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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements.

Rulemaking 16-02-007
(Filed February 11, 2016)

(NOT CONSOLIDATED)

Order Instituting Rulemaking to Continue Implementation and Administration, and Consider Further Development, of California Renewables Portfolio Standard Program.

Rulemaking 15-02-020
(Filed February 26, 2015)

**JOINT ADMINISTRATIVE LAW JUDGES' RULING SEEKING INPUT ON
REPORT AND NEXT STEPS FOR DEVELOPMENT OF RENEWABLES
INTEGRATION COST ADDER**

Summary

This ruling requests party input on the April 4, 2016 Renewables Integration Cost Adder (RICA) Report filed by Southern California Edison (SCE) in Rulemaking (R.) 16-02-007. SCE's report is responsive to a December 9, 2015 Administrative Law Judge (ALJ) ruling in R.13-12-010, as well as a March 9, 2016 email ruling in R.13-12-010, granting SCE's request for a delay in filing the report until April 4, 2016. That e-mail ruling also requested that SCE file the report in R.16-02-007 and indicated that parties would be given an opportunity to comment on the report.

This ruling provides that opportunity for comment not only on the April 4, 2016 report filed by SCE, but also on how the Commission should proceed with any further work on refining the renewables integration adder already in place on an interim basis as adopted in Decision (D.) 14-11-042.

This ruling is being issued jointly in R.16-02-007 (rulemaking on integrated resources planning and long-term procurement planning) and R.15-02-020 (the renewables portfolio standard rulemaking). Parties should file their comments in the proceeding to which they are a party, or in both proceedings if the party is participating in both proceedings. All comments should be served on the service list of both proceedings. The availability of comments in both proceedings will allow the Commission to utilize the record of each proceeding in deciding which venue is most appropriate for any next steps in this effort.

Comments are requested on the RICA report itself and the questions posed in this ruling, to be filed in one or both proceedings (as appropriate to each party), and served on the service lists for both proceedings, by no later than June 3, 2016. Reply comments may be filed and served in the same manner by no later than June 17, 2016.

Background

In November 2014, in D.14-11-042, the Commission adopted an interim renewables integration cost adder required by Public Utilities Code Section 399.13. In the interim adder, the non-California-specific value for the variable cost component was based on a literature survey of studies of other jurisdictions, as proposed by Pacific Gas and Electric Company. This interim adder remains in place unless the Commission adopts an updated adder superseding the one adopted in D.14-11-042.

Since March 2015, SCE has been acting as a project manager, in coordination with the other utilities, Energy Division staff, and the California Independent System Operator, and utilizing consultants, to perform production cost simulation modeling to support the development of a methodology for calculating a California-specific value for the variable cost portion of the renewables integration cost adder.

On May 29, 2015, SCE produced some interim modeling results that they later called into question when certain modeling flaws were discovered, as discussed in SCE's October 1, 2015 motion in R.13-12-010.

On October 9, 2015, ALJ Gamson in R.13-12-010 issued a ruling that required SCE to file by November 2, 2015, either a progress report or a request for further extension, on revisions to all modeling runs for the 33% Renewables Portfolio Standard (RPS) case supporting analysis for the development of a new renewables integration cost adder.

On November 2, 2015, in R.13-12-010, SCE filed a further request for extension stating that the identified modeling flaws have not yet been resolved and requesting an extension to December 15, 2015 to file either modeling revisions or a request for further extension.

In response to SCE's November 2, 2015 motion for further extension, two responses were filed in R.13-12-010, by the Large-Scale Solar Association (LSA) and San Diego Gas & Electric (SDG&E). Both responses, while supporting SCE's extension request, also essentially requested that SCE provide more transparency to other interested parties about what is actually happening with the modeling, in more substantive detail.

On December 9, 2015, in R.13-12-010, an ALJ ruling required that SCE conduct a workshop, webinar, or conference call no later than January 13, 2016 to

explain results to date; file a complete report with 33% and 40% RPS analysis and results no later than March 4, 2016; and conduct a workshop, webinar, or conference call presenting the results no later than March 18, 2016.

