

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA



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Order Instituting Rulemaking to Continue
Electric Integrated Resource Planning and
Related Procurement Processes.

**OPENING COMMENTS OF
CENTER FOR ENERGY EFFICIENCY AND RENEWABLE TECHNOLOGIES
ON ADMINISTRATIVE LAW JUDGE'S RULING SEEKING COMMENT ON
PROPOSED 2023 PREFERRED SYSTEM PLAN AND TRANSMISSION PLANNING
PROCESS PORTFOLIOS**

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For: CENTER FOR ENERGY EFFICIENCY AND RENEWABLE TECHNOLOGIES

Date: November 13, 2023

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The Center for Energy Efficiency and Renewable Technologies (CEERT) respectfully submit these Opening Comments on Administrative Law Judge’s Ruling Seeking Comment on Proposed 2023 Preferred System Plan and Transmission Planning Process Portfolios, issued in (R.) 20-05-003 (Integrated Resource Plan (IRP)), on October 5, 2023 (ALJ Ruling). These Opening Comments are timely filed and served pursuant to the Commission’s Rules of Practice and Procedure and the instructions contained in the October 5 ALJ Ruling.

**I.
INTRODUCTION**

CEERT is a nonprofit public-benefit organization founded in 1990 and based in Sacramento, California. CEERT is a partnership of major private-sector clean energy companies, environmental organizations, public health groups and environmental justice organizations. CEERT designs and fights for policies that promote global warming solutions and increased reliance on clean, renewable energy sources for California and the West. CEERT is working toward building a new energy economy, including cutting contributions to global warming, and reducing dependence on fossil fuels. CEERT has long advocated before the Commission for increased use of preferred resources and for California to move towards a clean energy future.

II. SUMMARY OF CEERT'S POSITION

CEERT supports the general direction of the ALJ Ruling to reduce greenhouse gas emissions on a more accelerated trajectory than in previous Integrated Resource Plans given the ever-apparent increasing risks of catastrophic climate change. The recommendation to use the 25 million metric ton (MMT) Core portfolio as the preferred system plan is appropriate.¹

However, the use of the so-called high gas retirement scenario as the sensitivity case fails to take into account the requirements of Senate Bill (SB) 887 to address transmission constraints into load pockets such as the Los Angeles Basin where disadvantaged communities are impacted by the continued operation of fossil fuel power plants. CEERT recommends that a new sensitivity scenario be developed in order to comply with SB 887. It is critically important that the California Independent System Operator (CAISO) 2024-2025 transmission planning process model the needed transmission to reduce the use of fossil fuel generation in local capacity areas.

CEERT has strong concerns about the continued use of RESOLVE as the capacity expansion model used to formulate and analyze the portfolios developed in the Integrated Planning Process (IRP).² It has been apparent for several planning cycles that RESOLVE produces reliability and greenhouse gas emission results that are divergent with the Commission's production cost model, SERVIM. Since the Commission is now seeking additional funding for IRP modeling from the three investor-owned utilities it is time for the Commission to solicit an alternative capacity expansion model. The capacity expansion model will be increasingly important as the Commission looks further into the future for the selection of

¹ ALJ Ruling, at pp. 3 and 19.

² See, e.g., *Id.*, at p. 13.

emerging resources like offshore wind, advanced geothermal, and long duration storage to meet evolving capacity and energy needs.³

