 9.10.36; and

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

9.10.36.   The Regulation amount recoverable from Market Participant p for Dispatch Interval DI Trading Interval t is:

~~Regulation_Recoverable(p,t) = Regulation_Payable(t) × Regulation_Share(p,t)~~

Regulation_Recoverable(p,DI) = Regulation_Payable(DI) × Regulation_Share(p,DI)

where:

(a)   Regulation_Payable(DI t) is the total cost of Regulation for Dispatch Interval DI Trading Interval t as calculated in accordance with clause 9.10.24; and

(b)   Regulation_Share(p, DI t) is Market Participant p's share of the total cost of Regulation payable for Dispatch Interval DI Trading Interval t as calculated in accordance with clause 9.10.37.

9.10.37.   Market Participant p's share of the total cost of Regulation payable for Dispatch Interval DI Trading Interval t is:

$$\text{Regulation\_Share(p,t)} = \frac{\text{RegulationContributingQuantity(p,t)}}{\text{RegulationContributingQuantity(t)}}$$

$$Regulation\_Share(p,DI) = \frac{RegulationContributingQuantity(p,DI)}{RegulationContributingQuantity(DI)}$$

where:

(a)   RegulationContributingQuantity(p,DI t) is the quantity calculated in accordance with clause 9.10.38; and

(b)   RegulationContributingQuantity(DI t) is the quantity calculated in accordance with clause 9.10.39.

9.10.38.   Market Participant p's Regulation contributing quantity in Dispatch Interval DI Trading Interval t is:

~~RegulationContributingQuantity(p,t)~~

$$\sim= \sum_{SSF \in p} |MeteredSchedule(SSF,t)| + \sum_{NSF \in p} |MeteredSchedule(NSF,t)|$$

$$\sim+ \sum_{NDL \in p} |MeteredSchedule(NDL,t)|$$

RegulationContributingQuantity(p,DI)

$$= \sum_{SSF \in p} |MeteredSchedule(SSF,DI)| + \sum_{NSF \in p} |MeteredSchedule(NSF,DI)|$$

$$+ \sum_{NDL \in p} |MeteredSchedule(NDL,DI)|$$

where:

(a) MeteredSchedule(SSF,~~t~~DI) is the Metered Schedule of Semi-Scheduled Facility SSF in ~~Trading Interval t~~ Dispatch Interval DI;

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

(c) MeteredSchedule(NSF,~~t~~DI) is the Metered Schedule of Non–Scheduled Facility NSF in ~~Trading Interval t~~ Dispatch Interval DI;

(d) NSF∈p denotes all Non-Scheduled Facilities NSF registered to Market Participant p;

(e) MeteredSchedule(NDL,~~t~~DI) is the Metered Schedule of Non-Dispatchable Load NDL in ~~Trading Interval t~~ Dispatch Interval DI; and

(f) NDL∈p denotes all Non-Dispatchable Loads NDL associated with Market Participant p (including Synergy's Notional Wholesale Meter where Synergy is Market Participant p).

9.10.39. The Regulation contributing quantity in Dispatch Interval DI ~~Trading Interval t~~ is:

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

$$\text{RegulationContributingQuantity}(DI) = \sum_{p \in P} \text{RegulationContributingQuantity}(p,DI)$$

where:

(a) RegulationContributingQuantity(p,~~t~~DI) is Market Participant p's Regulation contributing quantity in Dispatch Interval DI ~~Trading Interval t~~ calculated in accordance with clause 9.10.38; and

(b) p∈P denotes all Market Participants.

9.10.40. The System Restart Service amount recoverable from Market Participant p for Trading Day d is:

$$SRS\_Recoverable(p,d) = \sum_{t \in d} SRS\_Recoverable(p,t)$$

where:

(a)   SRS_Recoverable(p,t) is the System Restart Service amount recoverable from Market Participant p for Trading Interval t in accordance clause 9.10.41; and

(b)   t∈d denotes all Trading Intervals t in Trading Day d.

