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)

COMMENTS OF THE CALIFORNIA WIND ENERGY ASSOCIATION ON THE USE OF EFFECTIVE LOAD CARRYING CAPABILITY FOR RENEWABLES PORTFOLIO STANDARD PROCUREMENT

Dariush Shirmohammadi
Technical Director
California Wind Energy Association
2560 Ninth Street, Suite 213A
Berkeley, CA 94710
Telephone: (310) 858-1174
E-mail: Dariush@shirconsultants.com

Nancy Rader
Executive Director
California Wind Energy Association
2560 Ninth Street, Suite 213A
Berkeley, CA 94710
Telephone: 510-845-5077 x1
E-mail: nrader@calwea.org

On behalf of the California Wind Energy Association

October 23, 2015

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)

COMMENTS OF THE CALIFORNIA WIND ENERGY ASSOCIATION ON THE USE OF EFFECTIVE LOAD CARRYING CAPABILITY FOR RENEWABLES PORTFOLIO STANDARD PROCUREMENT

I. INTRODUCTION

Pursuant to the October 9, 2015, ruling of Administrative Law Judge Anne Simon ("Ruling"), the California Wind Energy Association ("CalWEA") respectfully submits these comments on the questions posed in the Ruling on issues related to the use of the Effective Load Carrying Capability methodology for the Least-Cost Best-Fit ("LCBF") RPS bid evaluation process. These questions relate to the Ruling's attached *Energy Division Staff Paper on Criteria for ELCC in LCBF Analysis for RPS Procurement*, dated October 2, 2015 ("Staff Paper"). In these comments, we respond to the questions posed in the Ruling.

Generally, CalWEA strongly supports the direction of the Staff Paper to develop a uniform approach to the use of the Effective Load Carrying Capability ("ELCC") method for determining the capacity value of variable renewable resources. This evolution is consistent with the Commission's Decision 14-11-042 conditionally accepting 2014 RPS procurement plans, which required the utilities to report bid rankings based on the ELCC method as well as the "exceedance" approach currently used to determine net qualifying capacity ("NQC") in the Resource Adequacy ("RA") process. As noted in the Staff Paper, SB 2 1X directed the Commission to determine the ELCCs of wind and solar resources in order to establish the capacity value of wind and solar resources for RA purposes.

Eventually, the Commission should require the use of ELCC-based methodologies for all technologies, across all CPUC proceedings, so that it can compare and employ the capacity values of all technologies on the same basis. However, it is very important that we proceed with

employing the ELCC methodology now for variable renewable resources because these resources are expected to continue dominating renewable energy procurement (and procurement generally), and the reliability value of these resources can markedly change as their penetrations increase, as discussed below.[1]

II. RESPONSES TO QUESTIONS IN THE RULING

1. What are the potential advantages and disadvantages in using ELCC values for valuing capacity in LCBF evaluation of resources for future RPS solicitations for PG&E, SCE, and SDG&E?

The principal advantage of using ELCC-based capacity values, particularly for non-dispatchable renewable resources, is that they are a superior gauge of a resource's contribution to the reliable operation of the electric power system, as compared to simpler approaches.[2] This is due in significant part to the fact that the ELCC methodology actually evaluates the ability of a resource to serve load and, furthermore, is able to show the declining capacity value of the same resource with the increased penetration of other resources with the same output profile.[3] Therefore, as renewable resources will account for fully half of electric system energy needs by 2030, ELCC valuation is essential to the reliable operation of the grid. The North American Electric Reliability Corporation (NERC) advises that any simplified approaches "should be

[1] Moreover, as the use of ELCC is expanded to address conventional resources, it will be necessary to carefully consider how ELCC should be adapted to reflect the fact that natural gas resources are now routinely dispatched down by the system operator for economic reasons, given the availability of renewable resources whose fuels are free. In that regard, ELCC should reflect the *capability* of resources to meet demand when called upon.

[2] See, e.g., M. Milligan and K. Porter, "The Capacity Value of Wind in the United States: Methods and Implementation," *Electricity Journal*, Vol. 19, Issue 2, March 2006. pp 91-99. Elsevier, Inc. (related conference paper available at: http://www.nrel.gov/docs/fy05osti/38062.pdf; and S.H. Madaeni, R. Sioshansi and P. Denholm, "Comparison of Capacity Value Methods for Photovoltaics in the Western United States ," NREL (July 2012) (available at: http://www.nrel.gov/docs/fy12osti/54704.pdf).