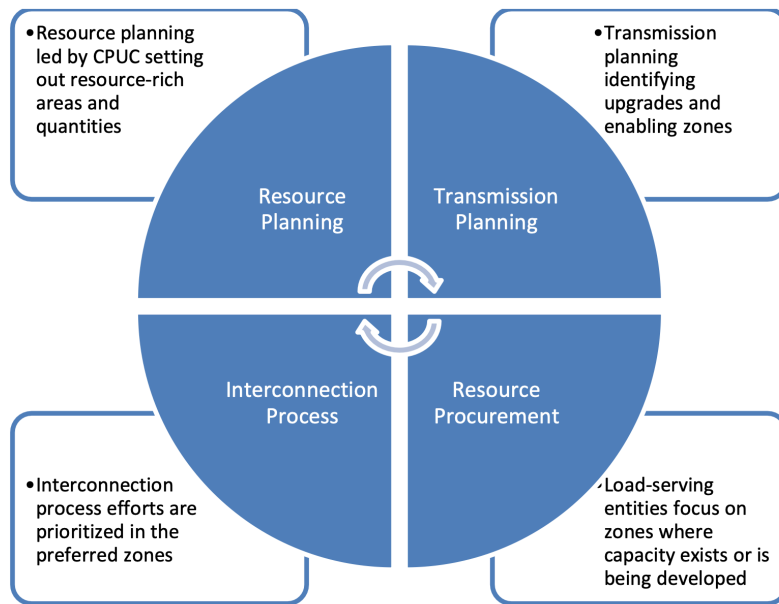
CEERT is strongly supportive of the development of a longer-term programmatic approach to procurement. We support efforts to fully develop the Reliable and Clean Power Procurement Program. A programmatic procurement program will be necessary to implement the centralized procurement entity authorized in Assembly Bill 1373. While the details of the program design are expected to be forthcoming in a future IRP decision CEERT is concerned about the use of marginal effective load carrying capability (ELCC) as a principal reliability metric in the design. Marginal ELCC has some value in determining loss of load probability at a point in time but could be disruptive if used for contracting under the centralized procurement process. CEERT urges the Commission to carefully evaluate the usefulness of marginal ELCC and its compatibility with the emerging slice of day reliability framework.⁴

Lastly, CEERT is concerned that the Commission has yet to fully recognize the value of the zonal approach to planning, interconnection and procurement that has been adopted by the CAISO in compliance with the Commission-California Energy Commission (CEC)-CAISO memorandum of understanding. The zonal approach as outlined by the CAISO envisions an iterative feedback process between resource portfolio development, transmission planning, resource procurement and the interconnection process. In the 2022-2023 Transmission Plan the CAISO included a special study regarding ways to reduce dependence on the Aliso Canyon gas storage facility. In that study the CAISO identified transmission projects that would be beneficial to reduced natural gas consumption in Southern California. It is not apparent that the CPUC has taken that study into account in developing the busbar mapping for the Preferred

³ ALJ Ruling, at p. 16.

⁴ *Id.*, at p. 55.

System Plan or in alternative high gas retirement scenarios. CEERT strongly urges the Commission to work together with the CEC and CAISO to further entrench better feedback into the various processes controlled by the Commission-California Energy Commission (CEC)-CAISO memorandum of understanding.



**III.
CEERT SUPPORTS THE ALJ RULING’S RECOMMENDATIONS REGARDING THE
25 MMT CORE PORTFOLIO**

The Core portfolio recommended in the ALJ Ruling recognizes that aggressive steps must be taken to meet SB 100 which requires that all retail electricity sold must come from renewable resources and zero-carbon resources by 2045.⁵ As such, the Commission must continue to adopt policies that assure that least-carbon resources are developed.

CEERT also recommends that the Commission deepen its commitment to the development of distributed energy resources (DERs) and implementation of demand response (DR) measures and targeted energy efficiency measures to assure system reliability through 2030.

⁵ ALJ Ruling, at p. 13.

The CEC has approved a new goal to make up to 7,000 megawatts (MW) of electricity available through “load shifting” or “load flexibility.” The goal doubles current flexibility levels.⁶ There is no evidence in the ALJ ruling that the Commission has taken into account the increased amount of load shifting or load flexibility in the IRP. While it may be too late to include this goal into the PSP, CEERT strongly recommends that the Commission include this higher level of DR in the future.

**III.
CEERT RECOMMENDS A NEW SENSITIVITY CASE BE DEVELOPED THAT IS
COMPLIANT WITH SENATE BILL 887**

In 2022, the Legislature enacted SB 887 (Becker) which memorialized that the State is required to build clean energy resources and declared that “build rates are not achievable without additional electrical transmission lines and facilities connecting new resources to consumers in the state’s load centers.”⁷ The law further observed that there are load pockets where there is insufficient transmission to import already available renewable energy resources and declared that this constraint should be promptly fixed.

SB 887 observed that the CAISO’s 20-Year Transmission Outlook identified multiple transmission projects that would be needed over the next 20 years to integrate clean energy to the grid, including transmission which would reduce reliance on natural gas resources in constrained local capacity areas such as the Los Angeles Basin.

