Stakeholder Comments
Regional Integration California GHG Compliance Issue Paper

Submitted by	Company	Date Submitted
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Southern California Edison (SCE) appreciates the opportunity to provide comments on the California Independent System Operator's (CAISO) Regional Integration California Greenhouse Gas (GHG) Compliance Issue Paper, dated August 29, 2016[1]. SCE supports the regional integration effort as it can facilitate efficient use of resources and a competitive market in the west. Below, SCE offers its comments on several topics under this initiative.

1) Optimization framework to support the single-Balancing Authority Area (BAA) market

One key question that the CAISO and the stakeholders should consider is, under the integrated market, how resources located in multiple states are optimized once those states join as one BAA, given the California GHG compliance. As depicted by the CAISO presentation[2], interties connecting CA and a neighboring state will no longer exist once the state joins the ISO market. Resources within the neighboring state will become internal resources to the expanded market. During the September 7, 2016 stakeholder call, the CAISO staff implied that, to achieve the most optimal market solution, all internal resources will be optimized based on economics under a flowed-based approach.

SCE seeks more clarity on this approach and how it is different than the existing approach under the EIM design, especially on two aspects: the GHG constraint and EIM Energy Transfer Limit, as described below.

Under the EIM design, there is a single GHG constraint that applies to all EIM Entity Areas[3]. Under the integrated market, since EIM Entity Areas may not apply in the Day-Ahead Market (DAM) but apply in the EIM, how will the modeling of this constraint need to be altered? For example, suppose there are multiple states incorporated in the DAM and additional multiple EIM Entity Areas in the Real-Time Market (RTM). Would a GHG constraint in the DAM be expanded to cover EIM Entity Areas in the RTM? Does the GHG constraint cover different geographic areas between DAM and RTM? If so, would it create issues to prices and resource awards from the DAM?

Regarding EIM Transfer Limits, the EIM design constraints imports into/exports from an EIM Entity Area within Energy Transfer Limits designated by the EIM Entity[4]. An Energy Transfer Limit

[1] http://www.caiso.com/Documents/IssuePaper-RegionalIntegrationCaliforniaGreenHouseGasCompliance.pdf
[2] Slides 12-16, Regional Integration California GHG Compliance presentation, available at: Link.
[3] Energy Imbalance Market Draft Final Proposal, dated September 23, 2013, pp. 88-89, available at: Link.
[4] Energy Transfer Scheduling in Energy Imbalance Market, dated January 23, 2015, pp. 2-8, available at: Link; Energy Transfer Scheduling in EIM, dated January 30, 2015, slides 4-7 available at Link.

represents a contractual-type of limit, and is modeled in the form of the power balance constraint, i.e., the power consumed and generated in an EIM Entity Area considering losses and energy transfer nets to zero. There can be multiple power balance constraints in the EIM. When multiple states join the CAISO market, the control and operation of transmission facilities are handed over to the CAISO. Therefore, the modeling of Energy Transfer Limits may no longer be needed. Instead, the boundary of the states within the BAA will be modeled based on physical flow, i.e., a flow-based approach that uses shift factors in the model to ensure physical flow on a path not exceeding its physical limits. SCE would like to know whether this understanding is correct. Further, would there be any contractual rights on a third-party facility (a facility of non-participant transmission owner such as BPA) that would require different treatment under the flow-based approach?[5]

2) The complexity under the scenario that different states may have different GHG programs

As stated by the CAISO, under this scenario, where different states may have different GHG programs, trying to reflect those GHG costs in new components in LMP may eventually become unmanageable. It should be subject to discussion whether such design can lead to undesired outcomes, such as difficulty in price discovery and cost hedge, market delay and/or increased instances of DC solutions.

Given the complexity, to the extent possible, if the magnitude of the problem associated with differences in those programs is small, the option of addressing the problem outside the electricity market should be included for stakeholder's discussion, along with other options.

3) Schedule change from day-ahead to real-time under the new paradigm

The new paradigm of a single-BAA market with a multi-state footprint will likely bring changes to resource scheduling and tracking. For example, under the integrated market, e-tags may no longer be used to track power from one state to another. For a resource that is deemed to serve CA load in the day-ahead market but with its award revised later in the real-time market (due to market conditions, bidding, unit outage or other factors), how will its CA GHG compliance quantity will be determined? How will a schedule change from day-ahead to real-time be settled? Examples would certainly be helpful to illustrate the changes under the new paradigm.

4) Regarding a potential rule that self-scheduled generation in one state cannot support load in another state

To maximize the market efficiency, ideally load should be served with the least cost of generation, including self-scheduled generation in a different state[6]. The question whether this rule is over-restrictive should be part of stakeholder's discussion, considering that under this rule,

[5] An example for Malin would be useful as it is a point where CAISO manages the South of Malin, BPA manages the Main interface, yet PacifiCorp and existing participating transmission owners have rights. Will Malin be a point managed by contract flow, flow based, or some combination of both?

[6] Similarly, aside from other considerations, generation would want to be awarded with the highest revenue based on the marginal price, regardless whether the revenue is from by serving load in the same state or other location.

potential excess self-scheduling in one state could lead to significant curtailment in that state and/or extreme prices that are not at economic levels.

5) Regarding attributing imports (or a portion) to a specific state

Under the regional integration, it may be desired to differentiate the sink of an import, since if the import is serving CA load, it would incur CA GHG compliance cost while this cost does not exist if it is serving non-CA load. Otherwise the import is part of a wheel through which does not support CA load. In designing a mechanism to achieve that, one should consider that imports are not subject to market power mitigation and no resource-specific information (e.g. heat rate or emission rate) may be available to calculate a GHG bid cap, and therefore, different rules may be necessary for imports compared to internal resources.

6) Regarding CA power exports and GHG treatment

Under the EIM design today, power exported from CA to an EIM Entity Area does not need to be treated differently, i.e., power exported from CA will be selected to serve non-CA load by the optimization if its cost is lower than the cost of the marginal resource in the EIM Entity Area, regardless whether the exported power has CA GHG compliance cost or not. However, under the potential scenario that different states may have different GHG programs, it should be subject to discussion whether such treatment for the CA-exports today is sufficient for proper optimization.

7) Regarding CARB's leakage concerns to account for atmospheric effects of EIM's least cost dispatch

As this issue is stilled being worked on, information on a resolution applied to the EIM market will likely be relevant under this initiative. With more information available, the performance of such a resolution can be assessed within the EIM market and then can be further evaluated whether it can be applied to the day-ahead market.

8) Interaction with convergence bids

In the material[7] presented to the market surveillance committee on Sept 19th, the CAISO brought up the issue of the treatment of convergence bids. SCE agrees that the interaction with convergence bids must be part of the scope of this initiative. Particularly the topic regarding how virtual flow created by convergence bids interacts with deemed flow, sourcing from physical generation, in the day-ahead market and then unwound in the real-time market should be further explored.

[7] http://www.caiso.com/Documents/BriefingOnRegionalIntegrationCaliforniaGHGCompliance-Sept19_2016.pdf