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 (Filed October 7, 2021)

REPLY COMMENTS OF THE INDEPENDENT ENERGY PRODUCERS ASSOCIATION ON ENERGY DIVISION'S LOLE AND ELCC STUDY

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I. INTRODUCTION

The Independent Energy Producers Association (IEP) submits the following reply comments to the Energy Division Study for Proceeding R.21-10-002 on loss of load expectation (LOLE) and effective load carrying capability (ELCC) for the expected 2024 resource portfolios (2024 LOLE Study or "study"). Although IEP has some methodological concerns regarding the 2024 LOLE Study, IEP agrees with many parties that it is critical that the Commission adopt new ELCC values for wind and solar for the 2023 Resource Adequacy (RA) year, as directed in Decision (D.) 21-06-029.[1] The solar ELCC values currently in effect for the summer months range from 1.3 to 2.7x higher than the Scenario D results from the study based on a projected 2023 portfolio. The current values are woefully out of date, and load-serving entities' (LSEs') continued reliance on these values could threaten reliability in 2023.

Although IEP supports the use of ELCC for all variable and use-limited resources, numerous parties' concerns regarding the modeling of energy storage, in conjunction with the low share of storage and high ELCC in the modeled 2023 portfolio and the fact that the

[1] D.21-06-029, pp. 78-79.

Commission may adopt a new resource adequacy framework for 2024 that would not rely on ELCC-based resource counting, suggest that deferring the application of ELCC to energy storage and hybrids may be appropriate.[2] In addition to updating the ELCC values, the study demonstrates the pressing need for the Commission to adopt a higher planning reserve margin (PRM). A PRM in the range of 20-21% would be a reasonable measure to ensure reliability for next year.

IEP agrees with several parties that the Energy Division should conduct additional workshops and further refine the modeling before the Commission adopts final PRM and ELCC (depending on the RA framework) values for 2024. Below, IEP responds to other parties' comments on select questions from the 2024 LOLE Study.

II. Q1: WHICH SCENARIO IS MOST LIKELY TO BE REACHED IN 2024? WHICH SET OF TECHNOLOGY ELCC VALUES SHOULD BE ASSUMED?

The California Large Energy Consumers Association (CLECA) objected to the use of ELCC on the grounds that the ELCC value of a resource will shift over time as a consequence of other LSEs' procurement decisions due to saturation and interaction effects. To illustrate the implications of this phenomenon, CLECA observes that an LSE that has procured a certain amount of storage to meet its peak needs will fall out of compliance with its RA obligations as other LSEs procure storage, driving down the ELCC value of storage.[3] The changing RA value of variable energy resources (VERs) and use-limited resources under an average or delta method ELCC does complicate LSEs' compliance with RA. Although some parties may prefer the 24-hourly slice framework due to the expectation that resources' RA values will be more stable, a vintaged incremental ELCC framework would similarly provide for stability in RA values by

[2] 2024 LOLE Study, p. 27.

[3] CLECA, p. 18.

allowing LSEs to lock-in resources' values for some period of time. In effect, a 24-hourly slice framework will function similarly to a vintaged ELCC framework. The first block of storage that an LSE procures will have higher capacity value than subsequent blocks as each successive block must fill an increasingly wider section of the peak load curve. A key difference between the 24-hourly slice framework and ELCC-based frameworks is that saturation effects will depend on the amount of storage in each LSE's portfolio rather than the system as a whole. Thus, LSEs that aggressively procure storage and hybrid resources early will suffer from saturation effects sooner under a 24-hourly slice framework than they would under an ELCC-based framework.

III. Q3: IS AN LOLE STUDY APPROPRIATE TO CALCULATE RA OBLIGATIONS FOR: 1) A PEAK RA CAPACITY FRAMEWORK, 2) A SLICE OF DAY FRAMEWORK?

Only one party opposed the use of LOLE studies to establish the total RA obligation and PRM under both frameworks,[4] although many parties, including IEP, acknowledged that additional work will be necessary to translate the PRM for a 24-hourly slice framework.[5] Southern California Edison Company (SCE), which stated in its 24-hourly slice RA reform proposal that the PRM should be calculated using an LOLE study,[6] argues in comments that the Commission should not rely on the 2024 LOLE Study to set the PRM because it only produces a single monthly ELCC value for each resource type. SCE further states that the "flawed ELCC causes inconsistencies between the PRM and the resource counting methodology under slice-of-day, which is an incorrect PRM."[7] IEP disagrees with SCE's conclusion that the study's results

[4] Public Advocates Office, pp. 9-12.

