

11.5.5 Settlement Amount for Residual Imbalance Energy

11.5.5.1 In General

For each Settlement Interval, Residual Imbalance Energy settlement amounts shall be the product of the MWh of Residual Imbalance Energy for that Settlement Interval and the Bid, as mitigated pursuant to Section 39.7 that led to the Residual Imbalance Energy from the relevant Dispatch Interval in which the resource was dispatched, subject to additional rules specified in this section below and in Section 11.17. The relevant Dispatch Interval and Bid that led to the Residual Imbalance Energy may occur prior or subsequent to the interval in which the relevant Residual Imbalance Energy occurs and can be contiguous, or not, with the applicable Trading Hour in which the relevant Residual Imbalance Energy Settlement Interval occurs.

11.5.5.2 Eligible Intermittent Resources

For Eligible Intermittent Resources, the Settlement Amount for any portion of the resource's Residual Imbalance Energy that is greater than its forecasted output for a particular Settlement Interval will be the product of the MWh of Residual Imbalance Energy above the resource's forecasted output for that Settlement Interval and the applicable RTD Locational Marginal Price or RTD MSS Price if the resource is MSS Net settled.

11.5.5.3 Metered Sub-Systems

For MSS Operators the Settlement for Residual Imbalance Energy is conducted in the same manner, regardless of any MSS elections (net/gross Settlement, Load following or opt-in/opt-out of RUC), except in the case of Eligible Intermittent Resource which are settled as specified in Section 11.5.5.2.

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11.5.5.4 Rerated Minimum Load

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When a Scheduling Coordinator increases the Minimum Load amount for a resource through SLIC, for the Settlement Interval(s) during which the affected resource is ramping up towards or ramping down from such a Minimum Load change, the Residual Imbalance Energy for the applicable Settlement Interval(s) will be re-classified as Derate Energy and will be paid at the applicable RTD Locational Marginal Price.

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11.8.2.5 Calculation and Application of the Day-Ahead Metered Energy Adjustment Factor to IFM Bid Costs and Market Revenues

The CAISO will adjust for each Bid Cost Recovery Eligible Resource the IFM Energy Bid Cost and IFM Market Revenue calculations by multiplying the Day-Ahead Metered Energy Adjustment Factor with the amounts derived as specified in Sections 11.8.2.1.5 and 11.8.2.2, respectively. In addition, the CAISO will apply the Real-Time Performance Metric to the IFM Energy Bid Costs, IFM Minimum Load Costs IFM Pumping Costs and IFM Market Revenues, as described in 11.8.4.4.

11.8.2.5.1 Calculation of Day-Ahead Metered Energy Adjustment Factor

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The CAISO will calculate the Day-Ahead Metered Energy Adjustment Factor for each BCR Eligible Resource through the following steps:

- a) For Generation Units and Resource Specific System Resources scheduled by CAISO in the Day-Ahead Market**

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Step 1: If the resource's Effective Day-Ahead Scheduled Energy is greater than or equal to its Day-Ahead Minimum Load Energy, and is greater than zero, then the calculation will proceed to step two. Otherwise, the calculation will proceed to step six.

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Step 2: If (1) the resource's Metered Energy less Regulation Energy is less than its Day-Ahead Minimum Load Energy less the Tolerance Band; or (2) the resource's Metered Energy less Regulation Energy is less than or equal to zero, then the Day-Ahead Metered Energy Adjustment Factor will be set to zero (0). Otherwise, the calculation will proceed to step three.

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Step 3: If the absolute value of the result of the resource's Metered Energy less its Regulation Energy less the total Expected Energy, is less than or equal to the Performance Metric Tolerance Band, then the Day-Ahead Metered Energy Adjustment Factor will be set to one (1). Otherwise, the calculation will proceed to step four.

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Step 4: If the resource's Effective Day-Ahead Scheduled Energy less its Day-Ahead Minimum Load Energy is less than or equal to zero, then the Day-Ahead Metered Energy Adjustment Factor will be set to one (1). Otherwise, the calculation will proceed to step five.