9.10.41.   The System Restart Service amount recoverable from Market Participant p for Trading Interval t is:

$$SRS\_Recoverable(p,t) = SRS\_Payable(t) \times ConsumptionShare(p,t)$$

where:

(a)   SRS_Payable(t) is the total cost of procuring System Restart Services in Trading Interval t as calculated in accordance with clause 9.10.27; and

(b)   ConsumptionShare(p,t) is the Consumption Share for Market Participant p in Trading Interval t as calculated in accordance with clause 9.5.6.

9.10.42.   The cost of procuring the Minimum RoCoF Control Requirement component of RoCoF Control Service recoverable from Rule Participant p in ~~Dispatch Interval DI~~ <u>Trading Interval t</u> is:

~~MinRCS_Recoverable(p,t) = MinRCS_Payable(t) × MinRCSShare(p,t)~~

<u>MinRCS_Recoverable(p,DI) = MinRCS_Payable(DI) × MinRCSShare(p,DI)</u>

where:

(a)   MinRCS_Payable(<u>DI</u>~~t~~) is the total cost of procuring the Minimum RoCoF Control Requirement component of RoCoF Control Service in <u>Dispatch Interval DI</u> ~~Trading Interval t~~ as calculated in accordance with clause <u>9.10.16</u> ~~9.10.18~~; and

(b)   MinRCSShare(p,<u>DI</u>~~t~~) is Rule Participant p's share of the cost of procuring the Minimum RoCoF Control Requirement component of RoCoF Control Service in <u>Dispatch Interval DI</u> ~~Trading Interval t~~ as calculated following the steps set out in Appendix 2B and as finally calculated in clause 2.8 of Appendix 2B.

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:

$$AdditionalRCS\_Recoverable(p,DI) = AdditionalRCS\_Payable(DI) \times$$
$$TotalRunwayShare(p,DI)$$

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 ρ'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.

9.10.44.   The NCESS amount recoverable from Market Participant p for Trading Day d is:

$$NCESS\_Recoverable(p,d) = \sum_{t \in d} NCESS\_Recoverable(p,t)$$

where:

(a)   NCESS_Recoverable(p,t) is the NCESS amount recoverable from Market Participant p for Trading Interval t in accordance with clause 9.10.44A ~~9.10.45~~; and

(b)   t∈d denotes all Trading Intervals t in Trading Day d.

9.10.44A. The NCESS amount recoverable from Market Participant p for Trading Interval t is:

$$NCESS\_Recoverable(p,t) = \sum_{DI \in t} NCESS\_Recoverable(p,DI)$$

where:

(a)   NCESS_Recoverable(p,DI) is the NCESS amount recoverable from Market Participant p for Dispatch Interval DI as calculated in accordance with clause 9.10.45; and

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

9.10.45.   The NCESS amount recoverable from Market Participant p for Dispatch Interval DI ~~Trading Interval t~~ is:

~~NCESS_Recoverable(p,t) = NCESS_Payable(t) × ConsumptionShare(p,t)~~

NCESS_Recoverable(p,DI) = NCESS_Payable(DI) × ConsumptionShare(p,DI)

where:

(a)   NCESS_Payable(DI~~t~~) is the total cost of procuring NCESS in Dispatch Interval DI ~~Trading Interval t~~ as calculated in accordance with clause 9.10.27D; and

(b)   ConsumptionShare(p,DI~~t~~) is the Consumption Share for Market Participant p in Dispatch Interval DI ~~Trading Interval t~~ as calculated in accordance with clause 9.5.6A ~~9.5.6~~.

…

9.14.   Settlement Statements

9.14.1.   AEMO must provide Settlement Statements to Market Participants and to each Network Operator in accordance with the settlement timeline in section 9.3.

9.14.2.   A Settlement Statement must include:

(a)   details of the Trading Days to which the Settlement Statement relates;

(b)   details of the Rule Participant to which the Settlement Statement relates;

(c)   for each Dispatch Interval of each Trading Day to which the Settlement Statement relates:

i.   cleared energy quantity in MW as recorded in the relevant Dispatch Instruction (where this quantity can be a Dispatch Target, Dispatch Cap or Dispatch Forecast);

ii.   the value of all Energy Uplift Payments made for the Market Participant for each of its Registered Facilities including the Energy Uplift Price and Energy Uplift Quantity for each Registered Facility;

iii.   the Final Energy Market Clearing Price;

iv.   the value of all final Market Clearing Prices of all Frequency Co-optimised Essential System Services;

v.   the meter reading for each facility associated with the Market Participant (other than any meters associated with the Notional Wholesale Meter);

vi.   in the case of Synergy:

1.   Notional Wholesale Meter values; and

2.   the total quantity of energy deemed to have been supplied by its Registered Facilities; and

vii.   the Net Trading Quantity for the Market Participant;

(d)   for each Trading Interval of each Trading Day to which the Settlement Statement relates:

i.   for a Market Participant:

1.   the STEM clearing Price;

2.   the STEM quantity scheduled for the Market Participant; and

3.   the STEM settlement amount for the Market Participant for the Trading Interval calculated in accordance with clause

9.7.3, where this may be a positive amount, negative amount or a zero amount;

  ii. the Bilateral Contract quantities for the Market Participant; and

  iii. the Net Contract Position of the Market Participant;

  iv. ~~the meter reading for each facility associated with the Market Participant (other than any meters associated with the Notional Wholesale Meter);~~

  v. ~~in the case of Synergy:~~

    1. ~~Notional Wholesale Meter values; and~~

    2. ~~the total quantity of energy deemed to have been supplied by its Registered Facilities;~~

  vi. ~~for a Market Participant, the value of the Final Reference Trading Price; and~~

  vii. ~~the Net Trading Quantity for the Market Participant;~~

(e) details of amounts calculated for the Rule Participant for a Trading Day under sections 9.6 and sections 9.8 to 9.12 with respect to, as applicable:

  i. net settlement amount;

  ii. Reserve Capacity settlement amount;

  iii. Real-Time Energy settlement amount;

  iv. Essential System Services settlement amount;

  v. Outage Compensation settlement amount; and

  vi. Market Participant Market Fees and Market Participant Regulator Fees settlement amounts;

(f) details of any Capacity Credits allocated to the Market Participant from another Market Participant in accordance with sections 4.30 and 4.31;

(g) details of any Capacity Credits allocated to another Market Participant from the Market Participant in accordance with sections 4.30 and 4.31;

(h) details of any reductions in payments in the preceding Trading Week under clause 9.20.4 as a result of a Rule Participant being in default;

(i) details of any payments to the Rule Participant as a result of AEMO recovering funds not paid to the Rule Participant in previous Trading Weeks under clause 9.20.4 as a result of a Rule Participant being in default;

(j) in regard to Default Levy re-allocations, as defined in accordance with clause 9.20.11:

  i. the total amount of Default Levy paid by that Rule Participant during the Financial Year, with supporting calculations;

<blockquote>

      ii.   the adjusted allocation of those Default Levies to be paid by that Rule Participant, with supporting calculations; and

      iii.   the net adjustment be made;

</blockquote>

(k)   details of any amounts to be distributed to a Market Participant under section 9.21 for the Trading Week;

(l)   whether the statement is an adjusted Settlement Statement and replaces a previously issued Settlement Statement;

(m)   in the case of an adjusted Settlement Statement, details of all adjustments made to a previously issued Settlement Statement relative to the first Settlement Statement issued for that Trading Week with an explanation of the reasons for the adjustments;

(n)   the net dollar amount owed by the Rule Participant to AEMO for the billing period (i.e. the Trading Days covered by the Settlement Statement) where this may be a positive amount, a negative amount or a zero amount as the case may be;

(o)   any interest applied in accordance with clause 9.1.4; and

(p)   all applicable taxes.

…

11. Glossary

…

Consumption Contributing Quantity: For a Market Participant ~~for a Trading Interval~~, has the meaning given in ~~clause 9.5.7.~~:

     (a)   clause 9.5.7 for a Trading Interval; or

     (b)   clause 9.5.7A for a Dispatch Interval.

…

Consumption Share: Has the meaning given in ~~clause 9.5.6.~~:

     (a)   clause 9.5.6 for a Trading Interval; or

     (b)   clause 9.5.6A for a Dispatch Interval.

