



Memorandum

To: ISO Board of Governors and WEIM Governing Body

From: Benjamin F. Hobbs, Chair, Market Surveillance Committee

Date: March 15, 2024

Re: **Briefing on Market Surveillance Committee activities – March 7, 2024 to May 10, 2024**

This memorandum does not require ISO Board of Governors or WEIM Governing Body action.

During the period of time covered by this memorandum, the Market Surveillance Committee (MSC) of the California ISO held two general session meetings, one on April 11, 2024 and the other on April 24, 2024.¹ Two topics were on the April 11th agenda: possible adjustments to reliability unit commitment requirements; and methods for quantifying the amounts of reserves needed to cover uncertainty in net loads. The April 24th meeting concerned the ISO's straw proposal for revising rules for bidding above the soft offer cap for the Summer of 2024 under Federal Energy Regulatory Commission (FERC) Order 831. This straw proposal is a component of the ISO's price formation enhancements initiative. The discussions at each meeting are summarized below.

In addition, the Committee drafted an Opinion on the ISO's draft proposal² for changes for the Summer of 2024 to the Order 831 soft cap upon energy offers for battery and hydro storage and proxy demand response. The draft Opinion is planned to be considered for adoption by the Committee at a general session meeting on May 15, 2024. If adopted, it will be submitted to the Governing Body and Board of Governors for consideration at their May 2024 meetings.

MSC General Session Meeting, April 11, 2024

Adjustments to Reliability Unit Commitment Requirements. This agenda item included two presentations by ISO staff, as well as a presentation by MSC Member Dr. Scott Harvey. The first ISO staff presentation was made by Dr. Guillermo Bautista-Alderete, Director of Market Performance and Advanced Analytics, and was coauthored by Abhishek Hundiwale,

¹ www.caiso.com/informed/Pages/BoardCommittees/MarketSurveillanceCommittee/Default.aspx

² www.caiso.com/InitiativeDocuments/Draft-Final-Proposal-Price-Formation-Enhancements-Redline-May-7-2024.pdf

Manager of Market Analysis. They addressed adjustments to the reliability unit commitment requirements and their market implications.³

Dr. Bautista-Alderete's presentation began with data on the evolution of upward load adjustments in the residual unit commitment process in the day-ahead market since 2017, which have been growing in magnitude. Upward load adjustments increase the amount of incremental commitment of generators in the residual unit commitment process, which follows the day-ahead energy market, so that the system has a high degree of assurance of having sufficient capacity in real-time, even if net load forecast errors are large. He then focused on the levels in 2022 and 2023, and the effects of changing the logic for calculating adjustments to using a regression-based logic to inform operator judgments. The effect of the new approach has been to yield larger estimates of net load uncertainty and adjustments. The presentation also provided data on not only the general quantitative effect of adoption of the regression-based method (which increased adjustments on average) but also resulted in morning and evening peaks in the amounts rather than one late peak per day. Dr. Bautista-Alderete also commented on the additional supply dispatch that resulted from the upward trend in adjustments, and on the mix of generation types committed in the residual unit commitment. He also pointed out a tendency towards larger total bid cost recovery payments (\$30 million in the last quarter of 2023), although those have diminished more recently (November-December 2023). He closed by posing the question of the benefits (in the form of reliability improvements) versus the costs of upward adjustments being made in all hours of the day during non-summer periods.

Stakeholder discussion during that presentation concerned several issues. Among these were the role of these adjustments in maintaining the reliability of the ISO system, interactions with imports scheduled in the day-ahead market, and the trend of increasing adjustments possibly having a chilling effect on the quantity of virtual supply and demand bids.

The second ISO staff presentation⁴ was made by Amber Motley, Director of Short Term Forecasting, with contributions by Tobiah Steckel, Forecast Modeler, and Lysha Matsunobu, Power Systems Forecaster Specialist. That presentation concerned the methods used by the ISO to define uncertainty requirements in the residual unit commitment process.

Ms. Motley included a brief summary of the present methodology for forecasting net load uncertainty in the day-ahead residual unit commitment and of metrics used to assess the performance of the forecasts. She noted that requirements decreased by more than half starting in late December 2023 when the operators switched from a 97.5% uncertainty target to smaller (75% and 50%) targets on non-alert days. Data were presented to show the quality of calibration (that is, whether the actual frequencies of extreme net loads were consistent with the targeted frequencies).