[5] See comments of IEP, p. 3; California Community Choice Alliance (CalCCA), p. 8; California Independent System Operator (CAISO), p. 8; Middle River Power, LLC (MRP), pp. 4-8, A1-A2; Calpine Corporation (Calpine), p. 4; and Western Power Trading Forum (WPTF), pp. 2-4.

[6] Future of Resource Adequacy Working Group Report, p. 10.

[7] SCE, p. 4.

are not useful for setting the PRM, and that an updated study will be necessary to be compatible with the slice-of-day framework. Regardless of the compliance framework, setting an analytically-grounded PRM begins with an LOLE study. That said, IEP and other parties (see footnote 5) explained that, to be compatible for a 24-hourly slice framework, the PRM must be adjusted to re-weight resource counting values by the alternative exceedance or Pmax values that would presumably be used under the 24-hourly slice framework. MRP provided an example of how to recalibrate the PRM when non-ELCC based counting resources are used for some technologies.[8]

IV. Q6: HOW OFTEN SHOULD STAFF PERFORM LOLE STUDIES FOR RA AND SHOULD THE LOLE AND ELCC STUDIES BE PERFORMED SIMULTANEOUSLY?

The California Energy Storage Alliance (CESA) expressed some concern about the simultaneous production of LOLE and ELCC studies. The basis for CESA's concern is two-fold: first, that conducting the studies simultaneously does not allow parties to vet the assumptions in the model and second, that the process is circular since updated ELCC values are used to estimate the loss of load probability (LOLP). CESA further suggests that the Commission conduct LOLE studies using current resource counting conventions and then update ELCC values based on the findings.[9]

To the first point, IEP agrees that parties should have more opportunity to vet the modeling inputs and assumptions, but this is true regardless of whether the LOLE and ELCC studies are conducted at the same time. To the second point, it appears that CESA may not fully understand the LOLE and ELCC modeling process. Capacity values are outputs of, not inputs to,

[8] MRP, pp. 5-7.

[9] CESA, p. 12.

a production cost model. Rather than using a QC value per se, models contain generation profiles and dispatch algorithms as inputs that they use to stochastically model a portfolio's performance under a variety of conditions. Once a portfolio is calibrated to achieve a desired LOLE, ELCC-based capacity values may be derived from the model. If an RA compliance framework rests on non-ELCC based resource values, resulting PRM requirements must be converted to reflect the differences, as discussed above. For ELCC values to be accurate, they must be derived from the same portfolio and same assumptions used to achieve the target LOLE, as explained by CAISO and the Union of Concerned Scientists (UCS0.[10]

V. Q7: COMMENT ON THE REVISED ELCC METHODOLOGY

IEP notes that many parties requested more information on the revised delta method Energy Division developed for this study.[11] IEP agrees that an additional workshop delving into more detail on the modified delta method and modeling assumptions would be valuable.

VI. Q8: SHOULD STORAGE AND HYBRID RESOURCES BE VALUED USING THE ELCC METHODOLOGY?

Many parties indicated that if the Commission ultimately adopts the 24-hourly slice framework, use of ELCC for variable and use-limited resources will not be feasible because hourly generation or discharge profiles will be necessary to demonstrate compliance. Under this framework, parties have largely agreed that continued of Pmax, subject to total discharge capacity, is reasonable. Conversely, if the Commission adopts the two-slice framework, continued use of Pmax will be untenable as the storage resource counting methodology will need to account for its use limits.

[10] CAISO, p. 7; UCS, p. 3.

[11] See for example, PG&E, pp. 6-7; CAISO, p. 8; and UCS, p. 4.

CESA broadly opposes the use of ELCC for storage stating that "ELCC is, in essence a metric that seeks to measure the coincidence between the expected output of an asset (or a class of assets) and the hours with loss-of-load probability ("LOLP"). Any measure of coincidence must assume a degree of independence between the two events it seeks to evaluate…."[12] CESA asserts that ELCC works for VER because VER output is non-dispatchable and independent of factors that drive LOLP but that CESA "is not convinced ELCC is a methodologically sound counting metric for dispatchable resources, as they can maximize the degree of overlap between their output and LOLP…."[13]

IEP disagrees with CESA's characterization of ELCC, which is a suitable methodology for all variable *and* use-limited resources, including demand response and use-limited thermal resources. The white paper that introduced the delta method states, "Increasingly, the industry has turned to 'effective load carrying capability' ("ELCC") as the preferred method for measuring the resource adequacy contribution of intermittent or energy-limited resources."[14] The paper then discusses at length the application of ELCC to solar, wind, and energy storage. At no point in the paper do the authors note any methodological reason that ELCC should not apply to dispatchable resources, and the paper includes no reference to the need to assume independence between an energy resource's output and the hours with LOLP. ELCC properly captures the capacity value differences between dispatchable use-limited resources and VERs since the

[12] CESA, p. 8.