…

Energy Uplift Payment: Has the meaning given in clause 9.9.8. ~~Is the Energy Uplift Payment in respect of a Facility and, in relation to a:~~

     ~~(a)~~   ~~Trading Interval, has the meaning given in clause 9.9.7; and~~

     ~~(b)~~   ~~Dispatch Interval, has the meaning given in clause 9.9.8.~~

…

~~**Final Reference Trading Price**: The Reference Trading Price as published or revised under section 7.13.~~

…

Metered Schedule: Has the meaning given in ~~clause 9.5.2 and clause 9.5.3~~ clauses 9.5.2, 9.5.3 or 9.5.3A, as the case may be.

…

Net Trading Quantity: In respect of a ~~Trading~~ Dispatch Interval and for a Market Participant has the meaning given in clause 9.9.5.

…

~~**Reference Trading Price**: Means, for a Trading Interval, the price determined in accordance with clause 7.11A.1(b).~~

…

Appendix 2B: Minimum RoCoF Control Service cost recovery method

> **Explanatory Note**
>
> Appendix 2B is updated to calculate cost recovery amounts for each Dispatch Interval rather than each Trading Interval.

1. Interpretation

1.1 Where anything is to be determined, calculated or done in this Appendix 2B, then except where otherwise stated, AEMO will determine, calculate or do, as the case may be, those things.

2. Cost recovery calculations for Minimum RoCoF Control Requirement

2.1 AEMO must calculate a Rule Participant's share of the Minimum RoCoF Control Requirement component of the RoCoF Control Service cost in ~~Trading Interval t~~ Dispatch Interval DI by following each of the steps set out in the rest of this Appendix 2B.

2.2 For each ~~Trading Interval t~~ Dispatch Interval DI, define the set of RoCoF Causers($\underline{DI}t$), being each of:

   (a) Network Causer($\underline{DI}t$): the set of Networks registered to Western Power which are RoCoF Causers under clause 2.34A.12J in ~~Trading Interval t~~ Dispatch Interval DI;

   (b) Injection Causer($\underline{DI}t$): the set of Scheduled Facilities, Semi-Scheduled Facilities or Non-Scheduled Facilities that are recorded in Standing Data as including an Energy Producing System, which have a non-zero Metered Schedule in ~~Trading Interval t~~ Dispatch Interval DI and which are RoCoF Causers under clause 2.34A.12J in ~~Trading Interval t~~ Dispatch Interval DI; and

   (c) Offtake Causer($\underline{DI}t$): the set of:

   i. all Scheduled Facilities, Semi-Scheduled Facilities or Non-Scheduled Facilities which comprise only Loads; and

   ii. all Non-Dispatchable Loads (including Synergy's Notional Wholesale Meter where Synergy is the Market Participant),

   which have non-zero Metered Schedules in ~~Trading Interval t~~ Dispatch Interval DI and which are RoCoF Causers under clause 2.34A.12J in ~~Trading Interval t~~ Dispatch Interval DI.

2.3 For each ~~Trading Interval t~~ Dispatch Interval DI, define a Causer Factor for each subset of RoCoF Causers(t) as follows:

(a)   ~~NetworkCauserFactor(t) =~~ $\begin{cases} 0 \text{ if the Network Causer(t) subset is empty} \\ 1 \qquad\qquad\qquad\qquad\qquad \text{otherwise} \end{cases}$ ~~,~~

(b)   ~~InjectionCauserFactor(t) =~~ $\begin{cases} 0 \text{ if the Injection Causer(t) subset is empty} \\ 1 \qquad\qquad\qquad\qquad\qquad \text{otherwise} \end{cases}$ ~~,~~ ~~and~~

(c)   ~~OfftakeCauserFactor(t) =~~ $\begin{cases} 0 \text{ if the Offtake Causer(t) subset is empty} \\ 1 \qquad\qquad\qquad\qquad\qquad \text{otherwise} \end{cases}$

(a)   <u>NetworkCauserFactor(DI) =</u> $\begin{cases} 0 \text{ if the Network Causer(DI) subset is empty} \\ 1 \qquad\qquad\qquad\qquad\qquad \text{otherwise} \end{cases}$ <u>,</u>

(b)   <u>InjectionCauserFactor(DI) =</u> $\begin{cases} 0 \text{ if the Injection Causer(DI) subset is empty} \\ 1 \qquad\qquad\qquad\qquad\qquad \text{otherwise} \end{cases}$ <u>,</u> <u>and</u>

