

Supplemental Comments on Storage Design and Modeling Working Group Presentation on March 16, 2026

Department of Market Monitoring

April 14, 2026

Summary

The Department of Market Monitoring (DMM) is providing these supplemental comments on the *Storage Design and Modeling* working group presentation held on March 16, 2026. As noted in DMM's prior comments, DMM supports the ISO's proposal to create a standardized storage DEB option for batteries in Western Energy Imbalance Market (WEIM) balancing areas. These supplemental comments provide analysis of the negotiated default energy bids (NDEBs) currently used by battery resources in WEIM balancing areas. Results of this analysis show that the current NDEBs used for WEIM battery resources are reasonable and have had extremely limited impact on the actual bids and dispatch of WEIM resources. DMM believes that the ISO should build on the same framework currently used to set NDEBs when creating a standardized storage DEB option for WEIM batteries. However, as with the standard storage DEB option currently in use for CAISO resources, DMM believes that this framework could be enhanced by allowing DEBs to be scaled up or down during different periods of the day to reduce the potential for uneconomic dispatch prior to the peak net load hours, while continuing to ensure effective market power mitigation during the highest priced net load hours.

Background

Since there are no day-ahead market prices for Western Energy Imbalance Market (WEIM) areas, default energy bids for batteries in WEIM areas must be established under the negotiated rate option of the ISO tariff. All real-time negotiated default energy bids that have been implemented for batteries in WEIM areas are based on the same framework as the standard opportunity cost default energy bid used for batteries in the ISO, but include two modifications:

- **Day-ahead price.** Instead of using each resource's hourly locational marginal prices in the day-ahead market, negotiated default energy bids for WEIM batteries are based on day-ahead default generation aggregation point (DGAP) prices. These DGAP prices are a product of the full-network model and reflect prices for modeled aggregations of generating units (usually aggregated at a balancing area-wide level).
- **Upward adjustment based on recent real-time prices.** To account for any systematic differences between DGAP prices and real-time prices at each WEIM battery's location, DMM includes an upward adjustment to the DGAP prices when calculating negotiated default energy bids. This adjustment scales up hourly DGAP prices based on the ratio of (1) the average hourly 15-minute real-time price for the WEIM area over the past three days, and (2) the hourly DGAP price from the ISO's day-ahead model in the corresponding hours.¹

¹ For example, if the average real-time price at the battery's location over the last three days was \$33/MW for hour t and the default generation aggregation point price for hour t from the ISO day-ahead model is \$30/MW, then the default generation aggregation point price for hour t is scaled up by 10 percent. The scalar has a floor of 1. Calculating the scalar based on the three day average of real-time prices was originally proposed by a WEIM entity, and has subsequently been included in negotiated default energy bids for all other WEIM batteries.

Except for these two modifications, NDEBs for WEIM batteries are used in the same manner as DEBs for batteries in the CAISO area. For example, the opportunity cost component of the NDEB for batteries with 4 hours of storage is based on the fourth-highest hourly DGAP price (after any upward adjustments), and the overall DEB calculation includes a 110 percent multiplier.

As with the storage DEB for CAISO resources, DMM believes this framework could be enhanced by simply allowing DEBs to be scaled up or down during different periods of the day. The multiplier would be set above 1 prior to the peak net load hours to reduce the potential for uneconomic dispatch, and would be set below 1 during and after the highest priced peak net load hours to reflect the lower opportunity costs of battery resources during these hours.

Analysis of NDEBs

To help assess potential changes in DEBs for WEIM batteries and provide additional transparency on this issue, DMM conducted analysis of the NDEBs for all batteries in the WEIM with a four hour storage duration during 2025. This analysis compares the NDEBs resulting from the current methodology to actual 15-minute prices for each battery, and calculates the number of hours each day that each resource's 15-minute locational marginal prices (LMPs) are higher than the resources' NDEBs.

This metric approximates the number of hours that a battery would be dispatched each day if their bid was capped due to mitigation at the NDEB. When this metric is less than or equal to four hours, then mitigation using the NDEB would not cause the unit to be dispatched uneconomically. When this metric exceeds four hours, it also provides a measure of the magnitude on the potential impact of mitigation in terms of causing a unit to be discharged prior to the highest priced or more critical hours.

