

**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  
(October 7, 2021)

**PHASE 2 PROPOSALS OF THE  
CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION**

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## EXECUTIVE SUMMARY

The California Independent System Operator Corporation (CAISO) presents two independent proposals pursuant to the Phase 2 Schedule for All Proposals (excluding FCR and LCR Issues) in the *Assigned Commissioner's Scoping Memo and Ruling* (Ruling) issued on December 2, 2021.

**Proposal 1:** The Commission should adopt an Interim Load Impact Profile (LIP) Informed Effective Load Carrying Capability (ELCC) Qualifying Capacity Methodology for Demand Response Resources for Resource Adequacy Years 2023 and 2024.

**Proposal 2:** The Commission Should Update the Planning Reserve Margin Based on a Loss of Load Expectation Study, Which Includes Updated Forced Outage Rates.

The CAISO appreciates the opportunity to submit its proposals in resource adequacy Implementation Track Phase 2 and looks forward to working collaboratively with the Commission to develop these proposals and improve the resource adequacy program.

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**PHASE 2 PROPOSALS OF THE  
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**I. Introduction**

The California Independent System Operator Corporation (CAISO) provides its Phase 2 proposals pursuant to the December 2, 2021 *Assigned Commissioner’s Scoping Memo and Ruling* (Ruling).

**II. Discussion**

**A. Proposal 1: The Commission Should Adopt an Interim Load Impact Profile (LIP) Informed Effective Load Carrying Capability (ELCC) Qualifying Capacity Methodology for Demand Response Resources for Resource Adequacy Years 2023 and 2024.**

In Decision (D.) 21-06-029, the Commission directed the California Energy Commission (CEC) to initiate a stakeholder working group in the 2021 Integrated Energy Policy Report (IEPR) process “to develop recommendations for a comprehensive and consistent measurement and verification (M&V) strategy, including a new qualifying capacity (QC) counting methodology for [demand response] resources addressing ex post and ex ante load impacts for implementation as early as practicable.”<sup>1</sup> In Rulemaking (R.) 19-11-009, the CAISO proposed to require all demand response program capacity, including Investor Owned Utility (IOU) demand response program capacity, to be shown on supply plans and treated like third-party demand

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<sup>1</sup> Commission, *Decision Adopting Local Capacity Obligations for 2022-2024, Flexible Capacity Obligations for 2022, and Refinements to the Resource Adequacy Program*, R.19-11-009, June 24, 2021, p. 77.

response programs and other RA resource types.<sup>2</sup> The CAISO also proposed adopting an Effective Load Carrying Capability (ELCC)-based QC methodology to “exempt demand response from [the Resource Adequacy Availability Incentive Mechanism (RAAIM)] and eliminate the obligation for demand response to bid a fixed capacity amount.”<sup>3</sup> The Commission declined to adopt the CAISO’s proposals in D.21-06-029, but noted “once the Commission confirms that CAISO permits [demand response] resources to bid variably in its markets and implements a [Federal Energy Regulatory Commission (FERC)] approved RAAIM penalty exemption for [demand response] resources, each IOU will be directed to move its [demand response] portfolios onto CAISO Supply Plans.”<sup>4</sup>

The CAISO continues to recommend requiring all resources counting for resource adequacy, including demand response, to be shown on supply plans. Consistent with this recommendation and D.21.06-029, the CAISO is willing to pursue a RAAIM exemption for demand response resources with QC values established under a methodology that 1) assesses the resource’s contribution to reliability across all hours of the year or seasons as a variable-output resource, and 2) assesses the resource’s interactive effects with other similarly-situated resources.<sup>5</sup> To meet these requirements, the CAISO recommends the Commission to adopt a LIP Profile Informed ELCC methodology that will more accurately reflect demand response resource reliability contributions. The Commission’s current LIP-based QC methodology does not accurately reflect demand response reliability contributions because it fails to consider use-limitations, limited energy, or the variable nature of most demand response programs in establishing QC values. The LIP process merely evaluates demand response resource load reduction capability. However, capability is not the same as a qualifying capacity value, which is the reliability benefit a resource provides to the grid. Like wind and solar, the load drop that demand response can produce (*i.e.*, capability) is less than its reliability benefit due to its variable and use-limited nature.

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<sup>2</sup> CAISO, Track 4 Proposals, R.19-11-009, January 28, 2021, pp. 2-6.