The Legislation directed the Commission to provide transmission-focused guidance to the CAISO as soon as possible but not later than March 31, 2024 that would enable transmission

⁶ CEC Senate Bill 846 Load-Shift Goal Report which can be found here:

<https://www.energy.ca.gov/publications/2023/senate-bill-846-load-shift-goal-report>

⁷ SB 887 (Becker) which can be found here: <https://legiscan.com/CA/text/SB887/id/2606958>

expansion that would reduce reliance on fossil fuel resources in local capacity areas.⁸ In January 2023, the Commission sent a letter to the CAISO specifically requesting that the CAISO identify “the highest priority transmission facilities that are needed to allow for increased transmission capacity into local capacity areas to deliver renewable energy resources or zero-carbon resources that are expected to be developed by 2035 into these areas.”⁹ The letter also urged that the CAISO include these projects in its 2022-2023 transmission plan.

The CAISO responded in its 2022-2023 transmission plan that it needed further guidance about the retirement of gas-fired generation in local capacity area before it could make any recommendations regarding additional transmission lines. In particular, the CAISO was referencing the Pacific Transmission Expansion Project, a high voltage direct current submarine cable that would deliver up to 2,000 megawatts of additional energy into the Los Angeles Basin.

Dependence on gas-fired electric generation in the Los Angeles Basin and elsewhere in California has grown over the past decade as imports from out-of-state generation have declined.¹⁰ In each of the IRP cycles the RESOLVE capacity expansion module has assumed that the current fossil fuel fleet will need to be kept available at least through 2050 to meet peak

⁸ SB 887 (Becker) which states: “In support of the state’s policy to supply increasing amounts of electricity from renewable energy resources and zero-carbon resources pursuant to Article 16 (commencing with Section 399.11) and Section 454.53, beginning as soon as possible and not later than March 31, 2024, the commission, in consultation with the Energy Commission, shall provide transmission-focused guidance to the Independent System Operator about resource portfolios of expected future renewable energy resources and zero-carbon resources. The guidance shall include the allocation of those resources by region based on technical feasibility and commercial interest in each region to allow the Independent System Operator to identify and approve transmission facilities needed to interconnect resources and reliably serve the needs of load centers.”

⁹ January 13, 2023 Letter which can be found here: <http://www.caiso.com/InitiativeDocuments/Letter-2022-2023-Transmission-Planning-Process-Jan%2013,%202023.pdf>

¹⁰ CEC 2022 Total System Electric Generation which can be found here: <https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2022-total-system-electric-generation>

loads.¹¹ That assumption then gets embedded into the transmission planning process which results in the failure to adopt new transmission projects that will alleviate the dependence on the existing fossil fuel fleet.

The particular sensitivity case that the ruling recommends is called the High Gas Retirement sensitivity. This sensitivity case includes the near-term retirement of 3.7 GW of once-through cooling (OTC) plants, the phase-out of 1.7 GW of combined heat and power units between 2031 and 2039 and the retirement of plants not included in LSE IRPs. Finally, the sensitivity case includes an age-based retirement assumption of 35 years.¹² These assumptions result in a total of 9.3 GW of retirements by 2035 and 15.9 GW by 2039.¹³

However, nowhere in the development of this scenario did the Commission staff explicitly take into account the requirements of SB 887. Only the net capacity amounts of retirements were modeled in RESOLVE. The locations of the retirements and local reliability impacts were not analyzed. The ALJ Ruling states that the individual locations of the gas retirements will be identified later as part of the Commission staff's busbar mapping process.¹⁴ Compliance with SB 887 clearly needs to be the central criterion used in the busbar mapping process. However, even that is inadequate if earlier vintage gas plants are not considered eligible for modeled retirement.

Development of new transmission projects into the Los Angeles Basin is needed to lessen the Commission's continued assumption of more natural gas in the medium term, as it recently did in Decision (D.) 23-08-050 where it increased the storage limit of gas at the Aliso Canyon

¹¹ E3 "Long-Run Resource Adequacy under Deep Decarbonization Pathways for California" which can be found here: https://www.ethree.com/wp-content/uploads/2019/06/E3_Long_Run_Resource_Adequacy_CA_Deep-Decarbonization_Final.pdf

¹² ALJ Ruling, at p. 20.

¹³ *Id.*, at p. 39.

¹⁴ *Id.*, at p. 27.

Natural Gas Storage Facility from 41.16 to 68.6 billion cubic feet.¹⁵ Renewable and clean resources can be developed throughout California. What is needed is transmission into the Los Angeles Basin and other constrained local capacity areas to deliver clean energy.

In order to remedy this deficiency CEERT recommends that a new sensitivity case be developed to eliminate natural gas plants at specific busbars in or adjacent to disadvantaged communities in the Los Angeles Basin for use in transmission modeling. Simply eliminating plants based on their age is insufficient. A new sensitivity case will enable the CAISO to model the need for more import capacity to local capacity area.

