

Proposed BCR Mitigation Measures

- The ISO proposes a modified version of the metered energy adjustment factor (MEAF) to the energy portion of the DA BCR calculation.
- The ISO proposes a performance metric (PM) that will scale components of the real-time bid cost recovery calculation based on the portion of the deviation from ISO dispatch. This performance metric will replace the real-time metered energy adjustment factor (MEAF).
- The ISO also proposes to put in place a real-time persistent UIE (PUIE) check that will disqualify real-time energy from real-time bid cost recovery in ten-minute settlement intervals in the case that the resource exceeds persistent deviation thresholds over the course of a day.

Modified DA MEAF

$$\text{Modified DA MEAF} = \min \left\{ 1, \left| \frac{\text{Metered Energy} - \text{DA ML Energy}}{\min\{\text{TEE}, \text{DA Sched Energy}\} - \text{DA ML Energy}} \right| \right\}$$

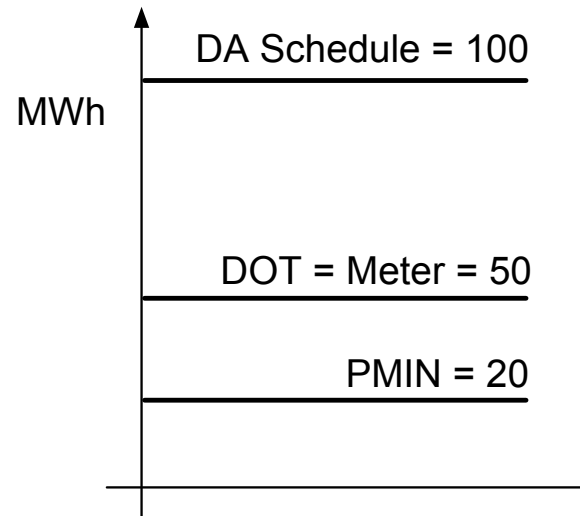
Application of Modified DA MEAF:

DA energy bid costs	DA energy revenues	Apply PM to...
+	+	Costs
+	-	Costs & Revenues
-	+	n/a
-	-	Revenues

For reference, the current DA MEAF:

$$\text{DA MEAF} = \frac{\text{Metered Energy} - \text{DA ML Energy}}{\text{DA Sched Energy} - \text{DA ML Energy}}$$

Simple example of modified day-ahead MEAF



$$\text{Current DA MEAF} = (50 - 20) / (100 - 20) = 0.375$$

$$\text{Modified DA MEAF} = \min [1, \text{abs}((50-20) / (\min(50, 100) - 20))] = 1$$

Please note that this is a simplified example provided for illustration only.

