

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

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

Rulemaking 20-05-003
(Filed on May 7, 2020)

**REPLY COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON
THE ADMINISTRATIVE LAW JUDGE'S RULING SEEKING FEEDBACK ON MID-
TERM RELIABILITY ANALYSIS AND PROPOSED PROCUREMENT
REQUIREMENTS**

Jin Noh
Policy Director

Sergio Dueñas
Senior Regulatory Consultant

CALIFORNIA ENERGY STORAGE ALLIANCE
2150 Allston Way, Suite 400
Berkeley, California 94704
Telephone: (510) 665-7811
Email: cesa_regulatory@storagealliance.org

April 9, 2021

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

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

Rulemaking 20-05-003
(Filed on May 7, 2020)

**REPLY COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON
THE ADMINISTRATIVE LAW JUDGE’S RULING SEEKING FEEDBACK ON MID-
TERM RELIABILITY ANALYSIS AND PROPOSED PROCUREMENT
REQUIREMENTS**

In accordance with the Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), the California Energy Storage Alliance (“CESA”) hereby submits these reply comments on the *Administrative Law Judge’s Ruling Seeking Feedback on Mid-Term Reliability Analysis and Proposed Procurement Requirements* (“Ruling”), issued by Administrative Law Judge (“ALJ”) Julie Fitch on February 22, 2021. In an E-Mail Ruling issued by ALJ Fitch on March 12, 2021 that granted the deadline extension for reply comments submission, CESA is timely filing and serving these opening comments on April 9, 2021.

I. INTRODUCTION.

CESA appreciates the opportunity to provide feedback and responses to the opening comments submitted by parties on March 26, 2021. In general, CESA shares the concerns and perspectives presented by several parties in opening comments. As a plurality of parties highlighted in their initial filings, the Commission should strive towards moving away from just-in-time procurement directives based on expedited stack analyses and collaborate with the Commission’s sister agencies and parties to formally revise the reliability assumptions that should

guide resource planning and development. That being said, CESA, as other parties do, understands that the magnitude and urgency of the need require expedited action. In this context, CESA is supportive of the Commissions' proposal to direct procurement of additional capacity under the framework included in the Ruling, provided some modifications on the magnitude and characteristics of the need are incorporated. As such, within these reply comments, CESA focuses on the following topics:

- The Commission should adopt a 20.7% planning reserve margin (“PRM”) for the purposes of this procurement directive while developing a PRM revision plan based on the recommendations of Pacific Gas and Electric Company (“PG&E”).
- The Commission should adopt a procurement target totaling 10 GW of incremental capacity by 2026.
- An immediate focus on 2027-2030 is needed to avoid just-in-time procurement and support long lead-time resources.
- The 1,000 MW procurement target for long-duration energy storage (“LDES”) is justified and consistent with the Reference System Portfolio.
- The 10-year contract term length minimum must be maintained, with greater lengths proposed for LDES resources.
- Behind-the-meter (“BTM”) resources should be pursued to the greatest extent possible to meet 2024-2026 system reliability needs.
- Concerns about energy storage operations in the wholesale market are not substantiated.
- Storage capacity counting values should be upheld based on current and expected penetration levels through 2030.
- Long-term fossil generation capacity should be prohibited from procurement to meet 2024-2026 mid-term reliability needs.
- A streamlined contract review process via Tier 2 or 3 advice letters can be supported with upfront review criteria and is necessary to ensure timely resource deliveries.

II. THE COMMISSION SHOULD ADOPT A 20.7 PERCENT PLANNING RESERVE MARGIN FOR THE PURPOSES OF THIS PROCUREMENT DIRECTIVE WHILE DEVELOPING A PLANNING RESERVE MARGIN REVISION PLAN BASED ON THE RECOMMENDATIONS OF PACIFIC GAS AND ELECTRIC COMPANY.

Several parties highlighted the methodological deficiencies of the Commission’s stack analyses relative to a formal revision of the PRM which would include a loss-of-load expectation (“LOLE”) study.¹ Due to these limitations, several parties agree that, in order to minimize the risks of future capacity shortfalls, a long-term revision of the PRM must begin with a proper LOLE modeling.² CESA shares this sentiment. While it is concerning that the Commission has recently issued three separate procurement directives using different PRMs,³ the Commission’s responsibility to ensure the continued reliability of the electric power system necessitates urgent procurement directives, where “effective” PRM upon which timely least-regrets procurement is directed is reasonable in the short term. However, this interim modification should not be adopted permanently.

