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 INDEPENDENT SYSTEM OPERATOR CORPORATION ON THE PRODUCTION COST SIMULATIONS FOR THE INTERIM VARIABLE INTEGRATION COST ADDER

Pursuant to the Administrative Law Judge's March 27, 2015 Ruling Directing Southern California Edison Company (SCE) to Perform Production Cost Simulations for the Interim Variable Integration Cost Adder (Ruling), the California Independent System Operator Corporation (CAISO) hereby files these comments.

I. Introduction

The renewable integration cost study was previously considered in the Renewable Portfolio Standard (RPS) rulemaking proceeding (R.11-05-005). Decision (D.) 14-11-042 adopted an interim approach to developing the integration cost adder and directed consideration of a comprehensive and final methodology in coordination with this long-term procurement plan (LTPP) proceeding.[1] The ALJ's March 27, 2015 Ruling in this proceeding specified the methodologies and cases for the interim variable integration cost adder study and directed SCE to file a report on its production cost simulations on May 29, 2015 (SCE Report).

The CAISO appreciates the efforts put forth to quantify the integration cost adder in this proceeding. Properly quantifying integration costs is an important step in better guiding future procurement as the state moves forward with increased reliance on preferred resources and energy storage to meet long-term electric needs. The CAISO believes that it is important to better understand and improve the methodology presented in the SCE report. The comments presented below address specific issues that need

[1] D.14-11-042, p. 63-64.

additional explanation and justification before the results of this study can be used for any procurement based decisions.

II. Discussion

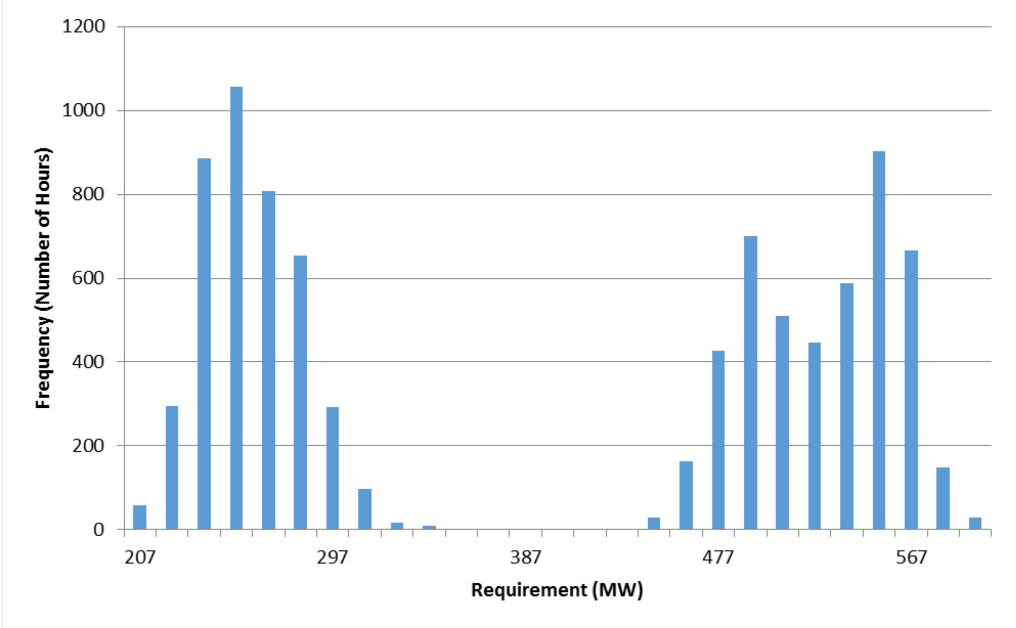
A. Regulation and Load-Following Requirements Used in the Study Require Additional Review.

The CAISO's analyses of the regulation and load-following requirements input data revealed patterns that are not intuitive. Accordingly, at a minimum, further vetting and support for the regulation and load-following data used in the SCE Report is needed.

For example, the histogram below shows the regulation-up requirement[2] input used in the study, though the patterns for load following and regulation down follow similar patterns. Figure 1 shows frequency peaks concentrated around 250 megawatts (MW) and 530 MW, respectively. There is zero frequency (number of hours) of regulation-up requirement between 350 to 440 MW. The lack of hours with regulation-up between 350 to 440 MW is not intuitive and needs to be better understood.

[2] The calculations of regulation and load-following requirements are symmetric. That is, the requirements of regulation-up and regulation-down are the same. Similarly, the requirements of load following-up and load following-down are the same.

