BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Reforms and Refinements, and Establish Forward Resource Adequacy Procurement Obligations.	Rulemaking 21-10-002

COMMENTS OF THE CALIFORNIA WIND ENERGY ASSOCIATION ON WORKSHOP REPORT ON FINAL PROPOSALS FROM REFORM TRACK PHASE 2 WORKSTREAMS 1-3

Dariush Shirmohammadi
Technical Director
California Wind Energy Association
1700 Shattuck Ave., #17
Berkeley, CA 94709
Telephone: (310) 858-1174
E-mail: Dariush@gridbright.com

Nancy Rader
Executive Director
California Wind Energy Association
1700 Shattuck Ave., #17
Berkeley CA 94709
Telephone: 510-845-5077 x1
E-mail: nrader@calwea.org

On behalf of the California Wind Energy Association

December 1, 2022

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Reforms and Refinements, and Establish Forward Resource Adequacy Procurement Obligations.	Rulemaking 21-10-002

COMMENTS OF THE CALIFORNIA WIND ENERGY ASSOCIATION ON WORKSHOP REPORT ON FINAL PROPOSALS FROM REFORM TRACK PHASE 2 WORKSTREAMS 1-3

I. INTRODUCTION AND SUMMARY

Pursuant to the Reform Track Phase 2 Schedule as set forth in Decision 22-06-050 and the September 2, 2022, Assigned Commissioner's Amended Scoping Memo and Ruling, the California Wind Energy Association ("CalWEA") respectfully submits these opening comments on the Workshop Report on Final Proposals from Reform Track Phase 2 Workstreams 1-3 ("Workshop Report").

CalWEA's comments focus on the various proposals for determining the qualifying capacity ("QC") of wind and solar resources under the new 24-hour resource adequacy ("RA") framework (Workshop Report section II.b.ii). In summary, CalWEA recommends that the Commission adopt the average historical production of wind and solar during the top 5 highest-load days in each month during the past 5 years ("top-5-load days") as the methodology for determining the QC values of these resources. This is the same sample that Pacific Gas & Electric Co. ("PG&E") and other parties use to calibrate the selection of their proposed exceedance values. Using just two exceedance values to represent 12 different months, as PG&E proposes, will inevitably result in under- or over-representing actual historical production during many, if not all, months. If the Commission nevertheless wishes to use exceedance values, it should adopt the monthly or quarterly values produced by Cal Advocates' more rigorous calibration approach, which produces exceedance values that more closely approximate the top-5-load days benchmark.

II. COMMENTS

A. Discussion of Proposed Approaches to Wind and Solar QC Counting & Rationale for Using Average Production on Top 5 Load Days

Cal Advocates provided a helpful diagram of the various proposals for wind and solar QC counting. (Workshop Report section II.b.ii.V, pp. 55-75.) Figure 27 depicted the exceedance-value proposals of ACP-CA, Cal Advocates, MRP, PG&E and SEIA, where the values are selected based on different reference points, and CalWEA and NRDC's proposals, which do not use exceedance values. Instead, the latter two proposals use different samplings of high load days to determine qualifying capacity values, although the proposed sampling methods differ.

In this section, CalWEA explains why, in the context of other approaches, our straightforward proposal to use average historical production values is simple, sufficiently accurate, and free of arbitrary influences. However, if the Commission is intent on adopting an exceedance methodology, it should adopt Cal Advocates' 12-season exceedance proposal (or alternatively its 4-season proposal), which conforms very closely to the same historical production values. We also explain why each alternate approach is less desirable.

1. Discussion of Approaches Based on Top 5 Load Days

CalWEA proposes that hourly wind and solar QCs be based directly on average historical production during the top 5 highest-load days in each month for the past 5 years or more, subject to the availability of reliable data – the same sample that Cal Advocates and PG&E use to calibrate the selection of their proposed exceedance values.[1] As CalWEA stated in its Workshop Report section (pp. 37-38), using historical average production from the top 5 load days captures the correlation between production and stressed grid conditions with a sufficiently robust data sample (25 datapoints for each hour in each month over a five-year dataset, plus 5 more datapoints for each additional year). This simple method is conceptually similar to the probabilistic ELCC method, which qualifies a resource's capacity only if it produces energy when the grid is most likely to experience electricity shortfalls but, unlike ELCC, is focused on production during specific hours during a month. The average historic production levels for each hour would be normalized using CAISO interconnection capacities to produce a percentage that

[1] Cal Advocates' approach can also be used to calibrate proposals that do not use the top 5 load days as the benchmark, though it did not present results for those proposals.

would be applied to each wind and solar resource to determine its qualifying capacity for that hour. The percentage values will naturally vary each hour of each month for each resource, producing 288 different QC percentages as required under the new 24-hour framework.

