

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

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The California Energy Storage Alliance (“CESA”)¹ hereby submits these comments pursuant to the Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), on the *Administrative Law Judge’s Ruling Requesting Comments on Modeling Methodology Staff Proposal*, issued by Administrative Law Judge, Julie A. Fitch, on November 16, 2015 (“Ruling”).

I. INTRODUCTION.

The Ruling seeks comments on the Energy Division Staff Proposal titled “Proposed Revisions to LTPP Modeling Methodology” attached to the Ruling (“Proposal”) proposing

¹ 1 Energy Systems Inc., Abengoa, Advanced Microgrid Solutions, AES Energy Storage, Aquion Energy, ARES North America, Brookfield, Chargepoint, Clean Energy Systems, CODA Energy, Consolidated Edison Development, Inc., Cumulus Energy Storage, Customized Energy Solutions, Demand Energy, Duke Energy, Dynapower Company, LLC, Eagle Crest Energy Company, East Penn Manufacturing Company, Ecoult, ELSYS Inc., Energy Storage Systems, Inc., Enersys, EnerVault Corporation, Enphase ENERGY, EV Grid, Flextronics, GE Energy Storage, Green Charge Networks, Greensmith Energy, Gridtential Energy, Inc., Hitachi Chemical Co., Ice Energy, IMERGY Power Systems, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Invenergy LLC, K&L Gates, LG Chem Power, Inc., LightSail Energy, Lockheed Martin Advanced Energy Storage LLC, LS Power Development, LLC, Manatt, Phelps & Phillips, LLP, Mitsubishi Corporation (Americas), Mobile Solar, NEC Energy Solutions, Inc., NextEra Energy Resources, NRG Solar LLC, OutBack Power Technologies, Panasonic, Parker Hannifin Corporation, Powertree Services Inc., Primus Power Corporation, Princeton Power Systems, Recurrent Energy, Renewable Energy Systems Americas Inc., Rosendin Electric, S&C Electric Company, Saft America Inc., Sharp Electronics Corporation, Skylar Capital Management, SolarCity, Sony Corporation of America, Sovereign Energy, STEM, SunEdison, SunPower, Toshiba International Corporation, Trimark Associates, Inc., Tri-Technic, Wellhead Electric. The views expressed in these Comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies. (<http://storagealliance.org>).

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 Proposal recommends approaches and rules for assessing and comparing modeling results, including stochastic and deterministic modeling results. CESA offers these comments with the goal of improving the LTPP, both in usefulness and in actionability. Fundamentally, CESA supports the LTPP’s main purposes of: 1) assessing system resource deficiencies or needs, and 2) directing procurement to rectify those reliability concerns. CESA’s comments are structured as responses to only certain selected questions posed in the Ruling, and CESA reserves the right to respond to the remaining questions and supplement the responses provided in these comments as appropriate.

II. CESA’S RESPONSES TO QUESTIONS POSED IN THE RULING.

Specific selected questions posed in the Ruling are listed below, followed by CESA’s response.

Question Number 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.”

CESA’s Response:

CESA recommends a more prudent and conservative definition of over-generation. The proposed definition implies that only situations of “dump energy” qualify as some sort of reliability event criteria, with curtailment as a first step solution. Such an approach is blunt and insufficiently conservative.

First, planning efforts should not assume “curtailment” can occur lightly. Reliability-based curtailments should not be generally assumed to qualify as a frequently available

reliability tool. Planning assumptions should instead assume operations may require ongoing renewable generation in order to comply with Renewable Portfolio Standard (“RPS”) procurement.

Second, over-generation problems can occur well before criteria for determining dump-energy situations occur. Getting to dump-energy implies all other reliability tools have been exhausted, akin to a generation insufficiency in which all reserves are used. Reliability criteria generally assume a more conservative approach for upwards ramping needs and traditional reliability concepts, such as loss of load events. For instance, the Proposal defines a loss of load event as when operating reserves are partially exhausted.² Downward ramping or “over-generation” considerations should mirror this conservative approach.

Question Number 10: Reporting of curtailment and “unsolved over-generation” in deterministic modeling in terms of annual energy and annual maximum capacity.

CESA’s Response:

Unsolved over-generation is a critical reliability concern. Like many other critical outputs of deterministic models, it should be reported hourly. Hourly granularity will highlight what portfolio, grid, weather, and load conditions precipitate unsolved over-generation. Hourly granularity befits a concern of this magnitude. Such information may also highlight where and when curtailment needs are highest, informing efforts to plan the fleet around RPS goals. When hourly information is too granular, this information can be aggregated into daily values.

