BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

Order Instituting Rulemaking to Consider Distributed Energy Resource Program Cost-Effectiveness Issues, Data Access and Use, and Equipment Performance Standards.	**Rulemaking 22-11-013** **(Filed November 17, 2022)**

CALIFORNIA LARGE ENERGY CONSUMERS ASSOCIATION COMMENTS ON RESOLUTION E-5476

Sam Harper
John Holler
Harper Advisory LLC
9002 Six Pines Drive
Shenandoah, TX 77380
(214) 463-9423
Sam@harper.energy

Consultants to the California Large Energy Consumers Association

Nora Sheriff
Timothy Lee
Buchalter LLP
425 Market Street, 29th Floor
San Francisco, CA 94105-2491
415.227.3551 office
415.227.0770 fax
nsheriff@buchalter.com

Counsel for the California Large Energy Consumers Association

September 24, 2026

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The California Large Energy Consumers Association (CLECA)[1] submits these comments to Resolution E-5476 (Resolution).

I. INTRODUCTION

CLECA has a direct interest in the Avoided Cost Calculator (ACC) based on three core priorities. First, CLECA members participate in the Base Interruptible Program (BIP), a supply-side emergency demand response resource relied upon in the Integrated Resource Planning (IRP) portfolio and repeatedly called upon during critical reliability events. Second, the ACC determines the cost-effectiveness of distributed energy resource (DER) programs whose costs are recovered through rates paid by CLECA members. Third, CLECA members depend on

[1] CLECA member companies produce goods essential for daily life, including critical infrastructure, oxygen for hospitals, and food distribution. CLECA members represent the steel, cement, industrial and medical gas, glass, beverage, minerals processing, cold storage, and pipeline transportation industries. Their aggregate electric demand is about 500 Megawatts, which is equivalent to the electricity consumption of approximately 470,000 average California households. CLECA members are large, high load factor and high voltage industrial electric customers in California for whom the price of electricity is essential to their competitiveness and for whom the reliability of electricity service is critically important. For both reasons, CLECA member companies have participated for decades in the Base Interruptible Program (BIP), providing reliability demand response to the grid in times of need. (For more information, please go to CLECA.org).

reliable electric service, which is increasingly supported by the same DERs that the ACC is intended to value.

The draft 2026 ACC systematically suppresses generation capacity value. The Integrated Calculation itself returns values as low as negative $1,000 per kilowatt-year,[2] the product of flawed methodology assumptions CLECA has objected to throughout this cycle.[3] Those values are then covered by an administrative floor, which sets the generation capacity avoided cost the ACC reports in thirteen of the fifteen years from 2026 through 2040. This binding floor is itself understated: it omits ad valorem taxes and insurance, an omission several parties identified, no party disputed, and the Commission declined to correct, which suppresses the reported value by a further 39 percent.[4]

CLECA does not ask the Commission to reopen D.26-09-007 in this Resolution. CLECA emphasizes serious concerns about the methodology and results of the draft 2026 ACC, asks

[2] 2026 ACC Integrated Calculation v1a, "Calculations – 4hr" and "Calculations – 8hr" tabs, "Capacity Cost (without Floor)," "Capacity Cost Floor" and "Capacity Cost (with Floor)" rows, selected by resource year consistent with Conclusion of Law 6 of D.26-09-007. The model was released to the service list of R.22-11-013 on September 4, 2026, and is referenced in Appendix A of the draft Resolution. All values are nominal dollars per kilowatt-year.

[3] CLECA Comments on Proposed Decision at 2 (the revised Integrated Calculation is "overly dependent on exogenous caps and floors that mask the problematic instability of the underlying calculation" and "wrongly fails to reflect the IRP resource mix critical for system reliability"); Opening Comments of California Large Energy Consumers Association on Administrative Law Judge's Ruling Issuing Updated 2026 Avoided Cost Calculator Staff Proposal for Party Input, R.22-11-013 (June 19, 2026) (CLECA Opening Comments on Revised Staff Proposal) at 2–3 and 11–12; Opening Comments of California Large Energy Consumers Association on Administrative Law Judge's Ruling Issuing the 2026 Avoided Cost Calculator Staff Proposal for Party Input, R.22-11-013 (May 13, 2026) (CLECA Opening Comments); Reply Comments of California Large Energy Consumers Association, R.22-11-013 (May 18, 2026).