One such project that was modeled in the CAISO special study on Aliso Canyon in the 2022-2023 transmission is the undersea High Voltage Direct Current (HVDC) cable from the Diablo Canyon switchyard into the Los Angeles area near Los Angeles International Airport. The CAISO special study on Aliso Canyon found that the subsea cable was an essential component of a strategy for maintaining reliability in the LA Basin and Southern California with less natural gas generation.¹⁶

IV. CEERT RECOMMENDS THAT THE CPUC SOLICIT AN ALTERNATIVE MODEL TOOL FOR CAPACITY EXPANSING MODELING

CEERT has previously expressed concerns about the use of the capacity expansion modeling RESOLVE for IRP modeling.¹⁷ RESOLVE has been used by the Commission since the beginning of the IRP process in 2016. CEERT previously argued that the RESOLVE

¹⁵ D.23-08-050 (Decision Granting In Part and Denying In Part the Joint Petition for Modification of Decision 21-11-008), issued in Investigation (I.) 17-02-002 (Aliso Canyon) on September 6, 2023, at pp. 23-26.

¹⁶ CAISO – “International Special Study of Reduced Reliance on Aliso Canyon Storage – Assumptions, Study Results and Alternative Analysis” which can be found here: <http://www.caiso.com/InitiativeDocuments/Appendix-K-Revised-Draft-2022-2023-Transmission-Plan.pdf>

¹⁷ See, e.g., CEERT Reply Comments on ALJ Ruling Seeking Comments on Portfolios to be Used in the 2021-22 Transmission Planning Process, submitted in this proceeding on November 20, 2020, at p. 1.

modeling assumptions have resulted in questionable resource portfolios that continue reliance on the natural gas fleet almost in perpetuity.¹⁸

CEERT notes that the RESOLVE capacity expansion model keeps most gas plants online even though the IRP now has a lower GHG target.¹⁹ The ALJ ruling itself makes the case that RESOLVE has little value in evaluating sensitivity portfolios that accelerate the phase out of natural gas generation. Instead of relying on RESOLVE to develop the sensitivity portfolio, the Commission uses other criteria for determining the phase out of natural gas plants such as LSE procurement decisions and the age of the power plants.

Furthermore, the Commission staff acknowledged that it had to spend considerable effort trying to align the RESOLVE and SERVVM models to ensure comparable results. In particular, the RESOLVE reliability need and resource counting metrics had to be derived directly from the SERVVM model. Further calibration was needed to align the models based on loss of load expectation results from SERVVM modeling.

Despite all this effort at attempting to align the RESOLVE capacity expansion model with the SERVVM production cost model the results were very disappointing. Table 6 in the ALJ ruling compares the GHG Emissions Results for the 25 MMT Core Portfolio.²⁰ There is a significant degree of variance between the RESOLVE modeling and the SERVVM modeling. SERVVM shows 10.8% more GHG emissions in 2026 compared to RESOLVE.²¹ That increases to 21.0% by 2030 and 22.8% MMT by 2035.²² Clearly, this variance in results casts a cloud over the credibility of the IRP as a tool to reduce GHG emissions in the electric sector.

¹⁸ CEERT Reply Comments on ALJ Ruling Seeking Comments on Portfolios to be Used in the 2021-22 Transmission Planning Process, submitted in this proceeding on November 20, 2020, at p. 1.

¹⁹ ALJ Ruling, at p. 21.

²⁰ *Id.*, at p. 33

²¹ *Id.*

²² *Id.*

The ALJ Ruling suggests that the difference in GHG results is reasonable and acceptable for a modeled result, given that no two models can be expected to produce identical results.²³ CEERT finds this conclusion not to be reasonable or acceptable. It is not supported by any evidence about what level of difference between models would be acceptable. The idea that the Commission would find a modeled difference of more than 22% in GHG emissions in 2035 to be acceptable is very troubling. For the above reasons, CEERT strongly recommends that the Commission solicit proposals for more accurate capacity expansion models for future use in the IRP process.

The ALJ Ruling observes that funding for IRP modeling was originally authorized in D.18-02-018 for a total of six years.²⁴ It further notes that meeting future GHG reduction goals while maintaining reliability will require ongoing refinement of the analytical framework and tools that are being used for the IRP process.²⁵

The ALJ Ruling proposes that the funding that has been in effect since 2018 be continued at the same level for an additional six years.²⁶ As new funding for modeling is being sought it would be appropriate for the Commission to instruct staff to solicit new models for capacity expansion modeling. Using another vetted model would increase confidence that the State is on track to reduce GHG emissions.