Questions Number 13: Reporting of greenhouse gas (GHG) emissions for both California and the entire Western Electricity Coordination Council (WECC) area on a monthly basis.

CESA’s Response:

Greenhouse Gas (“GHG”) emissions should be reported hourly where feasible. If hourly

² “Proposed revisions to LTPP Modeling Methodology,” CPUC Energy Division, November 16, 2015, p. 14.

is infeasible, then daily GHG emissions should be used. CESA understands that modeling may not provide perfectly accurate GHG outputs, but GHG output data is crucial, especially with the upcoming efforts for Integrated Resource Planning (“IRP”), required by Senate Bill 350. IRP requires smart and low-GHG procurement and modeling outputs of GHG emissions will feed this related Commission consideration. Further, periods of high GHG emission intensity generation may promote smart deployments of alternative clean resources or energy storage such that commitments or uses of high GHG emission-intensity resources are mitigated.

Question 14: Reporting of GHG emissions via unit dispatch model results, including fuel use and generation.

CESA’s Response:

GHG emission-reporting should be as detailed as possible. Dispatch and fuel-use information is relevant and should be provided with the greatest practicable degree of granularity.

Question Number 20: Approaches described in Section 6.3 of the Staff Proposal for assessing flexibility reserves commitment requirements.

CESA’s Response:

The Commission should further develop thresholds for determining flexibility shortages in modeling results. Hourly modeling, such as the modeling granularity of some prevalent deterministic models, softens much of the flexibility challenges inherent in operating the grid. Intra-hour flexibility can require precise uses of a fleet’s ramping capabilities and of positioning, typically driving real-world ramping needs that exceed modeled hourly average ramping needs. Fundamentally, the grid solves two types of ramping challenges: variability challenges which involve dealing with known and predictable load or net load changes, as well as uncertainty challenges, which deal with randomness that is inherently unpredictable yet correlated with the portfolio and load make-up.

The Commission should assume uncertainty and intra-hour variability are underrepresented in its modeling, and should require new “flexibility reserves” to be retained throughout the modeling runs to represent the dispatchable resources needed to accommodate uncertainty and perhaps some intra-hour variability. The Megawatt scale of these flexibility buffers can perhaps be approximated by the amount of Flexible Ramping Product planned for procurement through the CAISO’s Flexible Ramping Product demand curve formulation.³ When these flexibility reserves dip below required thresholds in the modeling, the Commission should note this as a reliability concern, potentially leading to corrective procurement needs.

Finally, modeling results should indicate, e.g. by cost, what resource mixes are more cost-effective. In so doing, modeling results should help identify resources such as energy storage that may resolve multiple grid challenges, such as fast-ramping capability and challenges with excess generation, coupled with lower emissions. This information should inform subsequent procurements within reason.

Question Number 21: Pursuing all of the issues and questions details by Working Group 3 in Section 5.2.4 with respect to “Regional Generation Requirements Modeling.”

CESA’s Response:

CESA supports modeling considerations of “real-world” grid requirements where feasible. Generally, the inclusion of these real-world matters – reactive power, frequency response capability, contingency recovery requirements, realistic limitations on transmission availability, *etc.* – generally constrain the modeling solution. The constraints posed by these real-world matters highlight how modeling results rarely reflect the conservative approach needed for real-world grid operations. Overall, these considerations highlight a need for continued conservatism.

³ CAISO “Flexible Ramping Products – Draft Final Proposal,” December 4, 2014, p. 15.

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

CESA’s Response:

CESA strongly supports inclusion of various energy storage solutions in modeling efforts. CESA recommends modeling runs with varying levels of energy storage solutions to reveal how energy storage solutions change the solution versus counter-factual cases by reducing curtailments, providing flexibility, reducing commitments of fossil resources, reducing emissions, and flattening system price-spreads. CESA does not see deep dive modeling of a single day’s worth of data as a top priority at this time. The presumed profile of energy storage resources, similar to dispatchable generation, is reasonably predictable, especially because the current development of rules allows for more control over the dispatch of non-generator resources.⁴

III. CONCLUSION.

CESA thanks the Commission for the opportunity to submit these comments on the Ruling.

Respectfully submitted,



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⁴ Enhancements to the market participation, bidding, dispatch and scheduling capabilities of non-generator resources are underway at the California Independent System Operator, through the Energy Storage and Distributed Energy Resources Draft Final Proposal and other proposals. “Energy Storage and Distributed Energy Resources Stakeholder Initiative – Draft Final Proposal,” November 2, 2015, pgs. 5-6.