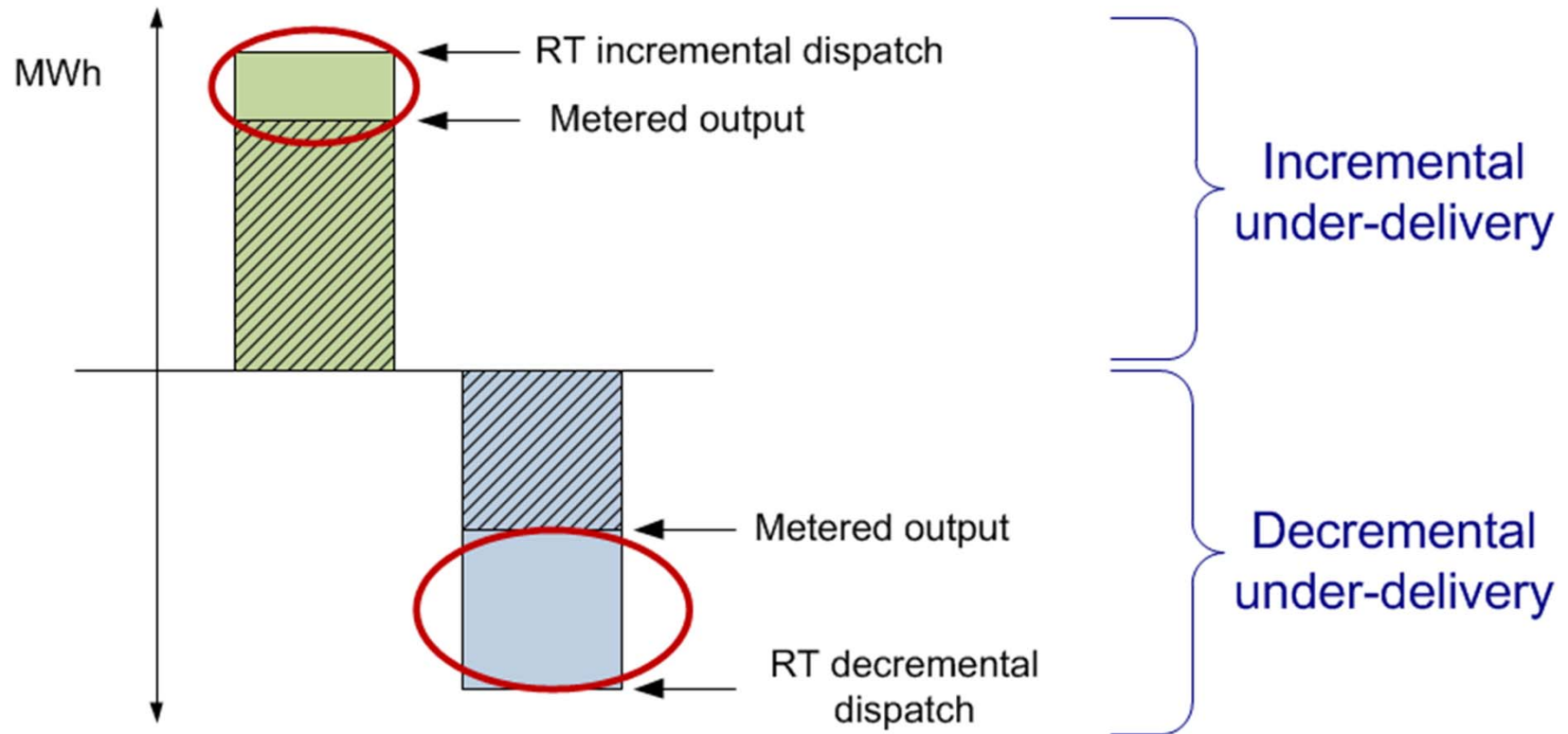
Performance Metric

$$\text{Performance Metric} = \min \left\{ 1, \left| \frac{\text{Metered Energy} - \text{DA Energy} - \text{Regulation Energy}}{\text{Total Expected Energy} - \text{DA Energy}} - 1 \right| \right\}$$

RT energy and ML costs	RT energy revenues	Apply PM to...
+	+	Costs
+	-	Costs & Revenues
-	+	n/a
-	-	Revenues

Note: the PM is also applied to DA minimum load cost only in the case that a resource is committed by the ISO in DA and de-committed by the ISO in RT as noted above.

Example of real-time performance metric



PM thresholds

~ if ~

$$| \text{Metered Energy} - \text{Regulation Energy} - \text{Total Expected Energy} | \leq \max\left\{ \frac{5 \text{ MWh}}{6}, \frac{(0.03 * p_{\max})}{6} \right\} + \text{Ramping Tolerance}$$

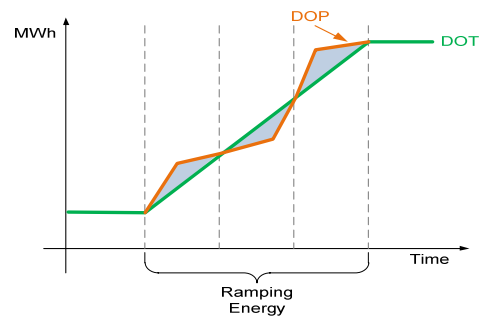
~ where ~

Ramping Tolerance

$$= | \text{Total Expected Energy based on Dispatch Operating Point} - \text{Total Expected Energy based on Dispatch Operating Target} |$$