A conference call was conducted by Commission staff and SCE on January 12, 2016 to explain status as of that date.

On March 4, 2016, SCE filed in R.13-12-010 a request for extension of the report deadline to April 4, 2016. That extension was granted in an e-mail ruling on March 9, 2016, which required the filing of the report by April 4, 2016 in R.16-02-007. Commission staff hosted a webinar and SCE and consultants presented the report's findings on April 13, 2016.

Request for Comments and Input

In response to SCE's April 4, 2016 RICA Report, we are requesting that parties file and serve comments on the report and results to date.

Unless stated otherwise, the term "variable integration cost" as used in this ruling is the variable operating cost component of the marginal (incremental) electric system costs incurred to integrate a marginal (incremental) amount of RPS-eligible generation. This generally refers to the costs attributed to the incremental commitment, starts, stops, and ramping of flexible generation needed to balance out the variability and uncertainty of output from the incremental amount of renewable generation. Currently, variable integration costs are only being calculated for wind and solar generation. Variable integration costs include costs associated with:

- The need to hold additional operating reserves to accommodate sub-hourly variability and forecast error of renewables; and

- The need to ensure adequate upward and downward ramping capability to meet hour-by-hour and multi-hour ramps in net load.¹

The technical analysis described in SCE's April 4, 2016 report intended to isolate and quantify only the variable component of renewable integration costs. As stated in the March 27, 2015 ALJ Ruling in R.13-12-010 that directed this work, the other components of renewables integration costs would be separately addressed.

However, SCE observed in its April 4, 2016 report,² "the variable cost component is only one piece of the entire cost of integrating renewables. In general, the value and cost components associated with integrating renewables are intertwined and difficult to separate (e.g. energy value, curtailment costs from over-supply and/or inflexibility, penalty costs, and integration costs)."

In light of this observation and the context provided above, the Commission asks the following questions on (1) the specific analysis to isolate and quantify variable renewables integration costs as reported in SCE's April 4, 2016 report, and (2) policy considerations and next steps for assessing renewables integration costs.

Questions on the Specific Analysis in SCE's April 4, 2016 Report

1. Do you agree with the primary conclusion of SCE's report that the results of this study (calculations of variable integration costs), as calculated using the tools and methodology described in the report, are unreliable? Explain why or why not.

¹ As defined on page 7 of SCE's April 4, 2016 Renewable Integration Cost Adder Report.

² At 4-5.

2. Do you agree with SCE's conclusion of four major lessons learned from this study:
 - a. The database should be designed for the purpose of the study;
 - b. The methodology should be designed with the confines of the model in mind;
 - c. Uncertainty in the modeling approach should be considered; and
 - d. A better understanding of reserve requirements and their relationship with increasing renewable penetration is needed.

Why or why not? Elaborate on which aspects of the database require further attention, which "confines" of the model must be better considered, what uncertainties are most critical (and perhaps overlooked), and/or what alternative approaches to reserve requirements should be considered.

3. Do you agree with the report's description of how uncertainty in the total production simulation costs and the calculated "difference of differences" masks the variable integration cost being measured? Explain why or why not. Are there other sources of uncertainty that should be considered, and if yes, how?
4. The RICA methodology modeled a "counterfactual" electric system by removing operating constraints for all flexible generation as well as flexible reserve commitment requirements attributed to wind and solar generation. The methodology then used a "difference of differences" calculation of variable (production) cost differences between normally (flexibility-) constrained vs. counterfactual cases both with and without an added increment of wind or solar generation. Is this a viable approach for calculating variable integration costs? Why or why not?
5. Can production cost models (not necessarily only PLEXOS) in general be used to calculate variable integration costs, or are such tools fundamentally limited, for example because variable

integration costs are difficult to isolate (they are intertwined with energy value, curtailment costs, penalty costs) and/or because they lack the required precision and accuracy? Why or why not?