[3] These studies include: A. Mills and R. Wiser, *Changes in the Economic Value of Variable Generation at High Penetration Levels: Pilot Case Study of California*, LBNL (June 2012) (available at: http://eetd.lbl.gov/EA/EMP); *Investigating a Higher Renewables Portfolio Standard in California*, Energy and Environmental Economics, Inc. (January 2014) (available at: http://www.ethree.com/public_projects/renewables_portfolio_standard.php); and A. Mills and R. Wiser, *Strategies for Mitigating the Reduction in Economic Value of Variable Generation with Increasing Penetration Levels*. LBNL. (March 2014) (available at: http://emp.lbl.gov/sites/all/files/lbnl-6590e.pdf).

benchmarked and calibrated to the rigorous ELCC calculations to ensure the validity of the approximation."[4]

This crucial benefit of ensuring grid reliability as our reliance on renewable energy grows far outweighs any potential disadvantages of using ELCC values. These disadvantages relate to the relative complexity of the ELCC approach and the work that will be required to develop and implement the ELCC methodology and to coordinate its consistent use across utilities and CPUC proceedings. At some later point, the Commission should investigate a simpler approach, benchmarked to the ELCC method that is developed.

Derived from the primary benefit of ensuring a reliable grid is the secondary, though important, benefit of obtaining accurate corresponding economic grid-reliability values for assignment to resources that are competing in the LCBF RPS bid evaluation process. Consumers should pay for the level of grid benefits that they will actually receive.

2. **In Section 2 of the Staff Paper, staff does not recommend using ELCC values from the Resource Adequacy (RA) proceeding for LCBF. Instead, staff recommends that PG&E, SCE, and SDG&E develop their own ELCC values. Do you agree or disagree with this recommendation? Please provide specific reasons in support of your position.**

The Commission should use the ELCC methodology in the RA proceeding for only one purpose: to establish accurate qualifying capacity ("QC") values for the resources whose QCs have already been calculated using the prior "exceedance" method. These resources should be assigned an average ELCC value that remains constant from that point forward.[5] ELCC-based RA values should be assigned in the LCBF process to procured resources on an incremental basis, which should hold as their QC values going forward. (See response to question 6a for further discussion.)

3. **Please comment on the proposed reliability standard in Section 4.1. Is the proposed standard adequate? Why or why not? Please describe and justify possible alternatives.**

[4] "Methods to Model and Calculate Capacity Contributions of Variable Generation for Resource Adequacy Planning." Princeton, NJ: North American Electric Reliability Corp. (March 2011), available at: http://www.nerc.com/files/ivgtf1-2.pdf.

[5] If there is a major change in the supply picture, e.g., the retirement of the Diablo Canyon power plant, these numbers could be updated using the same methodology.

Electricity system operators and regulators have developed the currently practiced reliability standards (e.g., one day in 10 years) through extensive studies that compare the cost of providing service with the value of unserved energy, and strike an appropriate balance between the two. This is an important matter, but is separate from how much credit a particular resource should receive towards meeting the reliability standard. Thus, CalWEA recommends that the Commission discuss this issue apart from the discussion of whether and how to use the ELCC methodology.

4. In Section 4.2, staff recommends the use of marginal ELCC value for RPS procurement. What are the advantages and disadvantages of this approach?

As noted above, numerous studies have shown that capacity values will diminish as non-dispatchable renewable resources with similar generation profiles are added to an electricity system. Hence, in order to avoid overestimating the contribution of a new resource to system reliability, it is important to evaluate its impact based on its *incremental* contribution to meeting system demand. Using an average value would mask the declining value of similar resources and defeat the purpose of using the ELCC method, which is to accurately estimate and value the reliability benefit of specific resources. Worse, as carried over into QC accreditation (see response to questions 2 and 6a), it would credit too much reliability value to resources with declining value, resulting in falling short of meeting the system reliability standard in reality (though not on paper), and thus threaten system reliability.

5. Section 5 includes specific topics for which the IOUs should develop common standardized methodologies. What are the benefits and drawbacks of standardizing the ELCC methodology across the three large IOUs? Please be specific.