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Commented [A3]: Suggest updating the criteria to "less than or equal to" to account for small mathematical differences within the individual interval calculations. This is also consistent with the MEAF calculation laid out by CAISO in Appendix A of the 10/14/2015 Business Requirements Specification for BCR Modification and VER Settlement (Step 3).

Step 5: The resource's Day-Ahead Metered Energy Adjustment Factor will be the minimum of: (A) the number one (1); or (B) the maximum of (i) the number zero (0), and (ii) the ratio of the resource's (a) Metered Energy less the Day-Ahead Minimum Load

Energy and less the Regulation Energy, and (b) the Effective Day-Ahead Scheduled Energy, less the Day-Ahead Minimum Load Energy.

Step 6: If the resource's Effective Day-Ahead Scheduled Energy is less than its Day-Ahead Minimum Load Energy and if the resource's Effective Day-Ahead Scheduled Energy is greater than zero (0), then its Day-Ahead Metered Energy Adjustment Factor will be set to one (1). Otherwise, the calculation will proceed to step seven.

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Step 7. If the Day-Ahead Scheduled Energy is positive and the resource's Expected Energy is less than or equal to zero, and its Metered Energy is less than or equal to zero, then its Day-Ahead Metered Energy Adjustment Factor will be set to one (1). Otherwise, its Day-Ahead Metered Energy Adjustment Factor will be set to zero (0).

b) Participating Load Pumped-Storage Hydro Units and Pumping Load scheduled by CAISO to pump in the Day-Ahead Market

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Step 1. If the resource's Day-Ahead Pumping Energy is negative and its Expected Energy is negative, then its Day-Ahead Metered Energy Adjustment Factor will be the minimum of: (A) the number one (1); or (B) the maximum of (i) the number zero (0) and (ii) the ratio of the resource's Metered Energy and its Expected Energy. Otherwise, proceed to step two.

Step 2. If the Day-Ahead Pumping Energy is negative and the resource's Expected Energy is greater than or equal to zero, and its Metered Energy is greater than or equal

to zero, then its Day-Ahead Metered Energy Adjustment Factor will be (1). Otherwise, its Day-Ahead Metered Energy Adjustment Factor will be set to zero (0).

c) Energy Storage Resources using the Non-Generating Resource Model

Step 1. If the absolute value of the result of the resource's Metered Energy less its Regulation Energy less its Total Expected Energy, is less than or equal to the Performance Metric Tolerance Band, then the Day-Ahead Metered Energy Adjustment Factor will be set to one (1). Otherwise, the calculation will proceed to step two.

Step 2: The resource's Day-Ahead Metered Energy Adjustment Factor will be the minimum of: (A) the number one (1); or (B) the maximum of (i) the number zero (0), and (ii) the ratio of the resource's (a) Metered Energy less the Day-Ahead Minimum Load Energy and less the Regulation Energy, and (b) the Effective Day-Ahead Scheduled Energy, less the Day-Ahead Minimum Load Energy.

11.8.2.5.2 Application of Day-Ahead Metered Energy Adjustment Factor

The CAISO will apply the Day-Ahead Metered Energy Adjustment Factor to the IFM Pumping Bid Costs in the same manner in which the CAISO applies the Day-ahead Metered Energy Adjustment Factor to the IFM Energy Bid Costs as specified in this Section 11.8.2.5.2 and its subsections.

11.8.2.5.2.1 If the IFM Energy Bid Costs and the IFM Market Revenues for the amounts of Day-Ahead Scheduled Energy above the Bid Cost Recovery Eligible Resource's Minimum Load are greater than or equal to zero (0), the CAISO will apply

Commented [A4]: We are requesting the introduction of NGR-specific language to address the unique operating abilities of existing battery storage resources currently bidding into the CAISO wholesale market. We agree that it is unlikely that an NGR resource would be eligible to receive Day-Ahead BCR payments, but suggest that market revenue inadequacy could result in the event of significant changes in the relevant Day-Ahead prices through the price correction process, or through similar updates.

