BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans.	Rulemaking 13-12-010 (Filed December 19, 2013)

COMMENTS OF THE CALIFORNIA WIND ENERGY ASSOCIATION ON REPORT OF SOUTHERN CALIFORNIA EDISON COMPANY ON INTEGRATION COST STUDY FOR 33% RENEWABLES PORTFOLIO STANDARD

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On behalf of the California Wind Energy Association

June 26, 2015

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OF THE STATE OF CALIFORNIA

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Pursuant to the March 27, 2015, Ruling of Administrative Law Judge Gamson directing Southern California Edison Company ("SCE") to perform production cost simulations for the interim variable integration cost adder ("Ruling") and providing for public comment, Judge Gamson's June 15, 2015, ruling granting a request to extend the comment schedule, and in response to SCE's May 29, 2015, report on its integration cost study ("SCE Report"), the California Wind Energy Association ("CalWEA") provides these comments.

Generally, CalWEA supports the approach described in the SCE Report to produce the integration cost ("IC") adders for wind and solar energy. The production simulation methodology and the data that were used are sound for the intended purpose of estimating the variable cost components the IC adder. While, as with any production simulation study, various approximations are necessary, the study has produced values within the same order of magnitude as have been shown in similar studies performed for other regions.

Nevertheless, we have comments in three important areas:

- Lack of transparency and potential underestimation of the variable IC components;
- Potential for inappropriate application of the variable IC adder in the least-cost, best-fit (LCBF) bid evaluation process; and
- Suggestions on developing the IC adder for 40% renewables.

1. Lack of Transparency and Potential Underestimation of Variable Costs

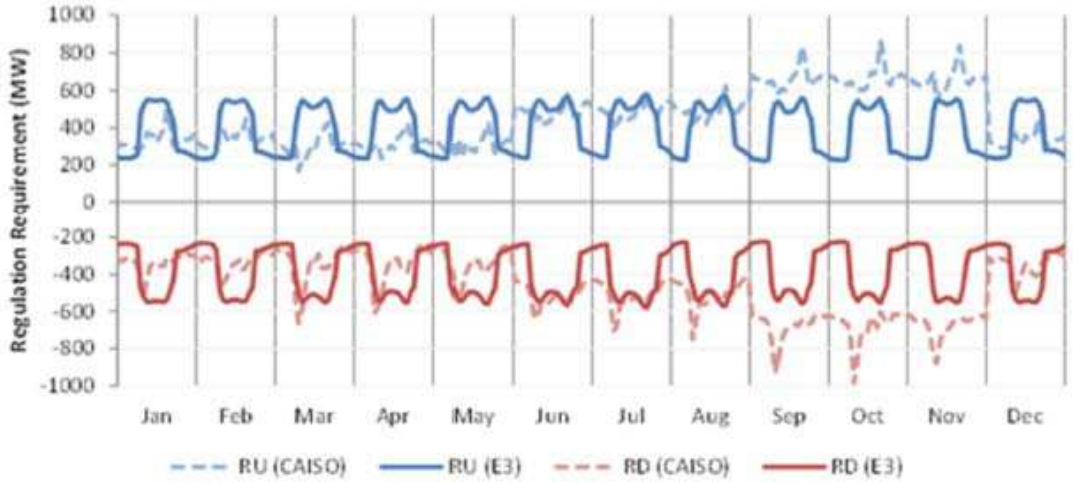
While the SCE Report seeks to address the two components of the variable IC adder -- subhourly variability (increased load-following and regulation reserve requirements) and hour-to-hour and multi-hour ramps in net load -- it underestimates the energy component of regulation costs and totally ignores the capacity costs for regulation and ramping (the cost incurred by ratepayers to reserve such capacity). In addition, it is important that all the basecases used for these analyses include up-to-date estimates of the amount of behind-the-meter solar PV resources that are expected to be on the system when 33% renewables is achieved.

a. Regulation costs

Figure II-3 in the SCE Report (reproduced below) shows substantially different results between the CAISO's[1] and E3's studies of regulation requirements for 33% renewables, yet the report states (at p. 11) that the "overall level and the trends observed for regulation requirements are generally consistent" between two studies, and E3's results are used. This statement requires further justification, since using E3's results could significantly underestimate regulation capacity needs, particularly for solar PV generation and when compared with results from the CAISO's earlier 33% renewables integration studies.

Figure II-3

Comparison of CAISO & E3 regulation requirements for 33% portfolio.



[1] CAISO used a modeling tool developed by Pacific Northwest National Laboratory (PNNL).

The SCE Report should also explain how it developed the costs associated with regulation and load following. While the study imposed constraints on an hourly basis to capture the energy cost of regulation and load following, the CAISO does not procure varying amounts of regulation on an hourly basis; rather, our understanding is that the CAISO determines the required level of regulation resources and acquires them for an extended period of time. The cost for this component of the IC adder should mimic how costs are actually incurred.