[13] CESA, pp. 8-9. American Clean Power – California opposes ELCC on similar grounds at p. 5

[14] N. Schlag, Z. Ming, A. Olson, L. Alagappan, B. Carron, K. Steinberger, and H. Jiang, "Capacity and Reliability Planning in the Era of Decarbonization: Practical Application of Effective Load Carrying Capability in Resource Adequacy," Energy and Environmental Economics, Inc., Aug. 2020, p. 1.

models will tend to attribute a much higher ELCC value per MW of nameplate capacity to dispatchable use-limited resources than to VERs.

CESA further asserts that "ELCC ignores that energy storage assets can maximize the degree of overlap between their output and LOLP and implies that the [model] is better at assessing economic signals and incentives than storage operators…." [15] Production cost models include algorithms that govern the charging and discharging behavior of storage resources in the model. While the algorithms may reflect real-world storage operations with varying degrees of accuracy, it is incorrect to say that ELCC "ignores" revenue maximizing strategies of storage operators. IEP strongly agrees with CESA and REV Renewables, LLC that parties should have an opportunity to vet the assumptions in the model.[16] IEP also supports the requests of CESA, REV Renewables, LLC and the Union of Concerned Scientists (UCS) to calculate ELCC values for different storage discharge durations.[17]

IEP takes issue with CESA's objection to the use of ELCC for storage on the grounds that it harms the financeability of storage projects. While IEP understands that contracting may be complicated by regulatory uncertainty until the Commission chooses the overall RA framework in Track 2 of this proceeding, it is more important to accurately assess the reliability contribution of resources than to facilitate contracting if the principal goal is to avoid loss of load events. If financeability is prioritized over accurate resource counting, LSEs may finance projects but still have an insufficient amount of effective capacity to avoid load shedding. Rather than sacrificing accurate resource counting for the sake of financeability, contracting practices

[15] CESA, p. 12.

[16] REV Renewables, LLC, p. 3.

[17] CESA, pp. 12-14; UCS, pp. 5-6.

must adapt to the fact that saturation will affect the RA value of resources over time (unless they are vintaged).

The Alliance for Retail Energy Markets (AReM), pointed out a discrepancy in the modeling results that merits a deeper dive into the modeling assumptions. As AReM observed, the separate application of ELCC adjustment factors to a given nameplate capacity of solar and storage produces a slightly *lower* amount of effective capacity than applying the ELCC adjustment factor for hybrid resources to the same amount of solar and storage in a hybrid configuration.[18] This result in counterintuitive because one would expect to find similar or lower ELCC values for hybrid resources due assumed charging restrictions. This observation bolsters the need for more thorough vetting of modeling assumptions by the parties.

VII. SHOULD THE PRM BE STATIC ACROSS THE YEAR OR VARY BY MONTH/SEASON? HOW SHOULD PRM AND ELCC VALUES BE ALLOCATED ACROSS MONTHS?

While IEP agreed in comments that "[a]s long as the RA compliance obligation is monthly, the ELCC values must also be calculated on a monthly basis…",[19] IEP shares CAISO's concerns about the Commission deviating from industry-standard annual LOLE analysis with one PRM and one set of ELCC values.[20] The portfolios that Energy Division had to construct to force SERVM to produce a positive LOLE in each month are not realistic, and the high shares of VERs and use-limited resources used in the modeling may have inappropriately reduced the ELCC values of some resources.

[18] AReM, p. 7.

[19] IEP, p. 6.

[20] CAISO, pp. 3, 4, and 9.

VIII. Q10: SHOULD FORCED OUTAGE RATES BE INCLUDED IN THERMAL RESOURCES' QC VALUES? IF UCAP IS USED, SHOULD IT ALSO INCLUDE AMBIENT DERATES?

Like IEP, CLECA also emphasized that before the Commission adopts UCAP for thermal resources, the methodology must address the lag that CAISO's proposal would create in realizing the value of investments to improve availability.[21] Developing a UCAP approach that addresses this concern will take some time. If the Commission concludes that it will not be feasible to sufficiently vet an alternative UCAP approach before it needs to issue a decision on the RA reform framework, IEP would support CLECA's suggestion that the RA counting convention incorporate ambient derates in the near term while deferring consideration of a full UCAP methodology to a Phase 2 of the Reform Track.[22]

IX. CONCLUSIONS

The 2024 LOLE Study results reveal both that the current QC values of VERs, particularly standalone solar, are too high and that the PRM is too low. IEP urges the Commission to adopt updated values for the 2023 RA year expeditiously. The Commission should also prioritize further vetting of the modeling methodologies and assumptions before finalizing QC values for 2024.

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[21] CLECA, p. 21.

[22] CLECA, p. 21.