1/30/2023

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California Independent System Operator & Western Energy Imbalance Market

CAISO Board of Governors & WEIM Governing Body

250 Outcropping Way

Folsom, CA 95630

SUBJECT: Extended Day-Ahead Market

Dear CAISO Board of Governors and WEIM Governing Body Members:

Vistra Corp. (Vistra) respectfully submits this letter to the California Independent System Operator Board of Governors ("CAISO BOG") and Western Energy Imbalance Market Governing Body Members ("WEIM GB") on Management's Extended Day-Ahead Market ("EDAM") proposed elements related to greenhouse gas ("GHG").

Vistra believes that a Regional Transmission Organization ("RTO") is the best mechanism to ensure all market participants can compete on a level playing field to provide consumers power or other grid services reliably and efficiently. We support efforts that advance the benefits of competitive markets to a broader geographic region. We hope that EDAM participants will see the benefits of regional markets and their experience in EDAM will create a willingness to participate in a full RTO. We further hope that CAISO and the Southwest Power Pool (SPP) begin to work together to establish a joint operating agreement regarding EDAM and SPP Markets+ to unlock additional centralized grid operations and regional market benefits across the West. Vistra is committed to working with the CAISO, stakeholders, policymakers, and regulators to help further efforts towards greater regional coordination that provide benefits for all participants.

We understand that a coordinated day-ahead scheduling process is an essential confidence-building step needed for Western entities to begin exploring whether there is interest in forming RTO(s). The EDAM proposal is a solution that would allow this coordinated day-ahead process.

While we support efforts to build confidence, we have practical concerns that the proposal may lead to unintended consequences that CAISO staff has not addressed. We respectfully ask for the opportunity to work with the CAISO and other stakeholders in a future stakeholder effort to make data-driven proposals to improve the design, ideally one-year after implementation if it is approved by FERC. If CAISO can make this commitment,

then the CAISO can monitor EDAM's performance on implementation, flag if any of our and other participants' concerns materialize, and move expeditiously to improve the EDAM design. This commitment is essential to building confidence in EDAM's success.

While Vistra has raised various concerns regarding the proposed EDAM's unintended consequences in our comments, our largest concern is with respect to GHG price formation and resulting market outcomes. A well-functioning market should ensure reasonably accurate greenhouse gas price formation and resulting market outcomes. Vistra is concerned that the EDAM GHG proposal may not achieve this goal because it will over-credit capacity from external resources, and consequently that our non- and lower-emitting resources in the California GHG regulation area will be displaced in preference for higher emitting external resources due to the market design. Thus, we urge the Governing Body and Board of Governors to carefully consider our concerns and urge the CAISO to take every effort to mitigate these unintended consequences if observed.

In particular, we request the WEIM Governing Body and CAISO Board of Governors recommend that the CAISO:

1. ***Provide data and detailed reports regarding the market impacts of its existing WEIM GHG approach as soon as end of Q1 2023, and on the EDAM GHG approach once implemented.***[1]

2. ***Commit to opening a stakeholder process one year after EDAM implementation to evaluate and discuss the market impacts of the existing WEIM GHG approach and the implemented EDAM GHG approach, including any areas of improvement and potential solutions.***

We believe that under WEIM, coal and other high-emitting generation is actually dispatched as net imports[2] into California[3], while the CAISO treats California net imports as if they were sourced from cleaner resources, such as hydro. This disconnect artificially lowers the cost of net imports to California and displaces cleaner internal generation and may undermine the environmental objectives of other Western EIM participants, to the extent CAISO does not impose an accurate carbon cost on those net imports from carbon-emitting resources in neighboring states. If our understanding is correct, CAISO's proposed EDAM GHG approach could undermine the environmental regulations adopted by California. With the adoption of GHG regulations in the State of Washington, the WEIM/EDAM GHG approach could similarly undermine that state's goals. In addition, we have

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[1] In Appendix B, Vistra provides a set of metrics that would be informative to stakeholders, policy makers, and regulators seeking to understand the extent to which the resources that increase electricity production (and GHG emissions) in the WEIM and EDAM are the resources "deemed" by the CAISO's GHG approach to be the source of imports into California or Washington. We hope the CAISO will consider providing transparency into this type of information.

[2] Vistra is using "net imports" loosely to refer to all WEIM transfers supporting transfers into a Greenhouse Gas area.