[4] The corrected floor applies to the ACC's own floor of $42.62 per kilowatt-year in 2024 dollars, the ratio in SCE's unrebutted showing that including ad valorem taxes and insurance raises the floor from approximately $39 to approximately $64 per kilowatt-year in 2022 dollars. Opening Comments of Southern California Edison Company (U 338-E), R.22-11-013 (May 13, 2026) at 11–12. It illustrates the magnitude of the omission; it is not a value computed from source cost data.

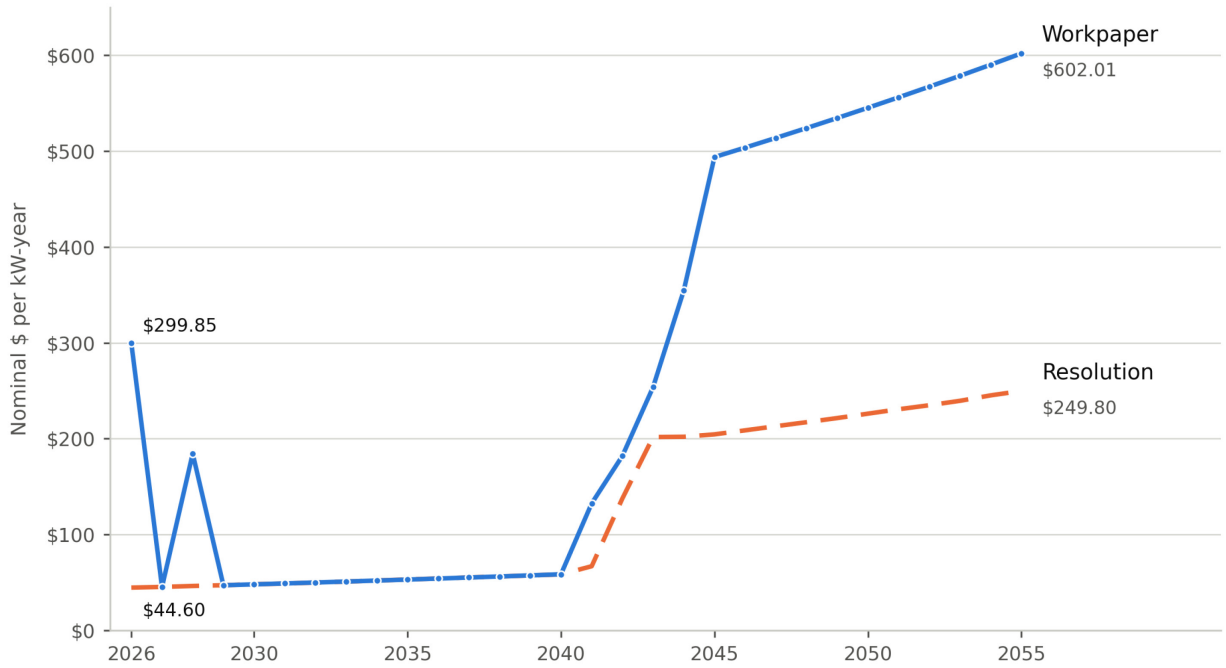
the Commission to correct Figure 2 of the Resolution, and requests important considerations for the 2028 ACC update cycle.

II. COMMENTS

A. The Resolution does not depict the generation capacity avoided costs that the 2026 ACC produces

The Resolution presents the 2026 ACC's generation capacity results in its Figure 2. That figure is inconsistent with the workpaper.[5] The two sources are compared below in Figure 1.

Figure 1: ACC Generation Capacity Values: Resolution vs. Workpaper ($ per kW-year)[6]



[5] Draft Resolution E-5476 at 6, Figure 2.

[6] The Resolution series is digitized from Figure 2 of the draft Resolution at page 6, rendered at 300 dots per inch, with the scale calibrated from the axis tick spacing. The workpaper series is taken from the "Result Summary" tab of the 2026 ACC Integrated Calculation v1a. The two series agree to within 0.2 percent in every year in which the floor sets the reported value, which confirms the calibration. CLECA also notes that the "Result Summary" tab captions the generation capacity results "Generation Capacity Avoided Costs (Nominal $/tonne)"; the values are stated in nominal dollars per kilowatt-year.