By contrast, after having calculated the QC values in the above manner, PG&E takes one more step and selects a single exceedance percentage value for each of two seasons to approximate average production during the top 5 load days, selecting 50% for "winter" and 70% for "summer." Dividing the year into two seasons is a subjective determination and using just two exceedance values to represent 12 different months will inevitably result in under- or over-representing actual historical production during many, if not all, months. Cal Advocates therefore developed a mathematically rigorous approach to develop exceedance values for 12 months of the year, which produces QC values that more closely approximate the benchmark historical average production values. Cal Advocates also used the same rigorous mathematical approach to develop exceedance values for 4 seasons, that can be expected to be less accurate than the 12 monthly exceedance numbers in approximating the benchmark historical average values. The results of both Cal Advocates approaches are demonstrated by the comparison figures in the Workshop Report, reproduced below.

Workshop Report Figure 32, reproduced below, shows that Cal Advocates' 4-season exceedance approach[2] closely approximates the August solar capacity factors produced by the top-5-load-days benchmark -- more closely than by PG&E's summer-season exceedance value and far more closely than the capacity factors produced by SEIA's proposed 50% exceedance level. (Similar results are presented for September in Figure 33.)

//

//

//

//

//

//

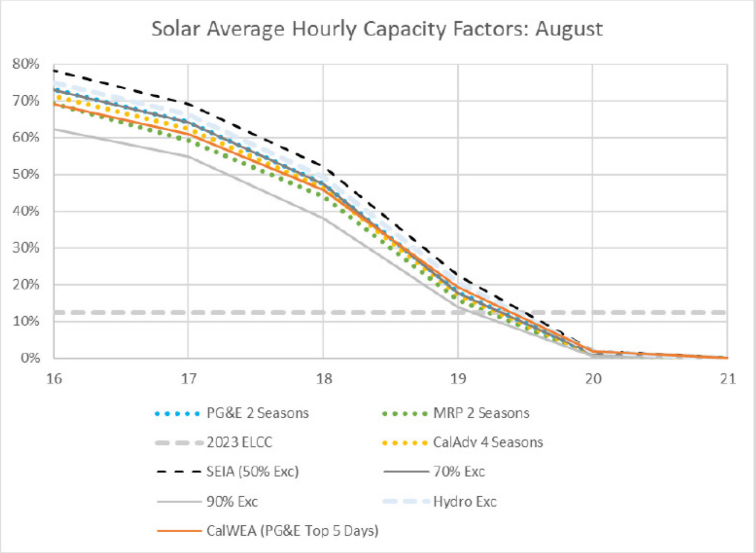
//

//

//

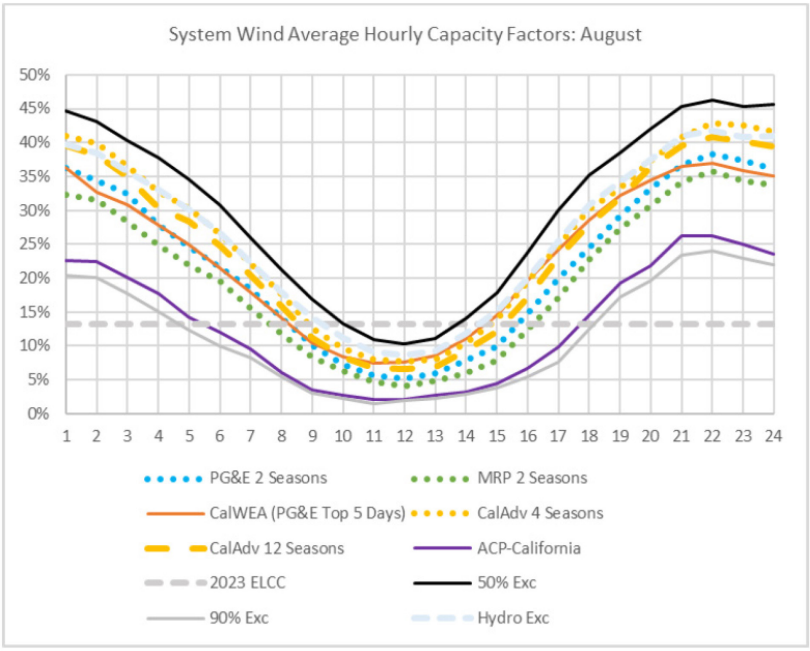
[2] Cal Advocates' 12-season approach is not presented.