~ then ~

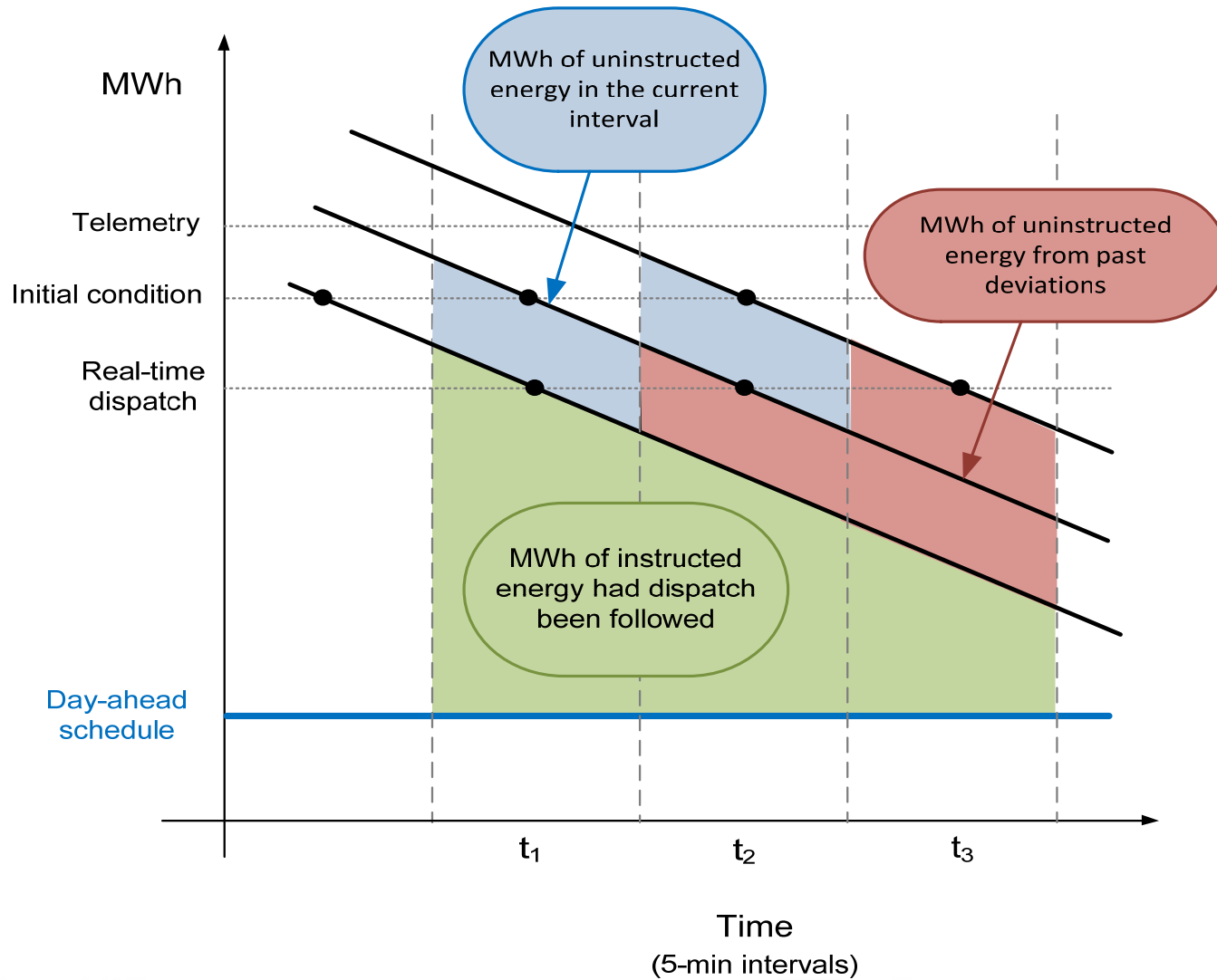
Performance Metric is not Applied



← ramping tolerance diagram

Ramping Tolerance = | TEE based on DOP – TEE based on DOT |

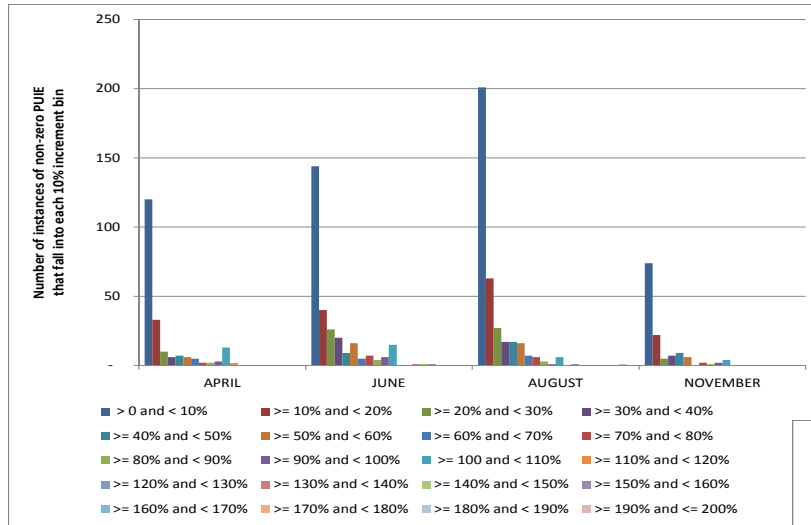
Persistent uninstructed energy check



Calculation of measures A and B

- Two measures A and B are formulated using these three quantities.
 - Measure A is the percent of the shortfall caused by the uninstructed deviation in real-time. The measure captures the persistency of the uninstructed deviation behavior that results in shortfall in the BCR calculation.
 - Measure B is a \$/MWh rate of the shortfall per MWh of uneconomical energy by uninstructed deviation. This measure captures the per-MWh impact on BCR from the UIE cumulative effect.