6. What should the Commission conclude about the calculation of variable integration cost adders for wind and solar, based on the results described within SCE's April 4, 2016 report?
7. Should the Commission continue development of methods to isolate variable integration costs? If yes, how?
 - a. Should alternative methods be developed, such as a simpler single cost differential? If yes, how? Consider that such simpler methods would need to discern energy value (production savings from using lower cost wind and solar energy to displace higher cost energy) from variable integration costs (production costs from operating the system to balance the variability and uncertainty of wind and solar energy).
 - b. How should any method of calculating variable integration costs based on multiple cases treat differences in constraint violations and curtailments between the cases?³
8. Should the Commission discontinue efforts to isolate variable integration costs and instead holistically calculate renewables integration costs without separating the components (variable integration costs, curtailment, and fixed costs)? Why or why not? If the Commission seeks to calculate renewables integration costs holistically, how should such a holistic calculation be undertaken? Specify any models or methods that would be required.

³ This question explores the observation in SCE's April 4, 2016 Report (page 13) that variations in constraint violations between different cases were indicative of different reliability levels between different cases, which may make case comparison problematic.

Questions Related to Policy Considerations and Next Steps

9. What future activities would you recommend the Commission undertake to further refine calculation of renewables integration costs according to the legislative requirements,⁴ considering that the result should also have a productive impact on both renewables and broader resource planning and procurement? How high a priority should it be for the Commission to undertake such activities, if any? Explain.
10. Should the adopted interim values for the variable component of the renewables integration cost adder be retained for use in the RPS Calculator and least-cost best-fit evaluation in RPS procurement? If not, what should replace them?
11. Should renewables integration cost adders be developed for geothermal and biomass resources to reflect costs to the system for the relative inflexibility of these resources? If yes, how should these adders be calculated? How should such a methodology recognize that any resources that are not infinitely flexible will likely have some “integration” costs?
12. Should the Commission modify its previous work to develop a renewable integration cost adder specifically targeted to inform RPS planning and procurement, and instead, inform RPS planning and procurement via a comprehensive integrated resources planning process (for example, an analysis that optimizes for reliability, low carbon emissions, and least cost across all resource types)? Why or why not?
 - a. How would such an analysis be conducted?

⁴ AB 2363 modified Public Utilities Code Section 399.13 requiring RPS least-cost best-fit evaluation to include: “Estimates of electrical corporation expenses resulting from integrating and operating eligible renewable energy resources, including, but not limited to, any additional wholesale energy and capacity costs associated with integrating each eligible renewable resource.”

- b. How would any resulting optimized portfolio(s) inform procurement of individual resources?
 - c. If the idea of a separate renewables integration cost adder with California-specific fixed and variable components, is no longer pursued, how would the Commission fulfill its legislative requirement to calculate renewables integration costs?
13. How should parties most effectively participate in any future development of integration cost analysis⁵ pursued by the Commission (e.g. small working groups, a series of workshops, collaborative effort by parties with modeling capabilities, etc.)?

IT IS RULED that:

1. Interested parties in Rulemakings (R.) 16-02-007 and 15-02-020 may file and serve comments on the April 4, 2016 Renewable Integration Cost Adder Report filed by Southern California Edison in R.16-02-007, as well as the questions included in this ruling, by no later than June 3, 2016. Comments must be filed in each proceeding in which the party is participating, which may include both proceedings, as applicable. Comments must be served on the service lists of both proceedings.

2. Interested parties in Rulemakings (R.) 16-02-007 and 15-02-020 may file and serve reply comments on the April 4, 2016 Renewable Integration Cost Adder Report filed by Southern California Edison in R.16-02-007, as well as the questions included in this ruling, by no later than June 17, 2016. Reply comments must be filed in each proceeding in which the party is participating, which may

⁵ Future development of renewables integration cost analysis includes all the possibilities discussion in this ruling, for example the possibilities posed in questions 7 or 12 of this ruling.

include both proceedings, as applicable. Reply comments must be served on the service lists of both proceedings.

Dated May 11, 2016, at San Francisco, California.

/s/ MARYAM EBKE

for
Julie A. Fitch
Administrative Law
Judge

/s/ ANNE E. SIMON

Anne E. Simon
Administrative Law
Judge

/s/ ROBERT M.
MASON III

Robert M. Mason, III
Administrative Law
Judge