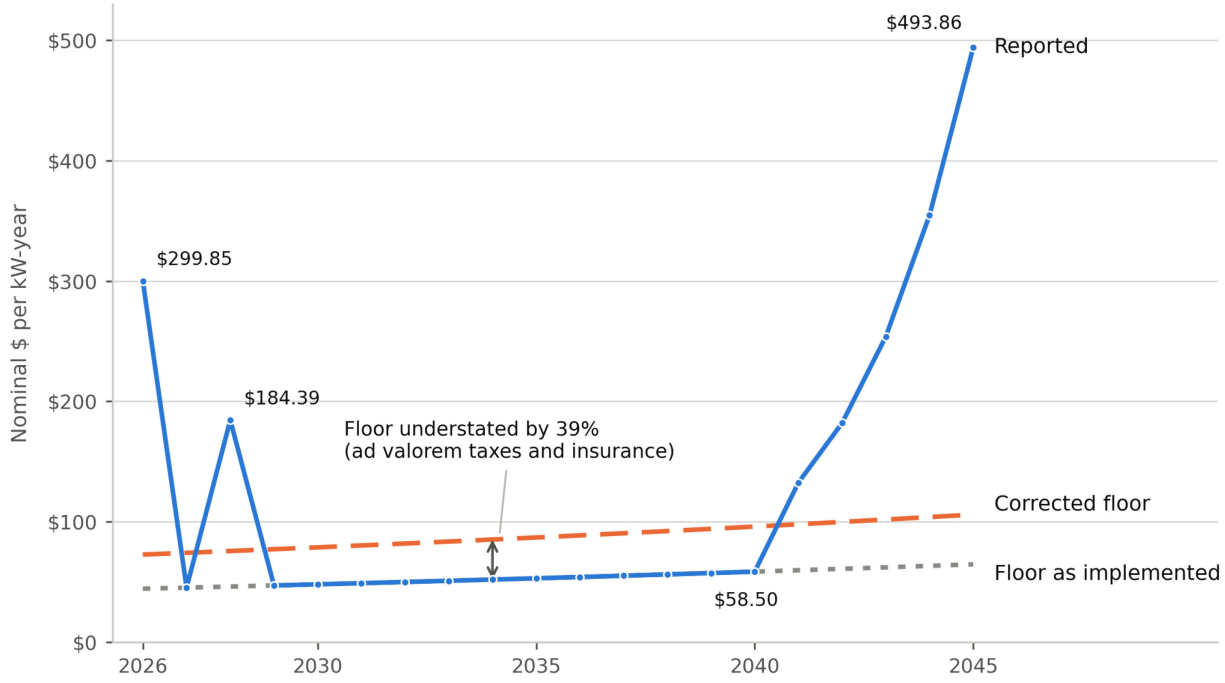
Assuming the workpaper is correct, the Resolution misrepresents the volatility of generation capacity avoided costs. The cost falls 85 percent between 2026 and 2027, rises 308 percent the following year, falls 74 percent the year after that, and then rises 744 percent between 2040 and 2045. These swings are what remain after the floor is applied in almost every year from 2027 through 2040. Without the floor, the chart would be even more erratic, further illustrating the instability of the underlying model.

Because the Resolution adopts the 2026 ACC v1a, and because the Resolution's Figure 2 is its only presentation of the model's generation capacity results, the figure should be corrected before the Resolution is adopted.

B. The published values show that the generation capacity floor, not the Integrated Calculation, sets the generation capacity avoided cost

Figure 2 shows the generation capacity avoided cost the draft 2026 ACC reports for each year from 2026 through 2045, against the generation capacity floor as the 2026 ACC implements it and against the same floor with the ad valorem taxes and insurance included.

Figure 2: Generation Capacity Avoided Cost vs. Corrected Floor (nominal $/kW-yr) [7]



In thirteen of the fifteen years from 2026 through 2040 the reported value is the floor, and across that period the reported avoided cost sits roughly 39 percent below the corrected floor — which is to say below the annual fixed cost of keeping an existing gas unit in service, the level the Commission set as the minimum the ACC should report.

D.26-09-007 did not dispute the omission but declined the correction "to better align the value with the IRP inputs and assumptions."[8] However, the decision's retention of the

[7] The corrected floor is derived as described above: the ACC's floor of $42.62 per kilowatt-year in 2024 dollars, adjusted by the ratio in SCE's unrebutted showing. Opening Comments of Southern California Edison Company (U 338-E), R.22-11-013 (May 13, 2026) at 11–12.