<sup>3</sup> CAISO, Track 3B.1 Proposals, R.19-11-009, January 28, 2021, pp. 20-22.

<sup>4</sup> Commission Decision 21-06-029, R.19-11-009, June 24, 2021, p. 31.

<sup>5</sup> CAISO, Board Memo - *Decision on RAAIM Exemption Option for Variable-Output Demand Response*, July 7, 2021: <http://www.aiso.com/Documents/Decision-RAAIM-Exemption-Option-Variable-Demand-Response-Resources-Memo-July-2021.pdf>

To enable the CAISO to treat demand response as a variable energy resource and grant it a RAIM exemption, the CAISO proposed in the CEC's Supply Side Demand Response Working Group to develop a counting methodology to account for the variable nature and use limitations of demand response according to the following principles:<sup>6</sup>

The QC methodology should:

1. Represent accepted industry leading practices recognizing demand response resources' limited and variable output nature;
2. Assess demand response resources' contribution to reliability across the year or seasons; and;<sup>7</sup>
3. Assess demand response resources' interactive effects with other resources as incremental amounts of energy and use-limited resources begin to add less and less incremental capacity value to the system.<sup>8</sup>

Consistent with these principles, the CAISO and Pacific Gas and Electric (PG&E) proposed a LIP Profile informed ELCC QC methodology for resource adequacy year 2023 in the CEC working group process.<sup>9</sup> The CAISO proposes the Commission adopt this counting methodology for demand response resource for resource adequacy years 2023 and 2024. The LIP Profile Informed ELCC properly accounts for demand response resources' variable nature and use-limitation, consistent with the principles outlined above. As a result, implementing this methodology for QC counting justifies the CAISO seeking a RAIM exemption at FERC. This counting methodology should also be available to third party demand response providers in 2023 and 2024, pending continued implementation discussions with Energy Division staff.

The LIP Profile informed ELCC approach allows demand response providers to leverage the Commission's existing LIP process. Beyond a demand response provider's existing LIP report, demand response providers would develop demand response availability profiles modeled under various conditions. Whereas an ELCC study typically uses nameplate capacity, the LIP Profile Informed ELCC approach would use resource availability (LIP profiles) as a proxy for

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<sup>6</sup> CAISO Comments, Supply Side DR Workshop, CEC Docket 21-IEPR-04, December 17, 2021, p. 3.

<sup>7</sup> Demand response resources are not fixed capacity resources, and the new methodology should value the variable load curtailment nature of demand response and how its variability affects system reliability.

<sup>8</sup> Incremental amounts of similar energy and use-limited resources add less and less additional capacity value to the system.

<sup>9</sup> CAISO, *CEC Working Group: LIP Informed ELCC*, CEC Docket 21-DR-01, December 15, 2021. Available here: <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-DR-01>

the nameplate of demand response. Using LIP profiles as an input, the Energy Division staff would assess demand response programs' contribution to reliability using a loss of load expectation (LOLE) to calculate ELCC values of demand response programs. This modeling would utilize the modeling tool Energy Division staff currently uses to develop ELCC values for the resource adequacy program and in the IRP proceeding.<sup>10</sup> Allowing stakeholders to test this methodology for 2023 and 2024 can inform refinements to an ELCC-based counting methodology beyond 2024. The CAISO recognizes changes to the resource adequacy program determined in the Reform Track may inform changes to counting methodologies for demand response starting resource adequacy year 2024. However, CAISO recommends the Commission proceed with adopting a LIP Profile Informed ELCC counting methodology for demand response for both resource adequacy years 2023 and 2024. The LIP Profile Informed ELCC approach will more accurately capture the variable nature, limited availability, and saturation effects of use-limited demand response compared to existing demand response QC methodologies.

The Commission can continue to use and refine the LIP Profile Informed ELCC counting methodology until it adopts more comprehensive resource adequacy program changes beyond 2024. For example, the Commission could change the availability inputs in the LIP-informed ELCC approach to something other than a LIP profile.

The CAISO recommends the Commission adopt a LIP Profile informed ELCC counting methodology for demand response resources for resource adequacy years 2023 and 2024. The LIP Profile Informed ELCC approach meets the principles justifying a RAAIM exemption and captures the variable nature, limited availability, and saturation effects of use-limited demand response.

