

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

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)

**MOTION OF THE CALIFORNIA BIOMASS ENERGY ALLIANCE, CALIFORNIA  
WIND ENERGY ASSOCIATION, CALPINE CORPORATION, GEOTHERMAL  
ENERGY ASSOCIATION AND ORMAT NEVADA, INC., TO AMEND ASSIGNED  
COMMISSIONER AND ASSIGNED ADMINISTRATIVE LAW JUDGE'S RULING  
IDENTIFYING ISSUES AND SCHEDULE OF REVIEW FOR 2016 RENEWABLES  
PORTFOLIO STANDARD PROCUREMENT PLANS**

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**I. INTRODUCTION**

The Assigned Commissioner and Administrative Law Judge Mason's May 17, 2016, Ruling Identifying Issues and Schedule of Review for 2016 Renewables Portfolio Standard Procurement Plans ("Ruling"), among other things, instructed the three investor-owned utilities ("IOUs") to "continue to report on observations and issues related to economic curtailment as well as any actions and analysis." (Ruling at p. 16.) Pursuant to the Commission's Rule of Practices and Procedure 11.1, the California Biomass Energy Alliance, California Wind Energy Association, Calpine Corporation, Geothermal Energy Association and Ormat Nevada, Inc. ("Joint Parties") respectfully submit this motion to modify the Ruling to direct the utilities to specifically address: (1) how they propose to address the projected direct and indirect costs of energy curtailments in the least-cost, best-fit bid evaluation process, and (2) how they plan to make use of their contractual economic curtailment rights with respect to potential overgeneration conditions. Full consideration of these issues is necessary in the 2016 procurement cycle to ensure that the utilities acquire a least-total-cost portfolio, avoid shifting substantial costs onto other market participants, and foster timely compliance with the

Renewables Portfolio Standard (“RPS”) policy.<sup>1</sup> Properly addressing what is a common-pool problem may require the Commission and the IOUs to rethink how the utilities handle economic and overgeneration-related curtailments.

## II. ARGUMENT

### A. Achieving a Least-Total-Cost Portfolio Requires Accounting for All Curtailment Costs in Procurement Decisions

CPUC and CAISO planning models show that the concentrated daytime output profile of solar photovoltaic projects is expected to lead to very significant curtailment of solar energy over the next decade, a timeframe obviously encompassed in LCBF bid analysis.<sup>2</sup> Curtailment is an explicit cost component of the CPUC's RPS Calculator, which is used to project cost-effective 50% RPS resource portfolios for meeting California's 2030 Renewables Portfolio Standard (“RPS”) goals. This model make a critical assumption that may not track current utility practice: that generators are paid for their curtailed energy at the full contract price.<sup>3</sup> That is, the model assumes that the cost to curtail excess renewable generation will be included in the least-cost, best-fit (LCBF) analyses leading to utility procurement decisions, with the result that solar energy becomes less cost-effective and resources with output profiles that are complementary to solar become more competitive as solar penetration increases. However, it is not at all clear that curtailment costs are, in fact, being fully included – if included at all – in utilities' analyses of proposed bids. As a result, utility procurements may not be leading to a least-cost RPS portfolio.

Curtailment costs may be overlooked or under-estimated for two primary reasons. First, overgeneration-related curtailments are not necessarily of concern to the purchasing utility. This is because if normal operating practices, including the dispatch of economic curtailment bids from renewable resources, fail to maintain system reliability when supply is expected to exceed

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<sup>1</sup> In the event that curtailment is included as one of many issues to be addressed in an anticipated ruling addressing least-cost, best-fit reform in this proceeding, the Joint Parties stress that curtailment requires more immediate attention.

<sup>2</sup> See, e.g., Draft 2016 RPS Portfolios, RETI 2.0 Plenary Group Meeting, slide 12 (3/18/16) (CPUC [presentation](#) by Forest Kaser); and E3's [Draft Renewable Portfolios for CAISO SB 350 Study](#) presented at a February 8, 2016, CAISO Public Workshop.

<sup>3</sup> *Id.* (E3 study at slide 10).

demand, CAISO will implement reliability-related curtailment of renewable resources. The investor-owned utilities' pro forma power purchase agreements (PPAs) – and therefore presumably most, if not all, of their signed contracts – generally provide that the utilities will not pay for any reliability-related curtailments ordered by the CAISO, including curtailments resulting from overgeneration.<sup>4</sup> In this way, the utilities would shift curtailment costs to the seller.