[8] D.26-09-007 at 26 ("CLECA writes that the natural gas O&M cost floor is understated because it omits taxes and insurance costs"; "SCE and SEIA agree with CLECA's comments about the natural gas O&M cost floor being too low"); id. at 29 ("the Commission declines to modify the natural gas O&M cost floor to better align the value with the IRP inputs and assumptions"); id. at 44 (responding to comments on the proposed decision that "the gas O&M costs used for the 2026 ACC are aligned with the 2026-2027 TPP"). No party disputed the omission.

existing floor resulted in capacity values that are approximately 39 percent below the corrected floor during thirteen of those fifteen years.

The Integrated Calculation as implemented in the draft 2026 ACC is not resource agnostic; in thirteen years of the fifteen years, the binding value is tied to the partial cost of a single resource type. The floor correction to include taxes and insurance should be made in the 2028 update. CLECA further recommends that Energy Division transparently publish, with the 2028 ACC methodology workpapers, the Integrated Calculation's results before application of the floor.

C. The Commission agreed in 2024 that the calculation should include more resources and pointed to this cycle; the 2026 ACC narrowed it instead

D.24-08-007 built the Integrated Calculation on two resources, utility solar and lithium-ion energy storage. The Commission agreed with parties that it should not stay there: the calculation "should include all resources selected in the IRP that are reasonably expected to provide marginal GHG and capacity value," and Energy Division staff "may consider developing an approach for including additional resources in the calculation of GHG and generation capacity values for the 2026 ACC."[9] R.22-11-013 is that cycle. However, no resource was added. D.26-09-007 instead adopted a calculation "that considers a hybrid solar+storage resource as a single resource rather than two separate resources."[10] The calculation the Resolution would adopt is narrower than the one the Commission agreed two years ago should be expanded.

[9] D.24-08-007 at 22. The decision held the 2024 calculation to utility-scale solar and utility-scale battery storage on timeline grounds — "it may not be possible to add additional resources, vet the results, and still meet the planned timeline for issuing and approving the 2024 ACC" — not on the merits of the resource set.

[10] Draft Resolution E-5476 at 4 (reciting D.26-09-007: the decision "adopts an updated integrated calculation that considers a hybrid solar+storage resource as a single resource rather than two separate resources").

CLECA has raised this at every stage. In June, CLECA wrote that the Revised Staff Proposal "is less technology-agnostic, narrowing to a single hybrid resource."[11] In August, CLECA explained that the resource the calculation now relies on is not one the IRP builds: solar-plus-storage is not a candidate resource in RESOLVE, and the IRP neither requires nor plans for the two to be developed together.[12]

CLECA recommends that the Commission direct Energy Division, in the 2028 ACC update, to expand the resources in the Integrated Calculation to reflect the resources the adopted IRP portfolio relies on, including the demand response resources it counts on for reliability.

D. The GHG value that consumes the generation capacity residual is high against the Commission's benchmarks

D.26-09-007 declined to cap the GHG value at the high societal cost of carbon adopted in the Societal Cost Test,[13] and stated the condition on which it would revisit that determination:

> The Commission may reconsider capping GHG avoided costs in the ACC if the RESOLVE model's GHG shadow prices become persistently high and unrealistic in the future.[14]

Figure 3 compares the GHG avoided cost in the draft 2026 ACC — the sum of the RESOLVE shadow price and the cap-and-invest price — with the high social cost of carbon the same workbook uses for the Societal Cost Test.

