

**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 THE FUTURE OF RA WORKING GROUP REPORT**

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I. INTRODUCTION

The Independent Energy Producers Association (IEP) hereby responds to the opening comments on the Future of Resource Adequacy Working Group Report (FRAWG Report) and ALJ Chiv’s March 4, 2022 ruling (Ruling) that parties submitted on March 24, 2022. IEP wishes to highlight in particular the comments of two parties. First, the California Environmental Justice Alliance and Union of Concerned Scientists (CEJA/UCS) discourage the Commission from adopting either the two-slice or 24-slice framework. Between the two, CEJA/UCS seem to prefer the two-slice approach, describing the 24-slice proposal as “analytically ungrounded,” using exceedance-based counting rules that are “inadequate substitutes” for effective load carrying capability (ELCC), which is “the most analytically rigorous methodology available.”¹ CEJA/UCS further elaborate on the complexities of translating a planning reserve margin (PRM) derived from a loss of load expectation (LOLE) analysis to the 24-slice framework and calibrating resource counting rules accordingly.²

¹ CEJA/UCS, pp. 6-7.

² CEJA/UCS, p. 6.

Ultimately, CEJA/UCS do not support the two-slice framework either, since the net peak resource assessment is not necessary to ensure reliability. As CEJA/UCS explain, LOLE studies examine reliability in all hours, including net peak. Aside from regularly updating the PRM and ELCC values “additional reliability requirements should not be necessary.”³

Second, San Diego Gas & Electric Company (SDG&E) encourages the Commission to consider deferring action on the resource adequacy (RA) framework and instead focus on updating the planning reserve margin and ELCC values.⁴ As SDG&E explains, the release of the “long-awaited” LOLE and ELCC study, makes “no change” a viable third option because “a new LOLE analysis informing an updated PRM and ELCC values effectively achieves the desired 0.1 LOLE” and this is “the most accurate way of ensuring 0.1 LOLE.”⁵ Although SDG&E believes that the two-slice option is “likely the best option in the long run,” SDG&E urges the Commission to update the PRM and ELCC values on as an interim solution while it conducts a rigorous analysis of the likely portfolios that all three scenarios would incentivize to meet the 0.1 LOLE standard so that the Commission can compare the cost-effectiveness of all three options.

IEP fears that upending the entire RA construct may be an overreaction to the August 2020 blackouts. It would be informative to model how the system would have performed in August 2020 had updated PRM and ELCC values been in effect and to model how a status quo framework would perform in the future with respect to reliability and cost compared to the two-slice and 24-slice alternatives. If the No Change option achieves a 0.1 LOLE with a portfolio comparable to, or more cost-effective than, the likely portfolios under the other options,

³ CEJA/UCS, p. 12.

⁴ SDG&E, p. 1.

⁵ SDG&E, p. 3.

imposition of either the two-slice or 24-slice frameworks will impose considerable additional compliance and administrative costs with no offsetting benefit. If the Commission does not conduct a comparative analysis, it cannot ascertain with confidence whether any change to the basic RA framework is warranted.

Below, IEP respond to various parties' comments regarding the purported advantages of the 24-slice framework and shortcomings of the two-slice framework.

II. RESPONSES TO SPECIFIC TOPICS RAISED BY OTHER PARTIES

A. The Two-Slice Framework Does Not Only Evaluate Reliability at Two Points in Time

The Solar Energy Industries Association and Large-scale Solar Association (SEIA/LSA) state that one disadvantage to the two-slice framework is that it “only measures two points in time over the course of a month....”⁶ This characterization of the two-slice framework belies a misunderstanding of the use of LOLE and ELCC. LOLE analysis assesses the reliability of a portfolio of resources over *all hours* during the time period modeled (month, season, or year).⁷ In other words, the first “slice” in the two-slice framework is not actually a slice at all; it is an assessment of total system reliability. Under Gridwell Consulting’s (Gridwell’s) proposal, the coincident gross peak is only used to allocate procurement responsibility (in proportion to load serving entities’ (LSEs’) contributions to the gross peak) of the total effective capacity needed to meet the 0.1 LOLE target.⁸ As IEP noted in opening comments, the choice of gross peak load is somewhat arbitrary.⁹ The Commission could alternatively allocate the total portfolio requirement

⁶ SEIA/LSA, p. 6.

⁷ See FRAWG Report, pp. 35 and 75 and IEP, p. 10, fn 21.

⁸ FRAWG Report, p. 33.