For this analysis, this metric is calculated for hours-ending 10 through 24. This reflects an assumption that if a battery is discharged in other hours, it will have the opportunity to re-charge prior to the peak net load hours. The analysis also excludes batteries with storage durations of less than four hours in order to simplify presentation of results.

The analysis includes four different scenarios which show the sensitivity of results to different factors (i.e., the impact of the WEIM real-time price scalar and the frequency that units are actually subject to mitigation).

- 1) NDEB without real-time scalar, using all hours during 10-24 period.
- 2) NDEB with real-time price scalar, using all hours during 10-24 period.
- 3) NDEB without real-time scalar, only using hours when units were subject to mitigation.
- 4) NDEB with real-time scalar, only using hours when units were subject to mitigation.

As shown above, metrics for scenarios 1 and 2 include all hours between 10-24, regardless of whether or not each resource was actually subject to mitigation (i.e., could have had its bids mitigated if they were in excess of the NDEB). These scenarios reflect a bookend that reflects scenarios in which resources were always or usually subject to bid mitigation. In practice, however, resources in the WEIM are subject to mitigation very infrequently (i.e., usually only when transfer constraints into a WEIM area are congested). Therefore, scenarios 3 and 4 only count hours when resources were subject to mitigation due to congestion on transfer constraints into the WEIM area in which they are located. During these intervals, batteries could have their bids mitigated if they exceeded the NDEB.

Results

Results of this analysis for 2025 are provided in the following table and charts. These results show that NDEBs for batteries in WEIM areas were rarely less than the resource’s LMPs for more than 4 hours per day in 2025. The main cause of these findings is that day-ahead DGAP prices used in setting battery NDEBs for WEIM areas tended to be significantly higher than real-time prices for battery resources in WEIM areas (see Figure 1).

Figure 1. Average hourly prices and NDEBs
Aggregated results for all WEIM balancing areas (2025)

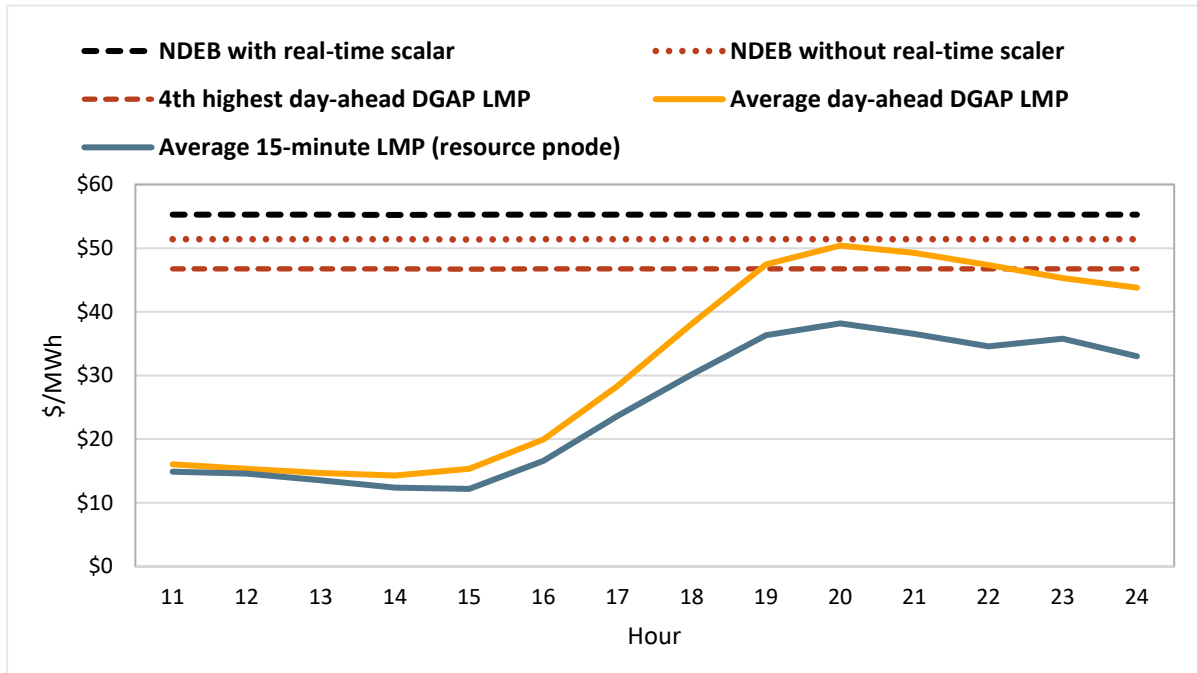


Table 1. Summary results for all WEIM balancing areas (2025)