**V.
THE COMMISSION MUST PRIORITIZE THE DEVELOPMENT OF
PROGRAMMATIC PROCUREMENT**

The ALJ Ruling addresses potential procurement-related actions that the Commission could take including deferral of long-lead time (LLT) procurement until 2031 and the possible

²³ ALJ Ruling, at p. 35.

²⁴ *Id.*, at p. 58.

²⁵ *Id.*

²⁶ *Id.*, at p. 59.

procurement of long-duration energy storage at operating natural gas power plants.²⁷ The staff recommends that if the deferral of LLT procurement is granted that the Commission should authorize an additional 2,000 megawatts of NQC capacity that would be available by the summer of 2028.

CEERT is not taking a position on this recommendation at this point in time and reserves the right to comment in reply comments. However, we note that the possibility of another ad-hoc procurement order is further evidence that the Commission needs to move quickly to taking a programmatic approach to resource procurement for the state’s load serving entities. A consistent programmatic approach will allow for load serving entities to plan for procurement in an orderly fashion and to allow for the development of a central procurement entity that can procure any unfilled needs that may arise.

According to the ALJ Ruling development of a new Reliable and Clean Power Procurement Program (RCPPP) is “expected to be considered in 2024, to address procurement in a programmatic fashion.”²⁸ The RCPMP must be prioritized in order to ensure that enough clean resources are procured in order to meet the targets set forth in the ALJ Ruling.

VI. THE COST OF LONG-LEAD TIME RESOURCES MUST BE REFINED

The RESOLVE capacity expansion model uses sources like the National Renewable Energy Laboratory’s Annual Technology Baseline (ATB)²⁹ as inputs to cost information about specific resources. Still, there is significant uncertainty about the actual costs of several resources that the state expects to rely on in the long term, including offshore wind (OSW), out-

²⁷ ALJ Ruling, at pp. 48-49.

²⁸ *Id.*, at p. 49.

²⁹ The ATB is a populated framework to identify technology-specific cost and performance parameters or other investment decision metrics across a range of fuel price conditions as well as site-specific conditions for electric generation technologies at present and with projections through 2050.

of-state wind and other renewables, and emerging long-duration energy storage (LDES) technologies.

In particular, while the cost of OSW have increased, “OSW cost assumptions are a significant driver of modeling results, but Commission staff recognize that the assumptions are as-yet untested with actual procurement processes in California, so reality could vary significantly from the assumptions.”³⁰ To ensure accurate modeling and transmission prioritization, there is a need for the best available costs information for OSW and other emerging resources. The Commission should provide further direction on the timeframe and process for reaching a consensus on the cost to be used in modeling.

VI. THE COMMISSION NEEDS TO FURTHER CLARIFY ITS PROPOSED APPROACH TO ASSURING RELIABILITY IN THE IRP PROGRAM AND THE RA PROGRAM

The ALJ Ruling puts forward an analysis and some initial recommendations the Commission could use to create a reliability framework for IRP modeling and LSE filing requirements.³¹ The ALJ Ruling asserts that an IRP reliability framework would be distinct from the methods to be used in the recently adopted resource adequacy framework.³² It is not clear at all that the distinction and need for coordination has been well thought out. CEERT believes that further consideration of how the IRP and RA programs would be coordinated is needed.

There is a broad consensus that California needs to use a consistent reliability standard. Most integrated resource plans adopt a probabilistic reliability metric, such as 0.1 days per year Loss of Load Expectation (LOLE). Through production cost modeling that reliability standard is expressed as the amount of capacity (MWs) needed above the forecasted load. Simultaneously,

³⁰ ALJ Ruling, at p. 16.

³¹ *Id.*, at pp. 51-58.

³² *Id.*, at p. 52.

resource counting conventions are for specific resources like wind and solar to determine whether the reliability standard is met.

Until recently the Commission has used a planning resource margin above the managed peak load forecast. The Commission has decided that this approach is no longer adequate for the evolving grid which will rely much more on time-limited resources such as batteries. As a result, the Commission adopted a slice-of-day framework for the RA program. That approach is being tested in 2024 and will become fully operational in 2025. A key element of the new RA program is to assure there is sufficient energy to charge the batteries in each LSE portfolio over the course of 24 hours during the most challenging day of each month.