[3] Appendix A includes a description of stakeholder sponsored analysis on WEIM GHG design's market impacts produced by Powerex that provide support for this understanding. We recognize that there will be questions on the methodology and outcomes of an analysis that is not vetted and produced by the CAISO and believe CAISO providing similar analysis is a needed next step. CAISO should provide analysis, using its access to information and expertise, to provide stakeholders and regulators the insight into the WEIM GHG impact on real-time market results.

raised concerns that the GHG approach may undermine environmental goals in other regions with clean energy standards.

Vistra recognizes that the market design cannot fully cure resource shuffling and the risk of inaccurate GHG pricing leading to inefficient dispatches or GHG revenue payments. However, we believe the market design must limit the application of GHG compliance obligations ("deeming") to external resources or external balancing authority areas (BAA) offering their surplus capacity to the GHG regulation area(s). We believe that the market should limit this "deeming" to a resource or BAA only if it could *potentially* be supporting net imports into a GHG regulation area, which is represented by the amount of capacity the market awards to the resource(s) above a reasonable baseline.

Our concerns described herein have real world impacts for our resources in CAISO EDAM BAA. We are concerned that our cleaner emitting natural gas assets and non-emitting storage asset will be displaced by higher emitting external resources under the EDAM GHG proposal. Such net imports will appear more economic to the market given the fact that the proposal might not appropriately apply a carbon cost on external resources likely awarded to serve off-system sales including supporting net imports into the GHG area. Market prices inside the GHG area would be suppressed by allowing the requirement to be met in part by resources that would be serving their own load and should not reasonably be supporting GHG net imports. When this happens, EDAM transfers into the GHG area would appear artificially more economic than internal cleaner generation.

It is critical that the CAISO provide transparency through detailed reporting and commit to a future stakeholder effort to explore whether enhancements are needed for a more durable market design.

Sincerely,

Cathleen Colbert

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Appendix A: Basis for Increased Transparency

Vistra believes there is a need for greater transparency. At this time, the best available source of information on market impacts from the GHG design comes from a stakeholder-sponsored report. Powerex sponsored a report that sought to address the need for objective information on the WEIM GHG approach impacts to the market, and inform how extending this functionality without addressing the limitations identified may impact the day-ahead result. Powerex issued its report in July 2022 showing when California was receiving EIM imports in 2021:

- Entities with mostly coal and natural gas generation provided 77% of the EIM exports, but were reported as the source of only 50% of the CAISO's imports; and

- Entities with mostly hydro generation provided only 20% of the EIM exports, but were reported as the source of 47% of the CAISO's imports.[4]

While Joint Stakeholders are not endorsing Powerex's conclusions, we do believe this report demonstrates how critical it is that CAISO produce its own analysis on market impacts so that stakeholders, policy makers, and regulators can evaluate these types of impacts. CAISO could consider Powerex's report as a good model for its own analysis. To illustrate the market results data we are seeking, see the charts in Powerex's July report, which indicate that:

1. the five BAAs with the largest volume of EIM net exports when California was receiving EIM imports have a resource mix consisting primarily of coal and natural gas;[5]

2. the resource mix of EIM entities that actually export electricity is entirely different than the resource mix of the CAISO's "deemed" imports; and[6]

3. resource shuffling in the EIM leads both to coal and other high-emitting resources avoiding any GHG costs, but also to excessive compensation for clean hydro supply that is "deemed" beyond any actual additional production.[7]

To achieve buy-in across the Joint Stakeholder group, we believe it is essential that the CAISO produce meaningful metrics similar to those in this Powerex report to allow us to evaluate the effectiveness of the CAISO's GHG approach first in the real-time market and then once implemented in the extended day-ahead market. This transparency should be provided as soon as possible for the real-time market and be provided for the day-ahead market upon its implementation.

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[4] *The Western EIM's Approach To Applying California's Cap and Trade Program To Imports Is Undermining The Program's Core Objectives.* Full paper, and executive summary.
[5] Id, Chart 6 at Page 28.
[6] Id, Illustration A-1 at Page 42 and Illustration A-2 at Page 45.
[7] Id, Chart 12 at Page 33.