Second, it is unlikely that bidders are fully factoring reliability-related curtailment into their pricing. While nobody may be able to accurately predict curtailment due to overgeneration over the long term, bidders lack access to much of the data needed to make even a reasonable estimate. For example, bidders will not be able to predict how much solar energy will be procured by California's utilities as well as all other load-serving entities on the CAISO grid, the growth of rooftop solar installations,<sup>5</sup> load growth or future levels of demand-response (such as midday electric-vehicle charging) or energy exports that might reduce curtailment. Furthermore, a conservative assumption will result in a losing bid, if other bidders do not project similarly high curtailment levels. Finally, as discussed below, most of the curtailment caused by the bidder will affect other operating generators.

### **B. The LCBF Process Should Consider Costs Imposed on Other Market Participants**

Reliability-related curtailments affect not only the marginal renewable supplier but other suppliers as well because reliability-related curtailments are indiscriminate, e.g., they do not differentiate between generation from new solar generators who may have tipped the market into overgeneration conditions and existing solar generators who may be curtailed only as the result of new solar resources entering the market. In fact, studies show that, while the marginal

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<sup>4</sup> See definition of “Curtailment Order” in PG&E's pro forma RPS contract and the definition of “Curtailed Product” in SCE's pro forma RPS contract.

<sup>5</sup> Though solar rooftops will cause curtailment, they will not suffer any curtailment because behind-the-meter resources are not subject to curtailment by the CAISO. Thus, the curtailment caused by rooftop solar will fall largely on wholesale solar projects.

curtailment caused by a bidder might be equivalent to 65% of its generation, overall average curtailment at that point would be 9% of overall renewable energy production.<sup>6</sup>

Thus, even if a bidder were to factor in some estimated amount of curtailment that it might suffer over its lifetime, it would not factor in the total curtailment that all generators (both online and contracted) would suffer because of the bidder's marginal contribution to the need for curtailment. Thus, the bidder effectively shifts costs to other market participants, largely other solar generators that would otherwise produce power during times of curtailment. These costs, as far as the Joint Parties can tell, are not being considered in the LCBF bid evaluation process. Moreover, it is not clear whether the utilities are factoring in reduced production from generators (primarily, but not exclusively, solar generators) in their own portfolios resulting from their additional solar procurements and resulting curtailments, let alone reduced production in the portfolios of the other utilities.

### **C. Fully Accounting for Curtailment Costs Will Foster Timely RPS Compliance**

As discussed above, renewable energy curtailments are expected to be very significant if solar procurements dominate the 50% RPS portfolio. These curtailments (on the order of 9% of all renewables) could affect the ability of the IOUs to comply with the RPS policy. By the same token, fully anticipating and accounting for curtailments (and avoiding them when it is cost-effective to do so) will foster timely RPS compliance.

### **D. Rethinking How The Utilities Handle Overgeneration-Related Curtailments May Be Necessary**

The situation described above represents a common-pool resource problem<sup>7</sup> in which everyone has access to a resource and, by using it, additional costs are imposed on other users of the resource. In this case, the grid's limited ability to absorb generation becomes exhausted at certain times due to a combination of limited demand and high solar generation, resulting in a

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<sup>6</sup> Marginal curtailment for solar PV was found to be 65% in a solar-heavy 50% RPS scenario in E3's [Investigating a Higher Renewables Portfolio Standard in California](#) (January 2014), at p. 15; similar results were found in E3's more recent [Western Interconnection Flexibility Assessment](#), where almost 9% of all renewables are shown to be curtailed on average in a high-solar case (slide 30). Also see note 2, *supra*, CPUC presentation slide 9.

<sup>7</sup> More specifically, the grid can be thought of as an open-access resource.

curtailment order to all generators. In their procurement plan filings, the IOUs should address this common-pool problem.

In the view of the Joint Parties, addressing the problem will require that procurement decisions take into account the potential “overuse” of the grid, such that procurement that exacerbates overgeneration will occur only when it is cost-effective in a global sense, including its impact on the curtailment of other resources.<sup>8</sup> This will require the utilities to account and pay for all curtailed power associated with congestion and overgeneration.<sup>9</sup> Three specific fixes are needed:

- (1) generators should be paid for reliability-related curtailment;
- (2) impacts of additional procurement on the curtailment of existing and planned generation must be accounted for in the analyses leading to procurement decisions; and
- (3) the utilities should utilize their economic curtailment rights under their existing contracts (under which generators are paid for economic curtailments) to avoid reliability-related curtailment.

Many versions of past utility pro forma PPAs allowed for a limited number of unpaid hours of economic curtailment in order to respond to very low or negative market prices, since utilities would rather not pay the PPA price when they get little or nothing – or even have to pay – to offload the energy onto the grid in return. These contract provisions also enable the use of economic curtailment to back generators down to avoid an overgeneration situation. Moreover, utility contracts also generally allow for unlimited curtailment if the seller is paid at the PPA price. In the normal course, one would expect the market price of energy to fall as supply began to exceed demand, which would introduce an incentive for a utility to utilize its economic curtailment rights to reduce supply before the supply-demand imbalance resulted in negative prices being applied to the utility's entire portfolio. Nevertheless, it's quite possible that utilities

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<sup>8</sup> Alternatively, the utilities could assign increasing, but reasonable levels of unpaid overgeneration-related reliability curtailments to each group of annual procurements (with the balance of curtailments paid). This would require selective curtailments, however, which would require the CAISO to give curtailment instructions to specific Scheduling Coordinators or generators, rather than the current practice of curtailing all generators uniformly.