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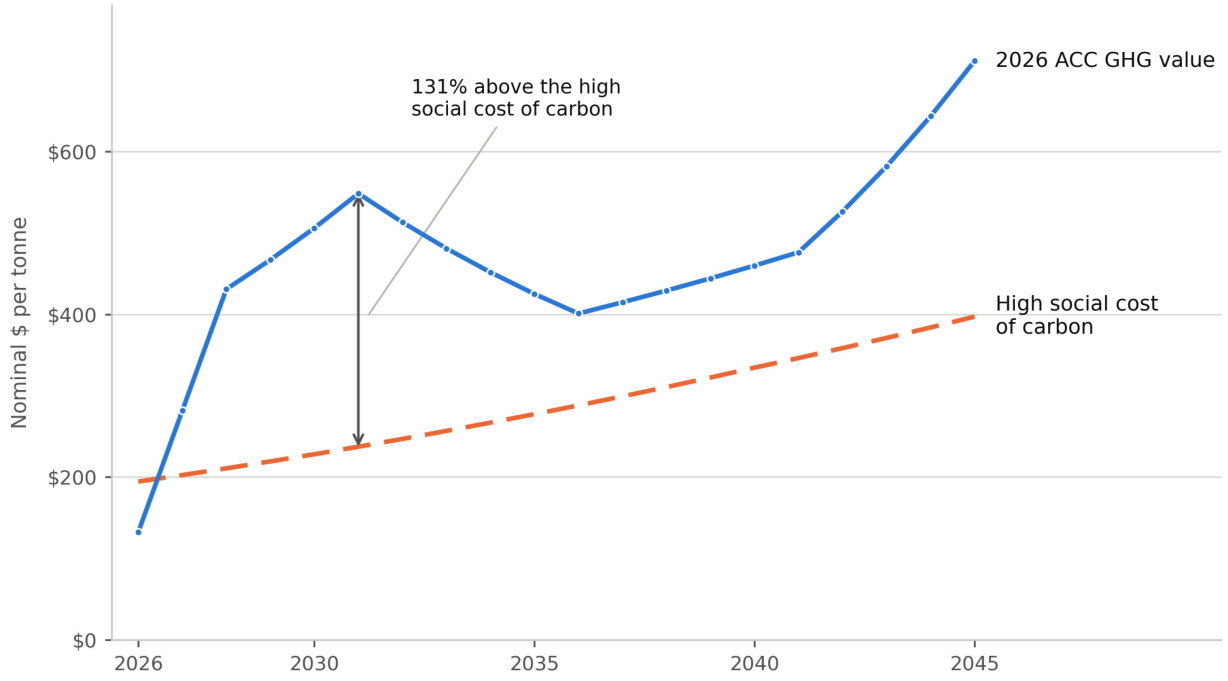
[11] CLECA Opening Comments on Revised Staff Proposal at 2–3.
[12] CLECA Comments on Proposed Decision at 3 (the IRP does not build hybrids: solar-plus-storage is not a candidate resource in RESOLVE, and the IRP neither requires nor plans for the two to be developed together).
[13] D.26-09-007, Conclusion of Law 3.
[14] D.26-09-007, Conclusion of Law 4.

Figure 3: GHG Avoided Cost in Draft 2026 ACC vs. High Social Cost of Carbon (nominal $/tonne)[15]



The High Social Cost of Carbon is not a central or even a moderately conservative estimate. It is the 95th percentile of the damage distribution at a three percent discount rate — the value the Interagency Working Group published to represent higher-than-expected climate impacts.[16] The ACC's GHG value exceeds that threshold in nineteen of the twenty years from 2026 through 2045, by more than 50 percent in eleven of those years and by more than 100 percent in five, peaking at 131 percent above it in 2031. The published 2026 ACC results raise

[15] 2026 ACC Integrated Calculation v1a, "Calculations – 4hr" tab, rows 191–198. Nominal dollars per tonne. The workbook's "SCT High GHG Adder" equals its "RESOLVE GHG Shadow Prices (Full years)" in every year from 2027 through 2045, so under the Societal Cost Test the shadow price displaces the social cost of carbon in every year but the first.

[16] Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide, Interim Estimates under Executive Order 13990 (February 2021), Table ES-1 and accompanying text. The document reports four statistics per emissions year: averages at 5, 3 and 2.5 percent discount rates and the 95th percentile at 3 percent. The fourth "was included to provide information on potentially higher-than-expected economic impacts from climate change, conditional on the 3% estimate of the discount rate." The workbook sources the SCT adder to this document.

the concerns identified in Conclusion of Law 4 of D.26-09-007 regarding persistently high and unrealistic GHG shadow prices. Accordingly, those results warrant further examination during the 2028 ACC update cycle, including consideration of whether a cap on GHG avoided costs is appropriate.