- For each interval in which a resource is determined to have a net shortfall, Measures A and B will be calculated.

PUIE empirical analysis

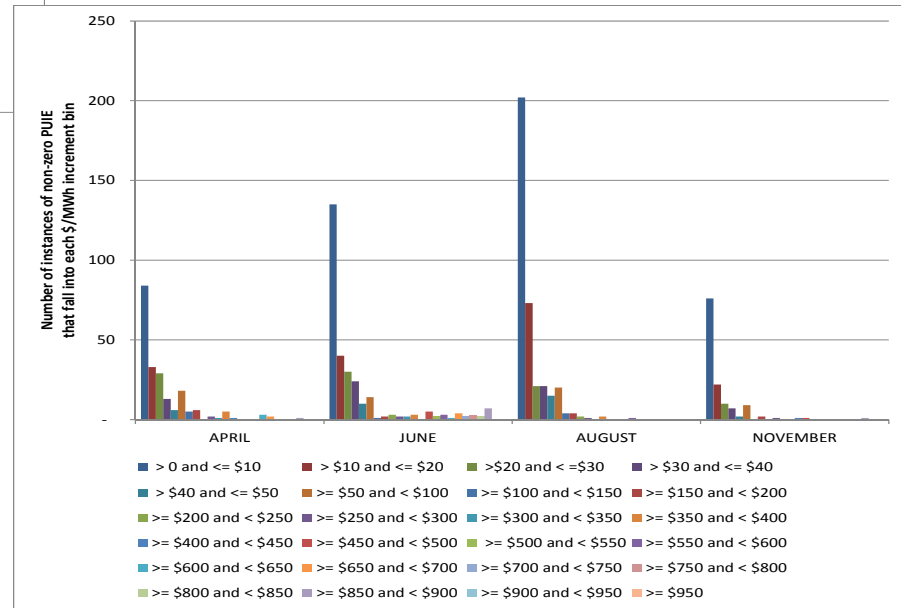


← Measure A (%)

ISO proposal is < 10% is okay

Measure B (\$/MWh) →

ISO proposal is < \$10/MWh is okay



Application of PUIE check given thresholds

If the resource has a calculated value of Measure A for the day that is greater than 10%

~OR~

If the resource has a calculated value of Measure B for the day that is greater than \$10/MWh

~THEN~

The energy from the intervals 10-minute settlement intervals with positive PUIE will be disqualified from the RT BCR calculation.