CalWEA strongly supports the staff proposal to require the utilities to develop a single ELCC methodology for use by all three utilities in their RPS procurement, and to benchmark the methodology to the RPS Calculator's ELCC methodology used for planning purposes.[6] Ensuring the reliability of the CAISO-controlled electric power system, which each of the utilities operate within, is not something that should be left to the discretion of each utility and vary among the utilities. The reliability impact of a resource procured by one utility or another in meeting system demand does not depend on the purchasing utility but on the resource's ability

[6] As discussed below, there should be no need to benchmark to ELCC values used in the RA proceeding once ELCC values are established for existing and procured resources.

to contribute to the reliable operation of the CAISO grid. Instead, careful thought should go into the ELCC methodology, leading to a uniform, consensus approach for use by the utilities and by the Commission and its consultants in the Commission's planning efforts. The valuation techniques used in procurement must be aligned with those used for planning so that the system and transmission resources that stem from planning efforts will support the resources that are procured.

This does not mean that the RPS Calculator and the larger planning efforts would dictate or bound procurement decisions; it means only that resources would be valued in a consistent way, particularly with respect to the reliability of the overall portfolio. The portfolios derived from the RPS calculator should support "least-regrets" system-resource and transmission planning decisions that will support a wide array of possible procurement outcomes. Other aspects of the utilities' LCBF methodologies, as well as the attributes of the renewable energy projects that developers submit into the bidding process, will influence procurement outcomes. These outcomes would then be reflected in future iterations of the RPS Calculator's 50% RPS portfolios.

6. **Staff recommends that SCE, SDG&E, and PG&E submit a joint proposal on ELCC methodology, standardized inputs and assumptions, draft ELCC values, and a benchmarking report (Joint Proposal).**

    a. **Section 5 includes specific topics for which the IOUs should develop common standardized methodologies. What other topics could the IOUs address in their Joint Proposal? Why should these topics be addressed?**

CalWEA proposes two additional topics for consideration.

First, the Commission and the IOUs should address the fact that the ELCC-based QC values calculated for a specific resource will change over time, particularly as more resources with similar characteristics interconnect to the system. Constantly changing values could lead to an unmanageable process that would make it difficult, if not impossible, to properly account for the impact of a proposed resource on system reliability.

CalWEA proposes that, to ensure that a resource's ELCC-based QC, once established, does not change (or changes infrequently), the Commission should establish a definitive cutoff date for switching to ELCC-based methods for all CPUC proceedings (and for CAISO NQC determinations and postings applications). All resources whose QC values had been calculated using other methodologies prior to the cutoff date should receive an "average" ELCC-based QC value (by technology and location) in the RA proceeding using the same ELCC methodology.

All new resources (those whose QC values will not have been calculated by the cutoff date) should have their ELCC-based QC values calculated on an incremental basis. Resources that are procured should be "tagged" with those values such that these values are carried over for RA valuation purposes. Once the average QC values for existing resources and incremental QC values for procured resources are established, they can be used as the base values in the evaluation of additional incremental resources in later procurement cycles.

Second, as CalWEA has proposed in other comments before the Commission,[7] the Commission should direct the utilities to evaluate resources in the LCBF process in the context of a 50% RPS portfolio produced by the RPS Calculator.

Currently, the utilities' LCBF procurement processes do not evaluate a proposed project's expected impact on the 50% RPS portfolio that is anticipated in 2030. Rather, a project is evaluated on the basis of its net market value today, using market-value projections that do not take into account larger RPS portfolios that are expected in the future. As shown in recent studies,[8] however, the value of a proposed project can be dramatically affected by the other RPS projects in operation at higher RPS levels – in particular, it could suffer significant curtailment that is not captured with the NMV assessment, leading to potentially large inaccuracies in the relative reliability (ELCC) value of the offered project.