(c)   <u>OfftakeCauserFactor(DI) =</u> $\begin{cases} 0 \text{ if the Offtake Causer(DI) subset is empty} \\ 1 \qquad\qquad\qquad\qquad\qquad \text{otherwise} \end{cases}$

2.4   Determine the total number of causer groups n(<u>DI</u>~~t~~) in ~~Trading Interval t~~ <u>Dispatch Interval DI</u> as follows:

~~n(t) = NetworkCauserFactor(t) + InjectionCauserFactor(t) + OfftakeCauserFactor(t)~~

<u>n(DI) = NetworkCauserFactor(DI) + InjectionCauserFactor(DI) + OfftakeCauserFactor(DI)</u>

where:

(a)   NetworkCauserFactor(<u>DI</u>~~t~~) is the Causer Factor for the subset Network Causer(<u>DI</u>~~t~~) in ~~Trading Interval t~~ <u>Dispatch Interval DI</u> as calculated in clause 2.3(a) of this Appendix 2B.

(b)   InjectionCauserFactor(<u>DI</u>~~t~~) is the Causer Factor for the subset Injection Causer(<u>DI</u>~~t~~) in ~~Trading Interval t~~ <u>Dispatch Interval DI</u> as calculated in clause 2.3(b) of this Appendix 2B.

(c)   OfftakeCauserFactor(<u>DI</u>~~t~~) is the Causer Factor for the subset Offtake Causer(<u>DI</u>~~t~~) in ~~Trading Interval t~~ <u>Dispatch Interval DI</u> as calculated in clause 2.3(c) of this Appendix 2B.

2.5   Determine Western Power's share of the Minimum RoCoF Control Requirement component of the RoCoF Control Service cost in ~~Trading Interval t~~ <u>Dispatch Interval DI</u> as follows:

~~WPShare(t) =~~ $\dfrac{1}{n(t)}$ ~~× NetworkCauserFactor(t)~~

<u>WPShare(DI) =</u> $\dfrac{1}{n(DI)}$ <u>× NetworkCauserFactor(DI)</u>

where:

(a)   NetworkCauserFactor(<u>DI</u>~~t~~) is the Causer Factor for the subset Network Causer(<u>DI</u>~~t~~) in ~~Trading Interval t~~ <u>Dispatch Interval DI</u> as calculated in clause 2.3(a) of this Appendix 2B; and

(b)   n(<u>DI</u>~~t~~) is the total number of causer groups in ~~Trading Interval t~~ <u>Dispatch Interval DI</u> as calculated in clause 2.4 of this Appendix 2B.

2.6   For each Registered Facility, f, which is a member of Injection Causer(t), determine its share of the Minimum RoCoF Control Requirement component of RoCoF Control Service cost in ~~Trading Interval t~~ Dispatch Interval DI as follows:

~~$$InjectionShare(f,t) = \frac{1}{n(t)} \times InjectionCauserFactor(t) \times \frac{|MeteredSchedule(f,t)|}{\sum_{i \in InjectionCauser(t)}|MeteredSchedule(i,t)|}$$~~

$$InjectionShare(f,DI) = \frac{1}{n(DI)} \times InjectionCauserFactor(DI) \times \frac{|MeteredSchedule(f,DI)|}{\sum_{i \in InjectionCauser(DI)}|MeteredSchedule(i,DI)|}$$

where:

(a)   n(DI~~t~~) is the total number of causer groups in ~~Trading Interval t~~ Dispatch Interval DI as calculated in clause 2.4 of this Appendix 2B;

(b)   InjectionCauserFactor(DI~~t~~) is the Causer Factor for the subset Injection Causer(DI~~t~~) in ~~Trading Interval t~~ Dispatch Interval DI as calculated in clause 2.3(b) of this Appendix 2B;

(c)   MeteredSchedule(f,DI~~t~~) is the value of the Metered Schedule for Registered Facility f which is a member of the subset Injection Causer(DI~~t~~), such subset as defined in clause 2.2(b) of this Appendix 2B, in ~~Trading Interval t~~ Dispatch Interval DI;

(d)   i∈InjectionCauser(DI~~t~~) denotes all Registered Facilities in the subset Injection Causer(DI~~t~~), such subset as defined in clause 2.2(b) of this Appendix 2B, in ~~Trading Interval t~~ Dispatch Interval DI; and

(e)   MeteredSchedule(i,DI~~t~~) is the value of the Metered Schedule for Registered Facility i in the subset Injection Causer(DI~~t~~), such subset as defined in clause 2.2(b) of this Appendix 2B, in ~~Trading Interval t~~ Dispatch Interval DI.