Finally, the SCE Report should explain how the costs of the capacity associated with actual procurement of regulation and sub-hourly load following have been accounted for. No capacity costs are shown in Table III-4, but the CAISO, and subsequently ratepayers, incur capacity costs for these services.

b. Ramping costs

Although the SCE Report purports to address hour-to-hour and multi-hour ramping, it fails to account for these costs (or even mention them beyond identifying them upfront). While these costs, particularly their capacity costs, may currently be low (depending upon the utilities' contract terms for existing flexible resources and whether additional payments to such resources are made to obtain flexible operation), they are likely to rise significantly as ramping requirements increase at renewable energy penetrations above 33% and particularly as renewable resources are called upon to provide the RA capacity. Whatever the costs are, the bilateral cost component for multi-hour flexible capacity should be available to the Commission from the utilities (which can be publicly reported in aggregate, average terms), in addition to any costs shown from the CAISO's multi-hour flexible resource adequacy market. Allocating these costs between wind and solar can be done in the exactly the same fashion as CAISO calculates and reports multi-hour flexible capacity needs among renewable technologies and load in its Resource Adequacy proceeding.[2] Because (as the CAISO reports show) ramping costs are far more attributable to solar than wind resources, this cost component can be expected to impact the relative variable IC adder values for wind and solar resources, and thus cannot be ignored.

[2] *See*, in CPUC R. 11-10-023, "Final 2014 Flexible Capacity Needs Assessment Report of the California Independent System Operator Corporation," Table 2 - Contribution to Maximum 3-hour Continuous Net-Load Ramp. May 1, 2014.

c. Basecase resources

It was noted by an E3 representative on the June 12, 2015, call that an additional 1,000 MW of solar can be expected to have the same integration cost impacts whether that capacity is centrally located or distributed; we understand that. However, the marginal impact will differ significantly depending on how much solar is already on the system. Therefore, the Commission should ensure that the basecase include up-to-date estimates of the amount of behind-the-meter solar resources that are expected to be on the system in the 33% reference year (2020). These resources should not be obscured within net load; rather, their impact on system integration needs should be directly modeled.

d. Minor comments

- Tables I-1 and I-2 do not define the unit of money. We assume it is $M.
- Although it can be surmised, please specify, for Figures II-4 and II-5, what the color coding indicates.

2. Potential Inappropriate Use of the IC Adder in the LCBF Bid Evaluation Process

The Ruling states (at p. 1) that the results of the production simulation study will inform the development of the variable component of the IC adder for use in the Renewables Portfolio Standard (RPS) LCBF evaluation (as well as the RPS Calculator whose results will flow into the LTPP studies). However, as was highlighted in slide 7 of E3's June 12, 2015, presentation on Marginal Integration Cost Calculations ("E3 Presentation") performed for the SCE Report, energy value and integration costs are both captured in total production cost savings, with integration costs "taking back" some of the energy value of renewables. As noted on the slide, these components are very closely linked, and methods of determining integration costs that are more sophisticated than the stack model used in the RPS calculator (and flowing into the IC adder in the SCE Report) "might already capture some or all of the integration costs."[3] This is a critical point, as the methods used by the utilities to determine energy value may have already captured those same costs. If so, then adding the IC adder results from the SCE Report to the LCBF adjusted-net-market value calculation would double-count these values. Therefore, the

[3] Thus, it may be that integration costs have been included in RPS bid evaluations all along.

Commission should ensure that the utilities do not double-count integration costs in their energy value analysis.

In particular, the results of the study on fuel cost savings (shown in SCE Report Table III-4 and as "energy value" on slide 23 of the E3 presentation) show that these savings dwarf the size of the integration cost adder: the integration costs for either wind or solar generation offset only about 8% of the fuel savings (energy value). However, the fuel cost savings of wind and solar (and possibly other renewable resources) differ significantly from one another, even before accounting for renewable curtailment costs, and thus it is very important that fuel cost savings be accurately represented in the LCBF evaluation. The commission should therefore ensure that the methods used by the utilities to produce, among other costs and benefits, the net energy values of RPS bids are consistent with the methodology of this study and produce results that are consistent with its results.

3. Comments on Developing the IC Adder for 40% Renewables

As indicated in the June 12, 2015, teleconference on this topic, the Commission, E3 and SCE are beginning to develop and analyze 40% renewable energy portfolios to quantify variable integration costs at this higher penetration level. (Per the Ruling, the results of the 40% study are due on August 31, 2015.) CalWEA offers the following thoughts.

a. Curtailment costs

While curtailment costs can be captured in (net) energy value or in the integration cost value, CalWEA believes that these costs are most appropriately considered as a part of energy value. In the results for the 40% study, we encourage the Commission et al. to clearly present the effect of curtailment as a component of energy value, as was shown for integration costs on Slide 23 of E3's Presentation.

b. Export assumptions

The WECC-wide nature of the model used for this IC adder analysis (the same model that is used for many other California studies), if unconstrained, will reduce the estimated IC value and renewable curtailments by providing access to more balancing resources across the

West. We understand that the study performed for this 33% analysis imposed a net-zero energy export constraint from the CAISO Balancing Area to the rest of the WECC. While this constraint may be overly conservative, it may also be a more reasonable representation of the operation of the CAISO BA within WECC than assuming no export constraints at all. There are impediments to the free flow of electricity out of the CAISO BA, among the most critical of which is the ability of neighboring states to accept the surplus energy, particularly if they likewise expand their renewable programs by relying heavily on solar generation. There will also be economic questions associated with the export and whether it is more advantageous to curtail the energy rather than export it. Therefore, for the 40% RPS scenario, the modelers should develop appropriate criteria for energy exports, potentially criteria where the values change between net-zero and unlimited exports depending on the state of system operation (e.g., higher exports during times of higher neighboring BA loads). At some future point, when the CAISO footprint may have expanded, the assumption should be re-evaluated.

c. Additional issues

The issues noted in section 1, above, with reference to the 33% case – regulation and ramping capacity costs and behind-the-meter solar in the baseline -- will be especially critical to get right for the 40% RPS integration cost study.

We appreciate this opportunity to comment on the SCE Report.

Respectfully submitted,

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