**B. Proposal 2: The Commission Should Update the Planning Reserve Margin Based on a Loss of Load Expectation Study, Which Includes Updated Forced Outage Rates.**

The Commission should use an updated loss of load expectation (LOLE) analysis and a one-in-ten-year standard to determine the appropriate planning reserve margin (PRM) to establish resource adequacy requirements. The CAISO recommends the LOLE analysis inputs, assumptions, and methodology coordinate and align with the integrated resource planning (IRP) process LOLE analyses. In recent testimony, the CAISO provided evidence indicating the

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<sup>10</sup> This tool is the Strategic Energy & Risk Valuation Model (SERVM).

current 15 percent PRM does not adequately capture system reliability needs during the gross load peak and after sunset.<sup>11</sup> The CAISO recommends the Commission update the PRM based on an updated LOLE analysis that more accurately reflects actual system forced outage rates and the potential for extreme weather events. The Energy Division staff’s LOLE study should help inform an updated PRM.

The CAISO is conducting analysis of forced outage rates of the CAISO generation fleet. Although CAISO’s analysis is not final, the CAISO has observed gas resource forced outage rates in some months higher than the 7.2 percent North American Electric Reliability Corporation (NERC) Generating Availability Data System (GADS) rate. The Commission should use at least a 7.5 percent forced outage rate to update the PRM to align with industry observed forced outage rates and account for extreme weather, as previously recommended by the CAISO.<sup>12</sup> The Commission should use updated forced outage rates in its LOLE studies to determine the appropriate PRM. This approach should not preclude further consideration of an unforced capacity (UCAP) framework, which considers forced outages in advance, in resource QC values.

The CEC assumes a 7.5 percent forced outage rate in its Summer 2022 Stack Analysis to account for extreme weather.<sup>13</sup> The CEC used a 7.5 percent forced outage rate “to consider the impact of persisting drought, wildfire, and smoke impacts on the supply fleet.”<sup>14</sup> Recent IRP procurement directives also identified higher PRM requirements and higher forced outage rate assumptions.<sup>15</sup> The CAISO recommends the Commission adopt an updated PRM to align IRP and procurement processes with the resource adequacy program.

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<sup>11</sup> See for example: CAISO, *Opening Testimony of the California Independent System Operator Corporation*, R. 20-11-003, September 1, 2021; CAISO, *Opening Testimony of the California Independent System Operator Corporation*, R.20-11-003, January 11, 2021; CAISO, *Comments of the California Independent System Operator Corporation on Order Instituting Rulemaking Emergency Reliability*, R.20-11-003, November 30, 2020.

<sup>12</sup> CAISO, *Opening Testimony of the California Independent System Operator*, 20-11- 003, September 1, 2021, p. 12.

<sup>13</sup> CEC Staff Paper – *2022 Summer Stack Analysis Update*, 21-ESR-01, January 11, 2022. <https://efiling.energy.ca.gov/GetDocument.aspx?tn=241145&DocumentContentId=74989>

<sup>14</sup> CEC, “*2022 Summer Stack Analysis*,” 21-ESR-01, September 8, 2021 <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M411/K194/411194667.PDF>

<sup>15</sup> For example, the IRP 2021 Preferred System Plan is based on a 22.5 percent PRM and the CEC 2022 Stack Analysis, which used a 7.5 percent forced outage rate, informed procurement directed under D.21-12-015.



The CAISO appreciates the Commission authorizing additional procurement and demand side programs to meet a higher “effective” PRM for 2022 and 2023.<sup>16</sup> However, using an “effective” PRM should be phased out, in favor of an official PRM update. An “effective” PRM fails to provide the CAISO with the necessary tools to ensure reliability. In particular, the CAISO cannot backstop procurement in the month-ahead timeframe to cure for “effective” PRM deficiencies. Additionally, deficiencies in meeting an effective PRM would not necessarily constitute a significant event under the CAISO tariff.<sup>17</sup> Further, non-resource adequacy capacity used to meet an “effective” PRM is not subject to CAISO resource adequacy rules, including the RAIM and must offer obligation. The CAISO recommends the Commission formally update the PRM based on an LOLE study.

### **III. Conclusion**

The CAISO appreciates the opportunity to submit these proposals in resource adequacy Implementation Track Phase 2

Respectfully submitted

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<sup>16</sup> Commission Decision, D.21-12-015 Phase 2 Decision, December 2, 2021.

<sup>17</sup> CAISO, *Comments on Proposed Phase 2 Decision*, R.20-11- 003, November 10, 2021, p. 3.