³ www.caiso.com/Documents/RUC_Adjustments-Presentation-Apr11_2024.pdf

⁴ www.caiso.com/Documents/RUC_UncertaintyRequirement-Presentation-Apr11_2024.pdf

The last presentation under this agenda item was by Dr. Harvey, who addressed the relatively high levels of bid-cost recovery expenses in the residual unit commitment process during the second half of 2023, and possible reasons for those levels.⁵ He suggested that high costs could have resulted from high coverage targets, but that is not the only potential driver. Examples of other factors that could contribute include: high costs per megawatt of RUC capacity scheduled; scheduling of high levels of long start capacity at times when there should be unloaded capacity day ahead or when instead short-start capacity could have been committed nearer to real time. Dr. Harvey included data from particular days with high costs to reinforce his points, and suggested a number of reasons why long- rather than short-start units were being committed. He also proposed that actual realizations of net load uncertainty be compared with upward adjustments across the year to see whether the month-to-month pattern of each were consistent, or if adjustments that were too large were being made in the last quarter of 2023, when recovery costs were high.

Dr. Harvey concluded by recommending that more detailed explanations of the uncertainty characterization methodology be provided to allow the MSC and stakeholders to better understand its implementation and to suggest improvements.

Methods for Estimating Uncertainty in Net Loads.

There were two presentations under this agenda item, including one by ISO staff and another by Dr. Harvey. The ISO staff presentation⁶ under this agenda item was a detailed assessment of the performance of methods to assess net load uncertainty requirements, and was authored by Mr. Steckel and Ms. Motley. Mr. Steckel was the presenter, and he emphasized a review of the performance of the MOSAIC regression methodology and identification of possible opportunities for improvement. He offered a detailed description of the range of possible performance metrics, ranging from in-sample error (the simplest) to production cost modelling (the most informative for assessing the consequences of errors).

Recognizing that no one metric tells the full story of the value and accuracy of an uncertainty forecast method, the results of testing a multimetric approach were presented. Twelve individual metrics were divided into three groups, and various weightings of the groups were used to create an overall metric. If one method is found to be best under most or all of the potential weightings, it would be viewed favorably. MOSAIC compared well in this regard compared to histogram and naïve benchmarks. MSC members pointed out that there may be informative tradeoffs among indices within a group, and those tradeoffs should be highlighted if some methods have particular advantages for one or more metrics.

Dr. Harvey then made a presentation⁷ on the pros and cons of different metrics for evaluating MOSAIC, emphasizing the need for metrics that quantified the market effects and economic benefits and costs of alternative forecasting approaches. The benefits, or “value”, is related to the ability of a forecasting method to fully cover net load uncertainties (which is

⁵ www.caiso.com/Documents/RUC_BCR_Costs_MSC-Presentation-Apr11_2024.pdf

⁶ www.caiso.com/Documents/Uncertainty_Performance-Presentation-Apr11_2024.pdf

⁷ www.caiso.com/Documents/Mosaic_Metrics_MSC-Presentation-Apr11_2024.pdf

related to Ms. Motley's calibration metric) and the reduction in market costs that result from improved information on the risks. Costs would be based on the expense of committing resources to cover that uncertainty in the residual unit commitment process. He suggested that geographic scope of the metrics could be expanded from the ISO residual unit commitment process to the Extended Day-Ahead Market as it develops. Dr. Harvey proposed that versions of the proposed economic metrics be developed for the overall Extended Day-Ahead Market region, and perhaps also for several regions (such as the ISO, Rockies, Southwest, and Northwest).

MSC General Session Meeting, April 24, 2024

The major agenda item for this meeting concerned a component of the price formation enhancements initiative addressing rules for bidding above the soft offer cap. Sylvie Spewak, Senior Policy Developer in Market Policy Development, provided a presentation⁸ in which she described background on FERC Order 831, the rationale for the straw proposal, the options considered in formulating the straw proposal, and how some of those options might have affected the market during a selection of high stress days in 2022-2024. Because market conditions on those days and potential effectiveness of the soft cap relaxation are also extensively discussed in the MSC's draft Opinion on the ISO's proposal, her presentation is only briefly summarized here.

The focus of the discussion was on the battery storage and hydropower default energy bids, and she provided information on how the present "reference level change request" process could be used by those resources if the straw proposal is adopted to allow them to make offers above the \$1000/MWh soft offer cap under certain conditions. The rest of the presentation addressed variants of the soft offer cap relaxation portion of the proposal that posed different levels of technology risk in terms of implementation feasibility for the summer of 2024. The presentation then described analyses performed by ISO staff of how alternative relaxations of the soft offer cap might have compared to system marginal energy prices under the conditions of August 16, 2023, January 14, 2024, and September 6, 2022, and what portions of the resource stack had bids exceeding the soft cap and thereby would have been able to raise their offers. Ms. Spewak provided simulated data concerning how the maximum import bid price (which would cap storage bids under one variant) compared to system marginal energy prices, and how the default energy bids of hydropower and battery storage might have been affected during eight days of stressful conditions during the August 2023 heat wave and the January 2024 cold snap.

⁸ www.aiso.com/Documents/PFE-rules-for-bidding-above-the-soft-offer-cap-straw-proposal-presentation-apr24_2024.pdf