Likewise, while sections a) and b) above the specific processes necessary for first conventional resources, and then Pump Storage, we do not believe that they allow for accurate MEAF calculations, especially when such a resource is scheduled to charge and is also providing regulation down support.

Example using the process from section a:
With the Day-Ahead Minimum Load Energy = 0
And Resource PMIN = -2 MW
If the Day-Ahead Schedule = -0.5
And Total Expected Energy = -0.5
And Regulation Energy = -1
And Metered Energy = -1.51

Then Meter-Reg < Day-Ahead Schedule
= -1.51 - (-1) = -.51
Since -0.51 < -0.5
Therefore MEAF = 0 and the NGR resource is not eligible to recover any possible IFM BCR for this interval.

Calculating MEAF for the same situation using the new, suggested process:
Then $\text{abs}(\text{Meter-Reg} - \text{Total Expected Energy}) < \text{Tolerance Band}$
= $\text{abs}(-1.51 - (-1) - (-0.5))$
= 0.01
Since 0.01 is < Tolerance Band
Therefore MEAF = 1 and the NGR resource is not eligible to recover any possible IFM BCR for this interval, which is more in line with the intent and purpose of the proposed changes

We feel that the introduction of this language is consistent with the intent of the final stakeholder policy and the corresponding approval by the CAISO Board of Governors.

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the Day-Ahead Metered Energy Adjustment Factor to the IFM Energy Bid Costs, but not the IFM Market Revenue.

11.8.2.5.2.2 If the IFM Energy Bid Costs are greater than or equal to zero (0) and the IFM Market Revenues are negative, the CAISO will apply the Day-Ahead Metered Energy Adjustment Factor to both the IFM Energy Bid Costs and IFM Market Revenues.

11.8.2.5.2.3 If the IFM Energy Bid Costs are negative and IFM Market Revenues are greater or equal to zero, the CAISO will not apply the Day-Ahead Metered Energy Adjustment Factor to IFM Energy Bid Costs or IFM Market Revenues.

11.8.2.5.2.4 If the IFM Energy Bid Costs and the IFM Market Revenues are both negative, the CAISO will apply the Day-Ahead Metered Energy Adjustment Factor to the IFM Market Revenues, but it will not apply it to the IFM Energy Bid Costs.

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11.17 Application of the Persistent Deviation Metric

The CAISO will modify the Bid Cost Recovery calculations described in Section 11.8 and Residual Imbalance Energy payments in Section 11.5.5 as described below to address persistent deviations that expand Bid Cost Recovery payments beyond what is necessary for purposes of ensuring Bid Cost Recovery.

11.17.3 Application of Persistent Deviation Metric to Eligible Intermittent Resources' Residual Imbalance Energy

For a Settlement Interval, the Persistent Deviation Metric does not apply to the Settlement amounts defined in Section 11.5.5.2.

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-Day-Ahead Metered Energy Adjustment Factor

A factor calculated for the purposes of determining the portions of a Scheduling

Coordinator's resource's relevant Day-Ahead Schedule to be included in the Bid Cost

Recovery calculations as further specified in the CAISO Tariff based on the resource's

actual performance reflected in the Metered Energy, which is calculated as set forth in

Section 11.8.2.5.

-Effective Day-Ahead Scheduled Energy

The minimum of a Resource's Total Expected Energy and its Day-Ahead Scheduled

Energy for a given Settlement Interval.

Deleted: the minimum of: (1) the number one (1); or (2) the absolute value of the ratio of the resource's (a) Metered Energy less the Day-Ahead Minimum Load Energy and less the Regulation Energy, and (b) the minimum of (i) the Expected Energy and (ii) the Day-Ahead Scheduled Energy, less the Day-Ahead Minimum Load Energy. In cases where both the denominator and numerator produced by this calculation equal zero (0), the Day-Ahead Metered Energy Adjustment Factor will be set to one (1). If the denominator produced from this calculation equals zero (0), but the numerator is a non-zero number, the Day-Ahead Metered Energy Adjustment Factor will be set to zero (0).

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