Recently, the Commission has used an ad-hoc approach to reliability in the procurement orders that it has issued. For example, the mid-term reliability procurement order used a 22.5% planning reserve margin. That approach to establishing a PRM relied on marginal Effective Load Carrying Capability (ELCC) values assigned to wind and solar resources.

Marginal ELCC values have to be frequently updated as the resource portfolio changes. Historically, they have declined for wind and solar as more of these resources are procured. However, they could increase in the future as more battery storage is procured that requires charging energy. In other words, ELCC is a variable metric that requires frequent updating to be used for a RA program. It was that uncertainty about the ELCC reliability metric that was a major factor in the RA program reform.

The Commission staff assert an annual ELCC calculation is appropriate for planning in the medium-to-long-term, while slice of day metric is appropriate for transactions between generators and LSEs to assure reliability in an operational timeframe.³³ However, it is not clear

³³ ALJ Ruling, at p. 55.

from the discussion in the ruling how the coordination between the two program would work in practice.

Nonetheless the Commission staff is proposing that planning and procurement by LSEs be based on the reliability modeling that uses annual marginal ELCCs. Reliability procurement requirements carry compliance and enforcement consequences.³⁴ In other words, the Commission is proposing a new procurement compliance mechanism on top of the RA compliance framework without clearly articulating how they will interact.

Southern California Edison Company's (SCE's) "Countdown to 2045" explains that Hitachi CE co-optimizes the investment, dispatch and retirement for various generation resources.³⁵ The model was used to identify the least-cost resource portfolio to meet the demand, renewable energy and carbon emission requirements while satisfying transmission and import/export limits and planning reserve margin. Hitachi CE used a full 8,760 hours per year of data input for modeling.

The modeling assumed that all natural gas resources could be considered for retirement. Natural gas generation was subjected to an operations and maintenance (O&M) cost of \$50/kW-yr. and an annual GHG emission constraint. Retired natural gas resources were from the least efficient resources. A total of 15 GW of gas generation was retired in the Countdown to 2045 portfolio.

Hitachi CE was updated to incorporate the RA program "slice of day" methodology for determining capacity contribution to reliability. SCE explains:

"This novel reliability modeling framework moves away from a single-hour planning reserve margin (PRM) and instead considers both capacity requirement

³⁴ ALJ Ruling, at p. 55.

³⁵ SCE "Countdown to 2045" which can be found here: <https://www.edison.com/our-perspective/countdown-to-2045>.

and energy sufficiency across all hours of the peak load day in a given month or year.”

“Single-hour planning reserve margins were developed for systems with a high level of dispatchable resources and are not effective when modeling systems with significant renewable resource penetration and increased energy-limited and use-limited resources. Since the peak load hour is typically during the evening and tied to low solar production, it is assumed that if there was sufficient capacity to meet the load plus an additional planning reserve during the highest net load hour, that capacity would also be sufficient to meet the load during other hours of the day as well.”

“However, contribution during the net load peak hour is not indicative of resource contribution during the rest of the day for intermittent resources. Additionally, implicit in this assumption is that there would be sufficient charging energy to supply power to the paired storage during the middle of the day.”³⁶

SCE explains that the slice of day approach uses a planning reserve margin across all 24 hours of the peak day, which captures the performance characteristics of solar, wind, and storage resources as well as load variability. The slice of day approach assesses the capability of the system to meet energy needs across a day.

CEERT has quoted extensively from the SCE *Countdown to 2045* appendix for two reasons. The first reason is to demonstrate that there is a viable alternative to using RESOLVE for capacity expansion modeling of the California power system. It was noted above that Hitachi CE models all 8760 hours of the year whereas RESOLVE uses a much more limited set of hours. The second reason is to point out that the Commission’s slice of day framework can be adapted to long-term planning and will better account for the diversity of clean energy resources that will be available in the future.

³⁶ Appendix to SCE “Countdown to 2045”, at pp. 20-24 which can be found here: <https://www.edison.com/our-perspective/countdown-to-2045>.

In conclusion CEERT strongly recommends that the Commission not adopt the proposed reliability framework for IRP. Instead, the Commission should refer this issue to the new RA proceeding (R.23-10-011) so that the proposed framework can be harmonized with the slice of day RA framework in a way that it can be effectively used by LSEs and the CAISO.

VII. CONCLUSION

CEERT appreciates the opportunity to submit these Opening Comments.

Respectfully submitted,

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