Figure 1 Histogram of Regulation-Up Requirement (Case 2)



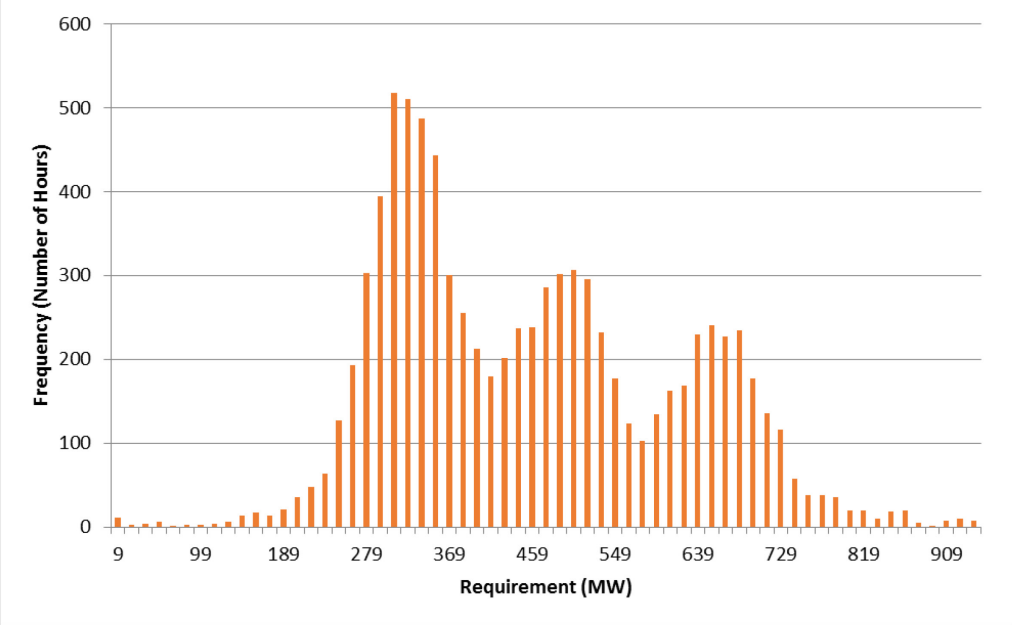
The annual (8,784 hours) average of regulation-up requirement by hour (see Figure 2) shows a pattern that the regulation requirement is more in proportion to load value than to the minute-by-minute variations of net load. The CAISO's methodology uses net load, as opposed to gross load, in calculating regulation and load following requirements. It is not clear the extent to which the differences materially impact the production costs and the integration adder cost results.

Figure 2 Annual Average of Regulation Requirement by Hour (Case 2)

In comparing its inputs with the CAISO's LTPP modeling, the SCE Report notes that "[w]hile the methodology and data inputs to E3's calculations differ from the model used by PNNL, the alternative method yields reserve requirements similar in magnitude and diurnal patterns to the PNNL model."[3] For comparison purposes, Figure 3 shows the regulation-up requirement in the CAISO's 2014 LTPP Trajectory scenario calculated using the PNNL method. The trajectory scenario is comparable to Case 2 of the renewable integration cost study.

[3] SCE Report, p. 11.

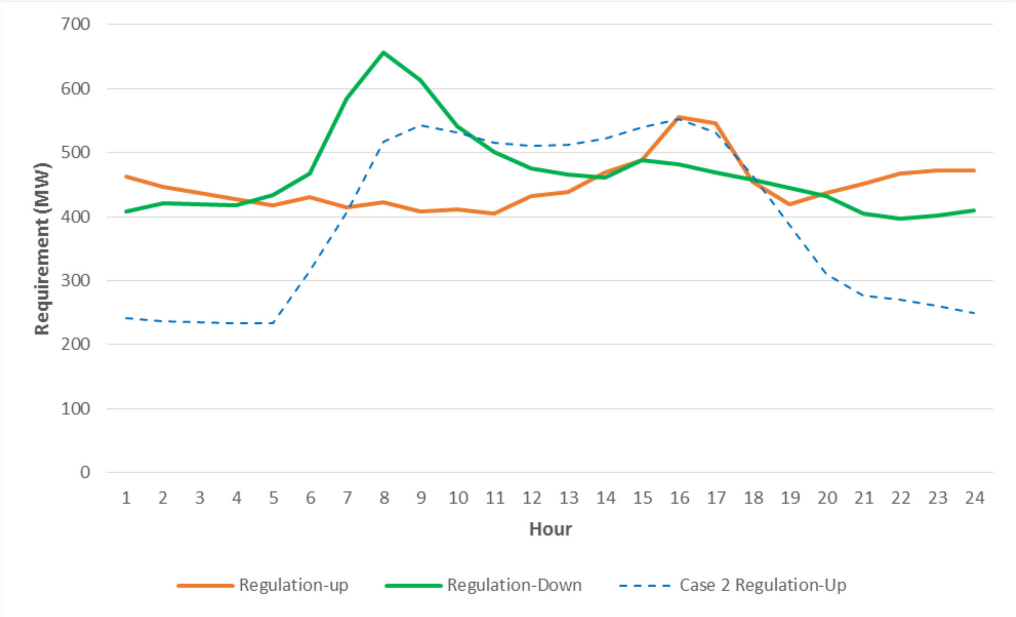
Figure 3 Histogram of Regulation-Up Requirement (LTPP Trajectory Scenario)



Comparing Figure 3 to Figure 1 above, the CAISO notes that the LTPP Trajectory scenario regulation-up requirement histogram has a continuous distribution from its minimum to maximum values, as well as a very high frequency of observations between 350 to 440 MW. This distribution is markedly different than the pattern of Case 2 as shown in Figure 1. At the very least it is important to understand if these observed differences have an effect on the changes in the production costs and, if so, reconciliation of the observed difference in regulation patterns would be appropriate.

