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**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)

**ADMINISTRATIVE LAW JUDGE'S RULING REQUESTING COMMENTS  
ON MODELING METHODOLOGY STAFF PROPOSAL**

This Ruling requests comments and reply comments on the attached Energy Division Staff Proposal titled, "Proposed Revisions to LTPP Modeling Methodology" (*See Attachment*). The attached document proposes changes to the modeling methodologies that will be used to determine the need for flexible and system resources in future Long-Term Procurement Plan (LTPP) proceedings and the California Independent System Operator's (CAISO's) Transmission Planning Processes (TPP). The Staff Proposal covers methods to validate, refine, and standardize the models and their applications to improve the analysis and comparability of results across various modeling techniques. The topic areas correspond to a previous Administrative Law Judge's Ruling,<sup>1</sup> which directed staff to investigate the following issues with parties and in working groups and workshops:

1. Developing common definitions, metrics, and standards;
2. Identifying standard outputs; and

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<sup>1</sup> Administrative Law Judge's Ruling discontinuing Phase 1a and setting forth issues for Phase 1b, Issued March 25, 2015, available online at:  
<http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M148/K825/148825409.PDF>

3. Validating stochastic and deterministic models and making technical improvements.

A number of parties have already participated extensively in an informal workshop, working group, and comment process hosted by Energy Division staff in Summer 2015. This Ruling represents the formal opportunity for parties to comment on the record of this proceeding to help inform a proposed decision designed to guide future modeling efforts in the LTPP and TPP processes.

Interested parties are requested to file comments on the attached Staff Proposal no later than December 4, 2015. Reply comments are due no later than December 11, 2015.

Parties wishing to comment are requested to organize their comments in the same order as the sections of the Staff Proposal. Suggested questions and topic areas where party responses would be especially helpful are listed below:

General Questions

1. How specific should the Commission be in directing modeling methodologies to ensure usefulness and comparability of model results? In comments on each topic/section below, parties are requested to offer a formulation of a commission directive that would be most effective.
2. Are there topics or issues areas missing from the Staff Proposal for which the Commission should give further guidance? If so, what are they, what should the direction be, and why?
3. How important will it be for the Commission to update modeling guidance periodically, and on what kind of time schedule?

For the sections and topics below, parties are requested to comment on whether they agree or disagree with the staff recommendations, providing discussion and rationale. In addition, parties are requested to offer a

recommendation on a specific formulation of guidance or directives from the Commission that would appear in a decision, for each area the party believes the Commission should offer that directive. Parties are also invited to respond generally to anything discussed in each section of the Staff Proposal, even if the topic is not specifically called out in the list below.

Section 3 topics: Definitions, Metrics, and Standards

4. Definition of “loss of load event” in stochastic modeling as occurring when effective operating reserves are depleted to 2.5% of hourly load or less (1.0% regulation + 1.5% spinning reserves).
5. Definition of “loss of load event” in deterministic modeling as occurring when effective operating reserves are depleted to 3.5% of hourly load or less (1.0% regulation + 1.5% spinning reserves + 1.0% load following-up).
6. Addressing “over-generation” in both stochastic and deterministic models first by curtailment, then load following-down, and finally regulation-down. Any remaining quantity of over-generation would then be recorded as “unsolved” or “dump energy.”
7. Definition of “day” for the “loss of load hours” metric in stochastic models as 24 cumulative hours and use of a “one day in ten year” standard.
8. Establishing a reliability standard of 0.001% for the “expected unserved energy” metric in stochastic models.
9. Establishing a “loss of load” standard for deterministic modeling of “no hours in one year.”
10. Reporting of curtailment and “unsolved over-generation” in deterministic modeling in terms of annual energy and annual maximum capacity.
11. Use of multiple metrics to measure system reliability and standards to balance reliability and cost.

Section 4 issues: Identifying Standard Outputs

12. Use of a combination of models: deterministic modeling to study system performance in a given scenario, and stochastic modeling to show a probability distribution of system performance around that scenario.
13. Reporting of greenhouse gas (GHG) emissions for both California and the entire Western Electricity Coordination Council (WECC) area, on a monthly basis.
14. Reporting of GHG emissions via unit dispatch model results, including fuel use and generation.
15. Accounting for bioenergy facility GHG emissions as “net zero” only for comparing alternate LTPP planning scenarios, with underlying unit dispatch information still reported and used for more granular accounting, when necessary.
16. Use of the 23 separate recommended criteria listed in Section 4.3.1 of the Staff Proposal for reporting at an hourly level for deterministic model “iteration-specific results.”
17. Use of the six recommended criteria listed in Section 4.3.1 of the Staff Proposal for reporting at an hourly level for every iteration of a stochastic model.

Section 5 and 6 issues: Model Validation

18. Use of combinations of load/wind/solar cases using historical data to validate deterministic modeling results.
19. Use of overall probability distributions and deep dives, in cases where events occur, to validate stochastic modeling results.
20. Approached described in Section 6.3 of the Staff Proposal for assessing flexibility reserves commitment requirements.
21. Pursuing all of the issues and questions detailed by Working Group 3 in Section 5.2.4 with respect to “Regional Generation Requirements Modeling.”

22. Examining storage and hydroelectric modeling results more fully through use of deep dives to analyze a full day's worth of data.

**IT IS RULED** that:

1. Interested parties may file and serve comments on the Staff Proposal attached to this Ruling titled "Proposed Revisions to LTPP Modeling Methodology" by no later than December 4, 2015.
2. Interested parties may file and serve reply comments no later than December 11, 2015.

Dated November 16, 2015, at San Francisco, California.

/s/ JULIE A. FITCH  
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Julie A. Fitch  
Administrative Law Judge