The LCBF process can take into account the anticipated 50% RPS portfolio by developing a basecase portfolio that incorporates the longer-term projected RPS goals and then reflecting, in the LCBF process, the expected impact of adding an RPS resource to that portfolio. The basecase portfolio would be that which is expected to meet the RPS net short of all retail sellers. To ensure consistency between procurement and planning, as discussed above, the forecasted RPS portfolio should be one produced by the RPS Calculator.[9]

---

[7] See: R.15-02-020, "Comments of the California Wind Energy Association on Draft 2015 RPS Procurement Plans and Related Questions in Assigned Commissioner's Ruling" (August 31, 2015) (available at: http://www.calwea.org/pdfs/publicFilings2015/CalWEA_Comments_2015_RPS_Plans_8_31_15.pdf); and R.15-02-020, "Comments of the California Wind Energy Association on the Staff Paper on Incorporating Land Use and Environmental Information Into the RPS Calculator and Developing Portfolios" (September 28, 2015) (available at: http://www.calwea.org/pdfs/publicFilings2015/15-02-020_RPS_CalWEA_Comments_Calc_PF_9_28_15.pdf).

[8] See *supra* note 2, and SCE's May 29, 2015, Report on Renewable Integration Cost Study, Table III-4, and slide 23 of the associated June 12, 2015, E3 presentation on Marginal Integration Cost Calculations.

[9] However, even the Calculator's methodology does not presently build an optimum renewables portfolio based on the target year and level, but rather adds renewables to the portfolio incrementally. Thus, concomitant changes are also required in the Calculator's methodology.

The substantial benefit of this approach is that resources would be evaluated based on the impact of the resource on the 50% portfolio, not just the market value of the marginal resource. Specifically, it would better capture the overgeneration impact and reliability (ELCC) value of proposed resources down the road. There is no indication, in procurement plan filings or otherwise, that the utilities consider longer-term influences on the reliability value of resources being procured today. These impacts are significant and warrant further investigation and discussion, in the context of both procurement and planning.

b. Section 6 includes common inputs and assumptions for the ELCC methodology. What other inputs and assumptions should the IOUs include in the Joint Proposal? Please identify the inputs and assumptions precisely. Use quantitative examples if appropriate.

CalWEA has no comment at this time.

c. Section 7 includes a proposal that the IOUs include a benchmarking report in the Joint Proposal that compares and contrasts ELCC values between and across IOU LCBF, RPS Calculator ELCC, and RA ELCC. How can the Commission make the proposed benchmarking exercise more effective?

As discussed in our response to question 5, CalWEA strongly supports the development of a single ELCC methodology for use in procurement decisions by all utilities and in calculating the RA value of existing resources. The objective of "benchmarking" this methodology against that used in the RPS Calculator should be to ensure the consistency of values produced by those methodologies for specific resources. The Staff Paper proposes to require the IOUs to "include a potential explanation and solution for addressing the variances." (Emphasis added.) However, the utilities must actually implement a solution that eliminates any significant variances.

7. Please suggest a process and the frequency for updating ELCC values for LCBF if ELCC values are adopted for LCBF. Also propose an equivalent process for acquiring and updating values that would serve the same function (capacity values), in the event that ELCC values are not adopted for LCBF.

See CalWEA's response to Question 6a. In addition, it will be important that procurements made in any given year are reflected in the subsequent year's ELCC analysis, since significant procurement by even one utility, let alone two or three utilities, could together substantially affect ELCC values. If the IOUs have not submitted Advice Letters for all such procurements in time for such analysis, each IOU could share with other IOUs, the Commission, and its consultants, generic descriptions of their planned procurements with their assigned QC

values. This practice will ensure the accuracy of incremental QC values calculated for future resources.

Finally, as mentioned above in response to question 1, it is possible to develop simplified methods to identify capacity values if they are benchmarked to rigorous ELCC-derived values. The Commission should explore such methods once the ELCC methodology has been established.

8. **Section 8 includes a proposal for next steps. Please describe any other steps should be taken in order to adopt final ELCC values for LCBF and explain why they are necessary or desirable.**

CalWEA believes that the benchmarking process, and potentially other issues discussed above, should be subject to public discussion in a workshop format.

Respectfully submitted,

Nancy Rader
Executive Director
California Wind Energy Association
2560 Ninth Street, Suite 213A
Berkeley, California 94710
Telephone: (510) 845-5077
Email: nrader@calwea.org

October 23, 2015

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 "Comments of the California Wind Energy Association on the Use of Effective Load Carrying Capability for Renewables Portfolio Standard Procurement" 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 October 23, 2015, at Berkeley, California.

_____

Nancy Rader
Executive Director, California Wind Energy Association