SIERRA CLUB CALIFORNIA

December 15, 2016

California ISO
250 Outcropping Way
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Submitted via email to initiativecomments@caiso.com

Re: Sierra Club Comments on Regional Integration and EIM Greenhouse Gas Compliance Proposal and Illustrative Model

Sierra Club hereby submits these comments following the California Independent System Operator's ("CAISO") December 1, 2016 workshop on Regional Integration and EIM Greenhouse Gas Compliance.

Sierra Club appreciates the continuing work performed by CAISO staff to address the difficult problem of accurately accounting for greenhouse gas ("GHG") emissions in both the Energy Imbalance Market ("EIM") and in any future multi-state, simultaneously-dispatched Day-Ahead Market ("DAM"). Sierra Club recognizes that there may be important benefits to coordinating with our neighbors on various electricity-related services and functions; however, Californians do not want their electricity purchases to support coal plants and other greenhouse-gas intensive sources of energy without accounting for any associated environmental harm. The ISO's efforts to reconcile the mechanics of optimal dispatch over a range of GHG "regimes" must fully respect and accommodate this principle.

I. Implementation of Option 2

Sierra Club agrees with the ISO that "Option 2", which entails a full counterfactual dispatch against which to measure the atmospheric impact of serving California load with EIM resources, is the most promising approach. The ISO's examples, posted on November 17, clearly show that the current approach inherently reassigns attribution of California-serving EIM sources to minimize GHG costs, regardless of whether individual resources would have been dispatched in the absence of exports to California. In theory, Option 2 will rectify this problem by specifically determining which EIM sources are incremented specifically in response to the need to address imbalances in California.

However, while the theory is promising, understanding the practical impacts of the proposal is critical. The implementation of Option 2 faces significant obstacles, including two that the ISO has already identified: (1) the need for simplifying assumptions to make it computationally feasible on the 5-minute timescale necessary for EIM operations; and (2) the start-up time of at least two years required for implementation, even in simplified form. In addition, there may be unforeseen obstacles for implementation in a much larger, regional DAM.

Extensive modeling will be required to fully understand the dynamics and impacts of this approach in any case, but particularly if such simplifications are to be used. CAISO must resolve these and other issues before it commits to moving ahead with regionalization, particularly with other balancing authorities that rely on much more carbon intensive generation portfolios. Unless CAISO can be certain that the integrity of both the markets and California's environmental rules will be scrupulously maintained, there is a significant risk that California consumption will lead to periods of unaccounted for increases in greenhouse gas emissions in the region.

Further, Sierra Club is concerned that the "bridge solution" mentioned on Slide 21 of the December 1 presentation has been given too little attention thus far. In fact, the so-called bridge solution may be the most important aspect of this issue, as there is no certainty regarding the timing for implementation of a long-term solution, and the GHG regulatory environment may evolve further before such a solution can be put in place.

The current situation is clearly inadequate—the current EIM approach often leads to increases in GHG emissions that circumvent California's AB 32 GHG rules. For example, the ISO's Draft Greenhouse Gas Emissions Tracking Report, dated September 30, 2016, shows that net GHG emissions have been consistently greater under the EIM than they would have been absent the EIM from mid-June through September 2016.[1] While the cumulative GHG impact over the entire year is still favorable, California Air Resources Board's regulatory framework does not allow the netting of emissions over time. This effect of increasing GHG emissions during part of the year also raises a concern about what trends are operating in the EIM that lead to greater GHG emissions during summer and fall periods.

Before implementing any other EIM solution—whether a "bridge" to a two-pass approach, a two-pass approach with approximations, or the full implementation of Option 2—the ISO should demonstrate using historical data and full dispatch models that its approach will consistently perform as intended with respect to GHG emissions. The simplified examples the ISO has used thus far are clearly inadequate to support long-term, expensive, and impactful changes to the ISO's dispatch and GHG accounting mechanisms.

In addition to being highly idealized and simplified configurations, some of the examples used during the workshop have degenerate solutions, wherein the LMP is different from an incremental vs. decremental perspective—and may be greater from a decremental perspective. During the December 1 workshop, the ISO maintained that this was an artifact of the examples and would not occur in a "real" market. However, Sierra Club is concerned that there may be a fundamental inconsistency between a GHG-accounting system that is one-sided, i.e. based only on incremental MW, and a price-formation system which should be symmetrical.

Further, Example 6j_Export suggests that the system may not even solve the GHG attribution problem. In this example, an increase in load at L1 in California (for example, to 301 MW) leads to an increase in dispatch at G3, a GHG-emitting resource with a GHG bid of $12—but with no GHG attribution, as there is still a net export from California. We believe that these

[1] See Figure 2 of http://www.caiso.com/Documents/DraftGreenhouseGasEmissionsTrackingReport.pdf. The declining cumulative emissions benefit from mid-June through the end of the reporting period (September 30) indicates that the benefit throughout this period was negative.

issues will require further modeling and analysis for full resolution before the ISO and stakeholders can conclude that the principles set out by the ISO are satisfied.

Finally, the simple examples do not represent the possibility of accommodating several GHG regimes—which the ISO has acknowledged to be a potential complicating factor in the future.

II. Application to a Regional Day-Ahead Market

The problems of optimizing dispatch while sending accurate and meaningful GHG emissions signals will increase substantially if a regional day-ahead market is formed. Not only will there be a much larger volume of energy and financial transactions involved, but the very notion of incremental dispatch will take on a different meaning. There will also be more interactions among interdependent markets, including the DAM, the EIM, and any ancillary service markets, that must be accounted for. The risks of litigation, complaints before FERC, and federal preemption will become significantly greater with more players, more states, and more money involved. It is therefore critical to adequately and completely address all issues, and to get broad agreement among participating states and stakeholders, before moving ahead with a regional market.

III. Conclusion

Sierra Club appreciates the opportunity to participate in the ongoing discussion of how best to serve California's electricity customers while protecting the environment and the integrity of California's greenhouse gas and other environmental rules. The energy sector in California, the Western US, and elsewhere is undergoing rapid change in response to both technological evolution and the pressing need to address the global climate challenge. Solutions that we create today must be forward-thinking and flexible enough to meet the challenges of both the present and the unknown future. The ISO's stakeholder processes, including detailed and transparent consideration of options and extensive opportunity for comment, are a crucial part of meeting these challenges.

Sincerely,

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