Appendix B: Requested Metrics

The following is a detailed description of information that would enable stakeholders to better understand the GHG emissions associated with increased electricity production by different types of resources located in different EIM entities. The aggregated metrics described below are analogous to similar information previously released by the CAISO or by its Department of Market Monitoring for specific time periods, and should not raise any confidentiality concerns. The results of the below analysis should provide a more accurate picture of the types of resources that are incrementally dispatched in the WEIM when California or Washington (once implemented) was receiving imports from the external non-GHG regulation areas. The results of the analysis will also provide a more accurate estimate of the average and total GHG emissions associated with WEIM imports serving load in the GHG regulation area(s), which can be compared to the GHG emissions of the resources "deemed" by the CAISO's GHG approach and to the emissions factors for unspecified imports used by environmental regulators in GHG-pricing states to require after the fact compliance for secondary dispatches, or resource shuffling impacts.

Request 1: Average resource fuel mix of incremental output dispatched in the Western EIM, by EIM BAA and by month since January 2021.

Using CAISO 5-minute data on each EIM Participating Resource, separately for each EIM BAA:

1. Calculate positive incremental output (above base schedules) for each EIM Participating Resource;

2. Sum all positive incremental output quantities for each resource fuel type (*i.e.,* hydro, natural gas combined cycle, natural gas peaker, coal, renewable, and other) in each EIM BAA.

3. Sum the incremental output for each resource fuel type over all 5-minute intervals in each month.

    a. Calculate each resource fuel type's percent share of total incremental output for each month.

4. Estimate incremental GHG emissions by multiplying the incremental output quantity of each resource fuel type by an estimated GHG emissions factor for that resource fuel type[8].

    a. Calculate the estimated GHG emissions rate by dividing the total increment GHG emissions, above, by the total increment output.

Output 1-1: Percent share, by resource fuel type, of incremental output for each EIM BAA, for each month since January 2021.

Output 1-2: Estimated GHG emissions rate, for each EIM BAA, for each month since January 2021.

Request 2: Average resource fuel mix of EIM net exports, by EIM BAA and by month since January 2021.

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[8] For example, 0 MT/MWh for hydro, wind, solar and nuclear generation; 0.424 MT/MWh for natural gas combined cycle generation; 0.6 MT/MWh for natural gas combustion turbine; and 1.0 MT/MWh for coal-fired generation.

For each month and for each EIM BAA:

1. Identify the 5-minute intervals in which the EIM BAA was a net exporter in the Western EIM.

2. For each 5-minute interval identified in Step 1:

    a. Sum the positive incremental output of each resource fuel type.

    b. Calculate each resource fuel type's share of total incremental output.

    c. Allocate the net export quantity to each resource fuel type by multiplying the net export quantity by the percent share of each resource fuel type.

3. Sum the allocated net export quantity for each resource fuel type over all 5-minute intervals identified in Step 1 for each month.

    a. Calculate each resource fuel type's percent share of total EIM net exports for each month.

4. Multiply the allocated monthly net export quantity for each resource fuel type by the estimated GHG emissions factor for that fuel type.

    a. Sum the estimated GHG emissions across all resource fuel types.

    b. Divide the above by the monthly net export quantity.

Output 2-1: Percent share, by resource fuel type, of EIM net exports for each EIM BAA in each month since January 2021.

Output 2-2: Average GHG emissions factor for EIM net exports for each EIM BAA, by month since January 2021.

Request 3: Average resource fuel mix of EIM imports serving California load, by month since January 2021.

1. For each month, identify 5-minute intervals in which California BAAs received WIEM net imports.

2. For each interval in Step 1:

    a. Identify each EIM BAA that was a net exporter in the Western EIM in the same interval.

    b. Sum allocated net export quantity per resource fuel type for all WEIM BAAs identified in Step 2a.

    c. Calculate each resource fuel type's share of total EIM net exports

    d. Allocate the California net import quantity to each resource fuel type by multiplying the California net import quantity by each resource fuel type's percent share of total EIM net exports from Step 2.c.

3. Sum the allocated California net import quantity for each resource fuel type for all 5-minute intervals identified in Step 1 for each month.

    a. Calculate each resource fuel type's percent share of total California net imports for each month.

4. Multiply the allocated monthly California net import quantity for each resource fuel type by the estimated GHG emissions factor for that fuel type.

    a. Sum the estimated GHG emissions across all resource fuel types.

    b. Divide the above by the monthly California net import quantity.

Output 3-1: Percent share, by resource fuel type, of EIM net imports serving California load, by month since January 2021.

Output 3-2: Average GHG emissions factor for EIM net imports serving California load, by month since January 2021.