<sup>9</sup> E3 similarly concludes, in its Western Interconnection Flexibility Assessment (see note 6, *supra*, at slide 46), that “creating an environment in which renewables can be curtailed routinely on an economic basis is necessary to avoid emergency conditions & reliability events.”

would not avail themselves of the opportunity to avoid negative pricing by paying for economic curtailment. This might occur if engaging in a strategy of foregoing the utilities' economic curtailment rights would push the supply-demand imbalance past the “tipping point,” forcing the CAISO to implement reliability-related curtailment.

If, instead, utilities were required to utilize their economic curtailment rights under their existing contracts to avoid overgeneration events, it would (in addition to solving the overgeneration problem) remove the economic incentive to engage in the strategy noted above. Namely, it would convert the overgeneration cost to a utility/ratepayer cost, rather than shifting it onto existing generators who could not reasonably have factored expected levels of reliability-related curtailment into their original PPA pricing. Moreover, an existing generator does not control the decision to engage in additional procurement of resources that cause increasing levels of reliability-related curtailment (their buyer does, along with other buyers).

Even if utilities don't pay existing generators for economic curtailment to avoid overgeneration, they should still factor the overall curtailment that is expected to result from their incremental procurements into their LCBF processes to achieve results going forward that are economically rational overall. The common-pool problem requires the problem to be resolved by looking at the big picture.<sup>10</sup> The CPUC should require greater transparency and an explanation of how the utilities are factoring in the impact of potential additional procurement on overall curtailment across all existing resources into the bid-evaluation process.

Since the utilities likewise cannot perfectly forecast anticipated levels of curtailment, they could use a low- and high-range of curtailments to inform their decision-making. This range could be based on reasonably possible levels of CAISO exports to neighboring BAs, rooftop-solar penetration, demand-response programs, and time-of-use pricing incentives, etc. This analysis should also factor in the low or negative energy values that would be involved in CAISO exports (or sales within an expanded CAISO) of generation that would otherwise be

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<sup>10</sup> To the extent that Electric Service Providers (ESPs) and Community Choice Aggregators (CCAs) do not employ this type of LCBF process and continue to purchase solar without paying to avoid curtailments, the investor-owned utilities (IOUs) should be able to charge them for the higher direct costs that they incur to avoid overgeneration curtailments pursuant to PU Code Sec. 454.51.

curtailed. Procurement decisions could be based on a mid-range assumption, or could involve hedging any bets that curtailment levels will be on the low-end of the spectrum by procuring some renewable resources that would most cost-effectively reduce potential curtailments through resource diversity.

In this way, the various planning models, which demonstrate that more diverse 50% RPS resource mixes are more cost-effective, will come to fruition in actual utility procurements. Likewise, the state can avoid a common-pool problem that could lead to a dramatic loss of solar energy that would prevent the achievement of 50% goal and hurt all renewable energy generators, but ultimately hit solar projects the hardest.

#### **E. CONCLUSION**

For the foregoing reasons, the Joint Parties respectfully request that the Commission grant the Motion to direct the utilities to address specifically: (1) how they propose to address the projected direct and indirect costs of energy curtailments in the least-cost, best-fit bid evaluation process, and (2) how they plan to make use of their contractual economic curtailment rights with respect to potential overgeneration conditions. Including this information in the draft procurement plans will enable other parties to comment on the utilities' proposals in this regard, and enable the Commission to make any needed adjustments in the plans.

Respectfully submitted,

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June 1, 2016

## VERIFICATION

I, Nancy Rader, am the Executive Director of the California Wind Energy Association. I am authorized to make this Verification on its behalf. I declare under penalty of perjury that the statements in the foregoing copy of “Motion of the California Biomass Energy Alliance, California Wind Energy Association, Calpine Corporation, Geothermal Energy Association and Ormat Nevada, Inc., to Amend Assigned Commissioner and Assigned Administrative Law Judge's Ruling Identifying Issues And Schedule of Review for 2016 Renewables Portfolio Standard Procurement Plans” are true of my own knowledge, except as to the matters which are therein stated on information and belief, and as to those matters I believe them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on June 1, 2016, at Berkeley, California.

/s/ Nancy Rader

Nancy Rader  
Executive Director  
California Wind Energy Association