The CAISO also notes that the Trajectory scenario regulation-up and regulation-down have different patterns, reflecting the different challenges to the system in the morning downward and early evening upward net load ramping. The regulation-up and regulation-down requirements do not necessarily change in response to changes in load value. The two patterns are quite different than that of the Case 2 regulation-up requirement. It is unclear the extent to which the observed differences in the regulation patterns would affect the production costs of the simulation and thus change the absolute results or the relative results of the incremental wind versus incremental solar adder.

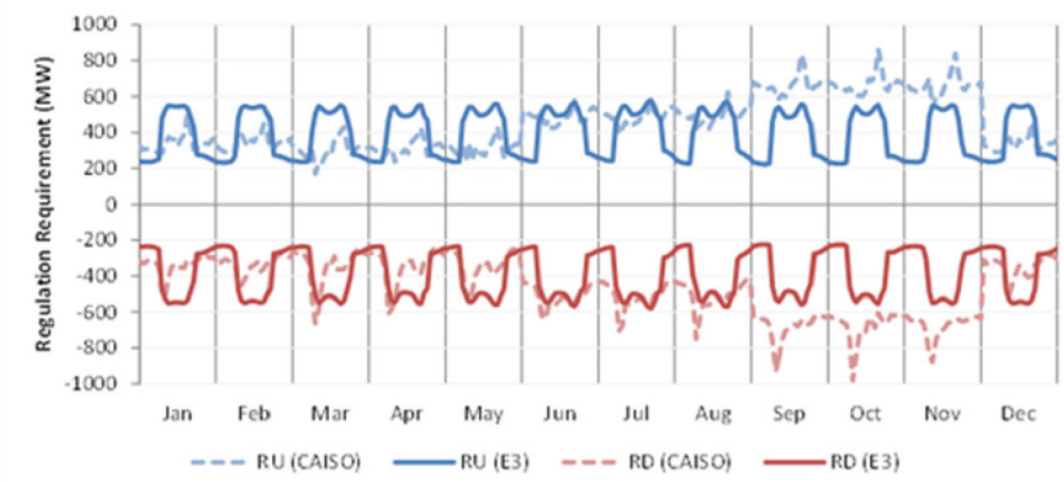
Figure 4 Annual Average of Regulation Requirements by Hour (LTPP Trajectory Scenario)



Indeed, Figure II-3 contained in the SCE Report indicates some significant differences to the regulation requirements calculated by the CAISO. Both magnitude seasonal-hourly pattern differences may be meaningful to the results reflected in the cost adder. Figure II-3 from the SCE Report is reproduced below.

Figure II-3

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



Lastly, the CAISO notes that the regulation and load-following input data indicate that the 1000 MW incremental solar PV seems to have no impact on regulation and load-following requirements. Case 2 and 6 have identical regulation and load-following requirements. Again this is counter intuitive to the expectation that changes in the amount of load-following and regulation would occur with changes in amount variable resources.

Based on these findings, the CAISO believes additional review of the regulation and load-following inputs is necessary before making any long-term planning decisions on the basis of the integration cost study.

B. General Considerations

In addition to the concerns identified above regarding the regulation and load-following results, the CAISO believes the following issues should be further vetted in this proceeding:

i. Why are all of the incremental costs resulting from the operational constraints[4] attributed to incremental renewables? It is unclear how this methodology was developed, and the methodology needs to be vetted in more detail before using it in long-term planning decisions.

ii. The 1000 MW incremental wind and solar cases will cause additional curtailment of renewable generation. The production costs of the runs used to calculate the renewable integration cost did not count the additional curtailment and the potential need for investing in other flexible capacity or services, because these issues will be addressed later in this proceeding. It is uncertain whether the costs due to incremental solar and wind and related ramps, load-following and regulation, can actually be calculated separately from the costs of renewable curtailment or over-generation and other operational and investment costs. If these costs cannot be calculated separately, the results in SCE's Report may not be meaningful because the results do not consider these other costs associated with incremental wind and solar and it is unclear the extent to

[4] SCE Report, p. 15.

which, if the total costs are considered the same, long-term planning or procurement decisions would be made.

III. Conclusion

The CAISO recommends that the Commission hold workshops to discuss the fundamental methodologies and assumptions used as the basis of the integration cost study before moving to the 40% RPS cases. The parties need to understand the study and to make sure correct methodologies and assumptions are used for any procurement based decisions.

Respectfully submitted,

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