2.7   For each facility that is a member of Offtake Causer(DI~~t~~), determine in ~~Trading Interval t~~ Dispatch Interval DI:

~~$$OfftakeShare(l,t) = \frac{1}{n(t)} \times OfftakeCauserFactor(t) \times \frac{|MeteredSchedule(l,t)|}{\sum_{i \in OfftakeCauser(t)}|MeteredSchedule(i,t)|}$$~~

$$OfftakeShare(l,DI) = \frac{1}{n(DI)} \times OfftakeCauserFactor(DI) \times \frac{|MeteredSchedule(l,DI)|}{\sum_{i \in OfftakeCauser(DI)}|MeteredSchedule(i,DI)|}$$

where:

(a)   n(DI~~t~~) is the total number of causer groups in ~~Trading Interval t~~ Dispatch Interval DI as calculated in clause 2.4 of this Appendix 2B.

(b) OfftakeCauserFactor(~~t~~DI) is the Causer Factor for the subset Offtake Causer(~~t~~DI) in ~~Trading Interval t~~ Dispatch Interval DI as calculated in clause 2.3(c) of this Appendix 2B.

(c) MeteredSchedule(l,~~t~~DI) is the value of the Metered Schedule for member l of the subset Offtake Causer(~~t~~DI), such subset as defined in clause 2.2(c) of this Appendix 2B in ~~Trading Interval t~~ Dispatch Interval DI;

(d) i∈OfftakeCauser(~~t~~DI) denotes all members of the subset Offtake Causer(~~t~~DI), as defined in clause 2.2(c) of this Appendix 2B in ~~Trading Interval t~~ Dispatch Interval DI; and

(e) MeteredSchedule(i,~~t~~DI) is the value of the Metered Schedules for a member i of the subset Offtake Causer(~~t~~DI), such subset as defined in clause 2.2(c) of this Appendix 2B in ~~Trading Interval t~~ Dispatch Interval DI.

2.8 Determine Rule Participant p's share of Minimum RoCoF Control Requirement component of RoCoF Control Service cost in ~~Trading Interval t~~ Dispatch Interval DI as follows:

$$\text{MinRCSShare}(p,t) = \sum_{f \in p} \text{InjectionShare}(f,t) + \sum_{l \in p} \text{OfftakeShare}(l,t) + \text{NOShare}(p,t)$$

$$\text{MinRCSShare}(p,DI) = \sum_{f \in p} \text{InjectionShare}(f,DI) + \sum_{l \in p} \text{OfftakeShare}(l,DI) + \text{NOShare}(p,DI)$$

where:

(a) InjectionShare(f,~~t~~DI) is, for each Registered Facility which is a member of Injection Causer(~~t~~DI), the Registered Facility f's share of the Minimum RoCoF Control Requirement component of the RoCoF Control Service cost in ~~Trading Interval t~~ Dispatch Interval DI as calculated in clause 2.6 of this Appendix 2B;

(b) f∈p denotes all Registered Facilities which are a member of Injection Causer(~~t~~DI) and registered to Rule Participant p;

(c) OfftakeShare(l,~~t~~DI) is the share of the Minimum RoCoF Control Requirement component of the RoCoF Control Service cost in ~~Trading Interval t~~ Dispatch Interval DI for each facility which is a member of Offtake Causer(~~t~~DI), as calculated in clause 2.7 of this Appendix 2B;

(d) l∈p denotes all facilities which are members of Offtake Causer(~~t~~DI) and associated with Rule Participant p; and

(e) NOShare(p,~~t~~DI) is, for Western Power, WPShare(~~t~~DI), as calculated in clause 2.5 of this Appendix 2B, and for all other Rule Participants, zero.

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