⁹ IEP, p. 10, fn 21.

in proportion to LSEs' contributions to net peak demand, but in neither case does the selection of the hour used to allocate procurement responsibility affect the total effective capacity requirement.

B. The Net Peak Reliability Check Would Appropriately Adjust Expected Output from Variable Resources

Pacific Gas and Electric Company (PG&E) criticizes the two-slice framework for failing to ensure reliability due to the inadequacy of the net peak assessment, but PG&E inaccurately characterizes the net peak assessment as using the same gross peak values for all resources but solar.¹⁰ This is not how the proponents of the two-slice framework describe their proposal. Gridwell states that the output for both solar and wind should be adjusted to reflect output during the net peak assessment hour.¹¹ Similarly, Vistra Corp. (Vistra) describes the capacity adjustment process as applying to both wind and solar using generation shapes from the California Energy Commission or California Independent System Operator (CAISO).¹²

Non-variable resources do not require a capacity adjustment, although an upward revision *may* be appropriate for daily use-limited resources. The capacity value of use-unlimited resources does not need to be adjusted since their performance during tight supply conditions is already reflected in the compliance framework, either in the PRM under the status quo or assigned to specific facilities under the unforced capacity (UCAP) methodology. A remaining question is whether the net peak assessment should use the ELCC value for storage or an adjusted value. An upward adjustment might be reasonable because storage would be expected to discharge as much as possible during the net peak hour on the worst load day. If the gross load

¹⁰ PG&E, p. 6.

¹¹ FRAWG Report, p. 34.

¹² FRAWG Report, p. 79.

ELCC value is used, as PG&E interprets the two-slice proposal, this would constitute a conservative assumption that reduces the qualifying capacity storage can show in the net peak hour, requiring either more storage or other resources to meet the net peak obligation. Parties and staff should further discuss the appropriate resource counting of storage and hybrid resources for the net peak assessment if the Commission adopts the two-slice approach.

C. The Two-Slice Approach Can Ensure Sufficient Energy for Charging Storage

Several parties criticize the two-slice framework for failing to ensure that the RA portfolio will have adequate supply to meet demand and charge storage resources.¹³ The failure of the framework to account for adequate energy for charging would be troubling... if it were true. But it's not. The LOLE analysis of the portfolio models the total output of all sources of generation and the charging and discharging of storage assets under a range of load and renewable output scenarios. If a given portfolio results in insufficient energy available to *fully* charge storage, and if the inability to fully charge storage caused the LOLE to exceed 0.1, then the RA effective capacity requirement would be increased until LOLE reached 0.1. It is simply not necessary to force LSEs to show sufficiency in every hour of the day to ensure that LSEs' RA portfolios achieve the target level of reliability. If the Commission is persuaded that energy sufficiency of the RA fleet is a genuine concern, a simpler daily energy sufficiency check appended to the two-slice (or better yet, one-slice) framework would be a better solution than transitioning to a wholly different 24-slice framework, which entails its own set of shortcomings.

¹³ California Independent System Operator (CAISO), p. 5; California Large Energy Consumers Association, p. 3; Natural Resources Defense Council, p.2; and Southern California Edison Company, p. 2.

D. The 24-Slice Framework Is Not Environmentally Superior to Two-Slice

Several parties assert, with no analytical support, that the 24-slice framework will better advance the Commission’s environmental goals than the two-slice framework. PG&E states that the two-slice framework harms environmental goals by creating uncertainty regarding the capacity values of variable energy and storage resources.¹⁴ California Community Choice Association states it prefers the 24-slice model because it “more appropriately” accounts for the reliability contributions of renewable energy and storage.¹⁵ Similarly, CESA states that the two-slice approach doesn’t advance environmental goals because it doesn’t improve on the current representation of variable energy resources toward reliability.¹⁶

IEP frankly does not understand these arguments. PG&E and CalCCA supported the use of LOLE studies to establish the PRM.¹⁷ (CESA took no position on this question.) Since ELCC values are derived from the same production cost model used to verify that a portfolio achieves the desired LOLE, the ELCC values reveal how different resources performed in the context of the load and supply conditions and the portfolio that were used to set the PRM. Other resource counting and compliance frameworks may provide more certainty for LSEs, but it’s hard to understand how they could be more appropriate, or an improvement on, the ELCC values derived from the same model used to establish the total portfolio requirement.

Regardless, the procurement of additional renewable energy and storage is driven by the Renewable Portfolio Standard RPS and Integrated Resources Planning (IRP) programs, not RA.

¹⁴ PG&E, p. 6.