	Percent of days when NDEB <= LMP more than 4 hours	Percent of hours subject to mitigation	Percent of days when NDEB <= LMP more than 4 hours (only counting hours with mitigation)
Total for 8 BAAs			
WEIM	1.3%	1.4%	0%
BAA			
AZPS	1.2%	.2%	0%
EPE	1.6%	0%	0%
NEVP	2.0%	.4%	0%
PGE	1.9%	17.0%	.6%
PNM	1.1%	.3%	0%
SRP	1.1%	.6%	0%
TEPC	.5%	0%	0%

Figure 2. Hours per day with NDEB <= LMP (all hours 11-24)
Aggregated results for all WEIM balancing areas (2025)

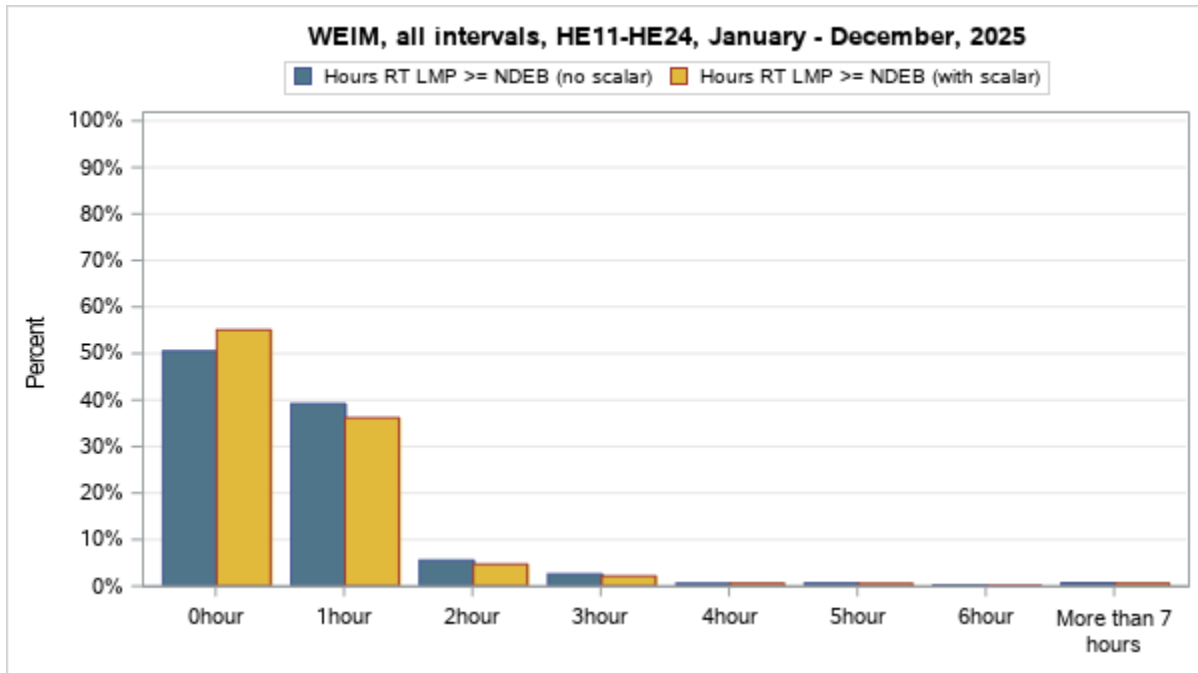


Figure 3. Hours per day with NDEB <= LMP (mitigated hours only from 11-24)
Aggregated results for all WEIM balancing areas (2025)