Figure 32: Solar Average Hourly Capacity Factors: August



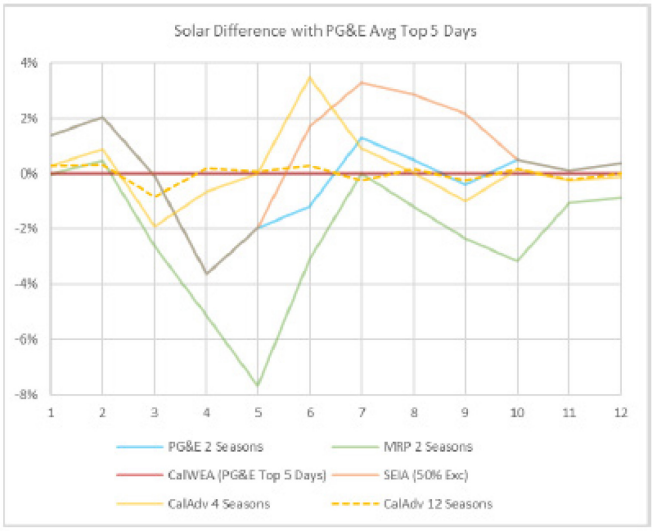
Results are similar for the August wind capacity factors produced by Cal Advocates' 4-season exceedance approach, which, as shown in Figure 43 of the Workshop Report, closely approximate the top-5-load-days benchmark capacity values during the evening peak hours -- more closely than the capacity factors produced by PG&E's summer-season exceedance value. Similar results are shown for September in Figure 44 of the Workshop Report, although, as expected, Cal Advocates' 12-season approach is the closest match.

Figure 43: System Wind Average Hourly Capacity Factors: August



Cal Advocates' comparison of the proposals in Workshop Report Figure 35 illustrates how well each exceedance proposal matches actual benchmark values (average historical production on the top 5 load days) on a monthly basis (shown as the 0% line, which also reflects CalWEA's proposal). The figure shows that, for solar, Cal Advocates' 12-season proposal is nearly a perfect match to historical values (particularly in summer months), while PG&E's 2-seasons proposal is a close match and other proposals are farther afield. The variances between the historical average values and the proposed exceedance values of PG&E illustrate the arbitrariness involved in the selection of exceedance levels. (MRP's proposal, which does not use the historical top 5 load days as the benchmark, and SEIA's proposal, which is pegged to ELCC values, are addressed below.)

Figure 35: Solar Difference with PG&E Avg Top 5 Days



Similarly for wind, Figure 46, below, shows that Cal Advocates' 12-season proposal is also nearly a perfect match to the historical production benchmark, with Cal Advocates' 4-season proposal next, and PG&E's values farther afield. (MRP's and ACP's proposals, which do not use the historical top 5 load days as the benchmark, are addressed below.)

//

//

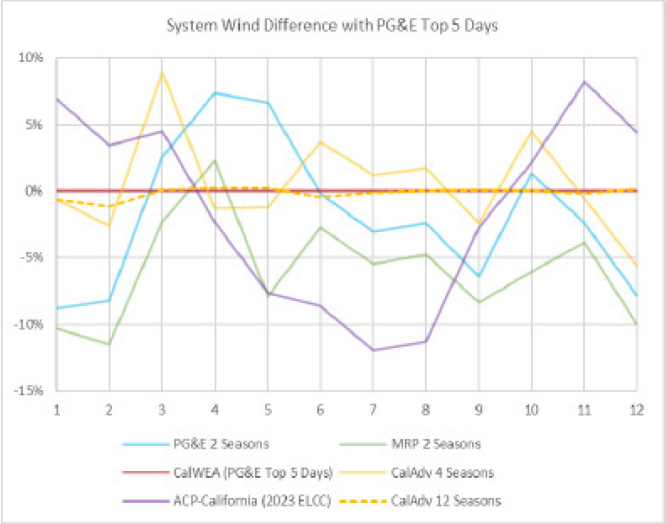
//

//

//

//

Figure 46: System Wind Difference with PG&E Top 5 Days



Among the proposals relying on historical production on the top 5 load days, CalWEA's proposal is to directly use the calculated benchmark values, without the second step of selecting an arbitrary exceedance level to emulate those benchmark numbers. Therefore, CalWEA recommends that the benchmark values that can be readily calculated using historical data, and updated as more historical data becomes available, be adopted -- avoiding the arbitrary and laborious second step However, if the Commission wishes to adopt an exceedance methodology, it should adopt Cal Advocates' more refined 12-season exceedance proposal (or alternatively its 4-season proposal) that results in a close match to historical production values.

2. Discussion of Other Approaches

NRDC's "Worst Day" proposal is conceptually similar to CalWEA's proposal, because it is based on historical production and does not add the unnecessary step of an exceedance level. But NRDC would consider historical production only on extreme high-load days, rather than the top 5 load days of each month (which may include relatively mild days) and would require more extensive modeling. NRDC's "LOLE-informed" approach would calculate historical performance based on the top 1% riskiest days in a loss-of-load-expectation study. These methodologies did not lend themselves to Cal Advocates' comparison analyses.