¹⁵ CalCCA, p. 3.

¹⁶ CESA, p. 4.

¹⁷ PG&E comments on the LOLE/ELCC study, p. 4; CalCCA comments on the LOLE/ELCC study, p. 8.

Additionally, the Legislature has established an overall cap on greenhouse gas emissions through 2030 via the Cap and Trade program, and the Commission established a sectoral greenhouse gas target in IRP. Because these other exogenous forces have a far greater impact on the environmental performance of California's electric supply than RA, IEP does not believe that either framework will produce an environmental outcome that differs materially from the other. Nonetheless, it's interesting to observe that the Joint Community Choice Aggregators (CCAs) and CEJA/UCS both believe that the 24-slice model favors the retention of gas-fired resources due to the challenge of demonstrating hourly resource adequacy at night.¹⁸

E. Statute Requires the Use of ELCC for Wind and Solar Resources

Middle River Power LLC (MRP) noted that Senate Bill (SB) 2-X1 (Simitian, 2011), which is codified in Sec. 399.26 of the Public Utilities Code, requires the Commission to use ELCC for wind and solar.¹⁹ According to MRP, some parties argued during the course of the workshops that the wording of the statute allows for the use of other methodologies but describes this interpretation as a “tortured reading of the plain language of this legislation...”²⁰ IEP agrees with MRP's assessment, and the legislative history of the bill provides further support. The Assembly Utilities and Commerce Committee's analysis of the bill describes how in 2009 the Commission “established the wind and solar load carrying capacity for the peak demand hours of the day... [using] production output data for January to determine a capacity value for January, February data for February capacity value, etc.”²¹ The decision the bill analysis refers to is

¹⁸ Joint CCAs, p. 5; CEJA/UCS, p. 2.

¹⁹ MRP, p. 10, fn 12.

²⁰ MRP, p. 10, fn 12.

²¹ Assembly Utilities and Commerce Committee analysis of SB 2-X1, March 2, 2011, p. 6.
https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201120121SB2#

D.09-06-028, which adopted an 70% exceedance methodology to determine the qualifying capacity values of wind and solar.²² The bill analysis indicates that adoption of the SB 2-X1 “will likely require the CPUC to undertake a new proceeding to determine the contribution of wind and solar energy resources during peak demand hours.”²³ Thus, the Legislature understood at the time that the bill would require the Commission to use a different resource counting methodology than the exceedance-based methodology the Commission had adopted two years prior.

Moreover, the term “effective load carrying capacity” is a well-known term of art in the electric utility industry. “Effective load carrying capability” may be more widely used, but “effective load carrying capacity” is also found in the literature, for example in the Energy Division’s 2020 RA report.²⁴ Clearly, the Legislature plainly intended that the Commission must use ELCC as the resource counting methodology for the RA program.

F. The Two-Slice Framework with ELCC Accounting Is More Flexible and Adaptable than a 24-Slice Framework that Relies on Exceedance and Pmax Resource Counting

Aside from being statutorily required for wind and solar, ELCC surpasses exceedance and Pmax as a resource counting methodology for all variable and use-limited resources. Several parties, including IEP, pointed out that the 24-hour load and generation profile framework cannot, without some additional resource sufficiency validation process, address dunkelflaute or other multiday reliability events.²⁵ Similarly, developers of long-duration storage technologies explain that a 24-slice framework cannot accommodate the expected charging and discharging

²² D.09-06-028, Appendix C.

²³ Assembly Utilities and Commerce Committee analysis of SB 2-X1, March 2, 2011, p. 6.

²⁴ CPUC. 2020 Resource Adequacy Report, p. 1. See also SEIA/LSA, p. 6.

²⁵ IEP, p. 3; Joint CCAs, pp. 2-3; MRP, p. 12; Calpine Corporation, p. 5;

behavior of storage assets with durations greater than 10-12 hours, which may charge days or even weeks in advance of when they're needed.²⁶ In contrast, ELCC inherently evaluates reliability events related to multiday conditions, can accommodate storage resources of any duration, and will appropriately attribute higher reliability value to longer-duration storage assets as short-duration storage saturates the grid.