The quantity that price is applied to is also high. The avoided GHG quantity, in tonnes, is derived from an implied marginal heat rate computed by dividing each hour's energy price by the gas price, subject to an upper bound but no lower bound.[17] The method therefore treats gas generation as marginal in every hour, including hours in which no gas unit could have been marginal. The Commission's own planning says otherwise: in the 2026–2027 Transmission Planning Process base case, natural gas runs at an 11 percent capacity factor by 2031 and 4 percent by 2045, against 24 percent in 2026.[18]

At the September 9, 2026 workshop CLECA asked whether the SERVM marginal resource data could be used to refine the hourly implied marginal heat rate. Energy Division responded that SERVM is not yet precise enough to support that use case. CLECA asks that the Commission direct Energy Division, in the 2028 update, to develop the precision required to more accurately estimate the marginal resource by hour from SERVM dispatch output and produce more realistic avoided emissions rates by hour.

[17] 2026 ACC Documentation v1a, Section 2.3, at 18 (the IMHR formula) and Section 2.4, at 19 (conversion at 0.053 metric tons per MMBtu; upper bound at an IMHR of 12,500 Btu/kWh, "intended to reflect the fact that few natural gas units operational today have physical heat rates above this level"). No corresponding lower bound is applied.

[18] CLECA Opening Comments on Revised Staff Proposal at 11–12, citing California Public Utilities Commission, Energy Division, 2026–2027 Transmission Planning Process Proposed Base Case: RESOLVE and SERVM Analysis (2026) at slide 28.

Together, the persistently high and unrealistic GHG prices and inaccurate avoided emissions rates by hour overstate GHG avoided costs and lead to higher costs for ratepayers and unreasonably low residual generation capacity values.

E. The Commission should direct Energy Division to examine how the adopted hourly allocation distributes generation capacity value within the day

The Resolution states that the generation capacity value in the 2026 ACC "is spread overnight to cover storage dispatch hours rather than concentrated just during the peak nighttime," and separately reports that the three updates bearing on hourly allocation — Loss of Load Hours rather than Expected Unserved Energy, energy prices rather than temperature to assign high-value days, and the separation of weekdays from weekends — produce "no significant change."[19]

However, CLECA has found from the ACC workpapers that significantly more hours would be needed to capture a day's ACC value, as shown in Table 1 below.

Table 1: Avg # Hours Needed to Capture 90% of Day's ACC Value[20]

ACC Vintage	2026	2030	2035	2040	2041 +
2024 ACC	5.8	6.3	8.0	8.0	—
2026 ACC	8.0	8.5	14.8	16.7	17.8

This change may be significant for limited-duration resources such as batteries and calls into question whether a 4-hour or 8-hour battery marginal resource is aligned with daily

[19] Draft Resolution E-5476 at 5–6 and at 7, Table 1.

[20] 2026 ACC Electric Model v1a, "Generation Capacity" tab, hourly generation capacity allocation factors, rows 11–8770, using the day definition at Section 4.5, step 4 of the 2026 ACC Documentation v1a. The 2024 ACC figures are computed from the month-hour Expected Unserved Energy tables at Figures 5-11 through 5-14 of the 2024 ACC Documentation v1b, pages 46–47, weighted by month. Each figure is computed for each day and averaged across days, weighted by each day's share of the year's generation capacity value.

capacity needs over many more hours. CLECA does not contend that the new distribution is incorrect. But if this characterization of its effect is right, the change deserves more visibility in the Resolution than "no significant change," and the Commission should direct that some measure of this dispersion be reported in the 2028 ACC.

III. CONCLUSION

With the publishing of the draft 2026 ACC, parties' objections can now be checked against published values rather than argued in the abstract. Those values show a generation capacity avoided cost set by a single technology-derived administrative floor in thirteen of the fifteen years from 2026 through 2040; a floor no parties dispute is understated by some 39 percent; a GHG value above the 95th percentile social cost of carbon in nineteen of twenty years; and a Resolution whose only depiction of the generation capacity results does not accurately depict the model it adopts.

CLECA appreciates the opportunity to comment and respectfully recommends that the Commission correct Figure 2 of the Resolution and consider CLECA's recommendations at the earliest possible opportunity.

Respectfully submitted,

BUCHALTER LLP

By:



Nora Sheriff

Counsel for the California Large Energy Consumers Association

CALIFORNIA LARGE ENERGY CONSUMERS ASSOCIATION

September 24, 2026