Conceptually, CalWEA has no objection to NRDC's proposals; however, the use of a high-load threshold can dramatically reduce the sample size, as some months may have only one hour, or no hours, that reach the selected threshold. This drawback is the reason that CalWEA abandoned its own effective net load reduction (ENLR) proposal, which also focused on the

highest-load hours, in favor of using PG&E's top-5-load days benchmark.[3] We agree with PG&E that using the top 5 load days (regardless of load level) for each month of the previous five (or more) years provides a sufficient dataset and would be much simpler to implement. However, if the Commission is concerned that the top 5 load-days' sample will include milder days, it could use production samples from fewer than 5 days for the lower load months.

MRP's proposal similarly aims to focus on only high-load days (days in which the peak falls within the top 5% of hours), which suffers from the same low-sample-size issue and, as a result, would generate inaccurate exceedance levels.

ACP-CA's proposal (for wind QC values only) to calibrate exceedance values to monthly ELCC values uses opaque mathematical techniques to generate varying hourly QC values using a benchmark (ELCC) that was never intended to be used to assess hourly effective capacity – the main reason for this entire exercise is to move away from fixed monthly ELCC numbers. As shown in Cal Advocates' Figures 43 and 46, above, ACP-CA's approach produces monthly values that are outliers compared to those produced by all other proposals and are far lower than production on the top 5 load days.

SEIA seems to justify its proposed 50% exceedance level (for solar QC values only) by stating that the resulting QC values reasonably replicate monthly 2023 ELCC values but, again, ELCC was never intended to reflect hourly values. SEIA's selection of a single annual value of 50% produces values that are modestly, but consistently, higher during the summer net peak period compared to other approaches (see Figures 32 and 35, above).

B. Responses to Questions from the Workshop Report

The Workshop Report posed four questions on the various proposals for resource counting for wind and solar resources (section II.b.ii, pp. 76-77). We respond specifically to these questions below.

1. Do parties support an exceedance-based approach or high-load day profile approach?

Per the discussion above, CalWEA strongly prefers a high-load-day profile approach to exceedance-based approaches where the exceedance level is based on crude and arbitrary

[3] See Working Group report at p. 38.

criteria. If an exceedance approach is adopted, it should be calibrated to historical production using Cal Advocates' mathematically rigorous approach.

2. **For the high-load day profile (which is used in the exceedance-based approaches as well), do parties have a preference for PG&E's top 5-day approach or MRP's top 5% approach?**

CalWEA prefers PG&E's top 5 day approach for direct use or for calibration purposes because it rests on a sufficiently large data set, whereas MRP's proposal, as well as NRDC's Worst-Day and LOLE approaches, use a high-load threshold that can dramatically reduce sample sizes, as several months could have only one hour, or even no hours, that reach the selected threshold, as we noted in discussing our proposed (but abandoned) ENLR approach.

3. **Do parties believe the wind and solar profiles need to be calibrated? If so, should they be calibrated to ELCC or within the PRM tool?**

No. Per the discussion above, the top-5-load-day values, or the values produced from NRDC's proposals, should be used directly. Adding an exceedance layer serves no purpose, complicates the process, and obscures the production profiles. In addition, exceedance numbers would need to be updated on regular basis, with stakeholder input, as benchmark values change.

CalWEA would support having Energy Division carry out NRDC's proposal to calculate PRMs for each of those proposed QC calculation methods that are not fundamentally flawed, either due to limited sample size or lack of mathematical or physical justification, to see which one produces stable PRMs as resource mixes change.

4. **Do parties support using actual data or modeled? Please include any input you have on: How many years of data should be used? How should it be updated? How often should it be updated? If using recorded, how should curtailments be treated? If you want to account for curtailments, do you have a proposal for how to do it given data limitations?**

CalWEA supports using actual CAISO data of sufficiently large sample size, normalized against interconnection capacity, whenever such data exists. CalWEA also proposes that calculated QC values be updated annually when sufficient additional actual data becomes available. Modeled data should only be used when sufficient actual data does not exist. Curtailed production should be eliminated from data samples as opposed to being "calculated." Among other reasons, curtailed production should be eliminated from data samples, because curtailed energy does not contribute to system reliability. As data is updated annually, any changes in curtailment will be captured.

Respectfully submitted,

/s/ Nancy Rader

Nancy Rader
Executive Director
California Wind Energy Association
1700 Shattuck Ave., #17
Berkeley CA 94709
Telephone: (510) 845-5077 x1
Email: nrader@calwea.org

On behalf of the California Wind Energy Association

December 1, 2022

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 Workshop Report on Final Proposals from Reform Track Phase 2 Workstreams 1-3" 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 December 1, 2022, at Berkeley, California.

/s/ *Nancy Rader*
Nancy Rader
Executive Director
California Wind Energy Association