SEIA/LSA criticize the two-slice framework for relying on “complex and opaque” ELCC analysis, yet SEIA/LSA (with Vote Solar) had proposed benchmarking exceedance value to ELCC in the FRAWG Report.²⁷ Obviously, this resource counting approach would necessitate performing ELCC analysis of solar on a regular basis. Although, SEIA/LSA/Vote Solar don't explicitly state whether “benchmarking” necessarily entails capping the exceedance-based capacity values during the net peak hours at the ELCC value, that appears to be the implication. Benchmarking the exceedance-based value to ELCC demonstrates considerable confidence in ELCC as a sound methodology. However, SEIA/LSA's support for their ELCC benchmarking proposal seems to be faltering since the Energy Division's recent LOLE study attributed much lower qualifying capacity values to solar than the older ELCC values SEIA/LSA/Vote Solar used in its analysis.²⁸ (Since SEIA/LSA/Vote Solar had argued that benchmarking the exceedance-based values to ELCC would satisfy the Sec. 399.26(d) requirements (an argument IEP rejects), IEP fails to see how a non-ELCC benchmarked counting method would pass legal muster.)²⁹

PG&E and CESA level similar criticisms of ELCC related to the shifting qualifying capacity values that variable and use-limited resources are subjected to under this

²⁶ Form Energy, Inc., pp 2-3.

²⁷ FRAWG Report, pp. 42-43.

²⁸ SEIA/LSA, p. 8.

²⁹ FRAWG Report, p. 42, fn 1.

methodology.³⁰ IEP offers two responses to these critiques. First, the changing qualifying capacity values of variable and use-limited resources send accurate signals to LSEs regarding the resources the *system* needs to maintain reliability. We may not like the fact that the capacity value of the storage and variable resources declines as they saturate the grid, but it would be a disservice to the reliability of the grid to pretend otherwise. Second, IEP acknowledges that the 24-slice framework provides more certainty to LSEs regarding the capacity value of resources over time. However, the 24-slice framework does not shield LSEs from the saturation repercussions of their procurement choices. The first tranche of storage of a given duration that an LSE procures will fill in a taller horizontal section (i.e., have greater capacity value) of its load curve than subsequent tranches, which must be spread across increasingly wider cross-sections of the load curve.³¹

The crucial difference between the declining values of variable and use-limited resources under each framework is that more environmentally aggressive LSEs will suffer from declining implicit capacity values sooner as they saturate their own *individual* load curves at a faster rate than the system-wide load curve.³² The 24-slice/exceedance based approach may provide more certainty to LSEs, but at a cost to early movers by failing to appropriately value resources based on system-level supply diversity. Despite Southern California Edison's (SCE's) assertion to the contrary,³³ individual LSE resource optimization is a bug, not a feature, of the 24-slice framework.

³⁰ PG&E, p. 6; CESA, p. 6.

³¹ This is similar to a vintaged incremental ELCC resource counting approach.

³² IEP also made this point in reply comments on the LOLE/ELCC study, pp. 2-3.

³³ SCE, p. 2.

G. The RA Fleet Modeled for LOLE and ELCC Can Use Conservative Assumptions

CAISO expresses a concern that the shown RA fleet may differ significantly from the portfolio used to derive RA values and based on this concern, asserts that validating the RA fleet on capacity alone may not ensure energy sufficiency.³⁴ IEP agrees that this is a theoretical concern when there is excess capacity from which LSEs, collectively, could choose materially different portfolios. However, IEP believes that this will not pose much concern in practice for a couple of reasons. First, a large share of the RA fleet is under long-term contract because it consists of solar, wind, storage, and hybrid assets that are still under (or will be under once completed) their original power purchase agreements. The assets not under long term contract consist mostly of in-state gas-fired generators and imports. Consequently, the pool of discretionary resources that LSEs can choose amongst is somewhat homogenous.

Second, to the extent some variable and use-limited resources are not under long term contract, the Energy Division modelers can conservatively assume that the discretionary RA resources used for modeling purposes includes a large, possibly disproportionate, share of non-firm resources. Those assumptions, though, will tend to drive down the qualifying capacity of variable and use-limited resources since they will more heavily saturate the RA fleet. Overly conservative portfolio assumptions will increase costs to customers by undervaluing the non-firm resources under long-term contracts.³⁵ This is an important point, which should be discussed by parties before Energy Division finalizes the recent LOLE analysis.

³⁴ CAISO, p. 5.

³⁵ Various parties raised a similar point regarding the portfolio adjustments in the LOLE/ELCC study.

III. CONCLUSIONS

IEP appreciates the Commission's consideration of these comments. Our primary recommendation is to give serious consideration to the proposal from SDG&E to defer a final decision on RA structural reform in order to focus the Commission's and parties' resources on further refining and finalizing the LOLE study and associated ELCC values. More analysis of the three options before the Commission is necessary before the Commission can make such a consequential decision on an informed basis.

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