In essence, the Commission should avoid using this expedited process to fundamentally revise the PRM used in the present proceeding. Instead, CESA supports the revision plan put forth by PG&E, whereby the Commission, in coordination with the California Energy Commission

¹ CAISO comments at 4; California Community Choice Association (“CalCCA”) comments at A-1; PG&E comments at 8-9; Natural Resources Defense Council (“NRDC”) comments at 5; Southern California Edison (“SCE”) comments at 5-6; The Utility Reform Network (“TURN”) comments at 1-2; Public Advocates Office (“Cal Advocates”) comments at 2; and City and County of San Francisco (“CCSF”) comments at 2-3.

² Union of Concerned Scientists (“UCS”) comments at 6-7; SCE comments at 7-8; PG&E comments at 8-9; San Diego Gas & Electric (“SDG&E”) comments at 4; Alliance for Retail Energy Markets (“AREM”) comments at 3-4; CCSF comments at 2-3; *and* Shell comments at 2.

³ PG&E comments at 9.

(“CEC”) and the California Independent System Operator (“CAISO”), initiate a stakeholder process within the present proceeding to formally revise the PRM. PG&E suggests these stakeholder process focus on the 0.1 LOLE reliability standard, the use of different weather forecasts, and the resource assumptions regarding California’s reliance on imports across the West.⁴ PG&E recommends this process to start in the first half of 2022 in order to properly coordinate it with determinations made in the Resource Adequacy (“RA”) proceeding regarding its own structure and PRM.⁵

CESA finds PG&E’s recommendation to be reasonable and aligned with the need to minimize market and regulatory disruptions while ensuring the reliability of the electric grid. Moreover, this recommendation articulates the comments of multiple parties that: (1) call on the Commission to perform robust LOLE analyses to properly determine the PRM; and (2) urge the Commission to revisit the weather forecasts considered within the PRM. This last piece is fundamental since the August and September 2020 heatwaves were 1-in-35 and 1-in-70 year-weather events, respectively. These facts, along with wide support among parties,⁶ warrant the consideration of stricter (*i.e.*, 1-in-5 and 1-in-10) weather forecasts. Thus, CESA urges the Commission to use the proposed 20.7% PRM for the purposes of mid-term reliability procurement while engaging with the CEC and CAISO to initiate a stakeholder process on the long-term PRM for the Integrated Resources Planning (“IRP”) proceeding, which should employ stricter weather forecasts to account for the increased likelihood of extreme weather events.

⁴ *Ibid.*

⁵ *Ibid.*

⁶ See CalCCA comments at A-2, Advanced Energy Economy comments at 4, Golden State Clean Energy (“GSCE”) comments at 6, and Middle River Power (“MRP”) comments at 7, among others.

III. THE COMMISSION SHOULD ADOPT A PROCUREMENT TARGET TOTALING 10 GW OF INCREMENTAL CAPACITY BY 2026.

Positions on the level of procurement that should be directed for mid-term reliability needs varied for a number of different reasons. Absent more robust analysis, several parties supported the adoption of procurement directives related to the Mid Need case as a reasonable least-regrets strategy.⁷ Other parties, meanwhile, erred on the side of the Low Need case due to questions about cost and/or some of the underlying assumptions (*e.g.*, import limits, lower PRM) of the stack analysis.⁸ Finally, like CESA, multiple parties supported the High Need case, pointing to the implied build rate necessary to comply with Senate Bill (“SB”) 100 as demonstrated within the SB 100 Joint Agency Report, forecasted electrification, uncertainty of thermal retirements or exports, and/or access to the federal investment tax credits (“ITC”).⁹

Notably, CAISO presented an updated stochastic analysis based on the 46 million metric ton (“MMT”) greenhouse gas (“GHG”) target portfolio. Crucially, this analysis found that, in order for the portfolio to achieve a 0.1 LOLE target, the portfolio would require an incremental 2.6 GW of capacity, raising the total need to 12.4 GW.¹⁰ After netting out the 3,300 MW already procured under D.19-11-016, considering the peak demand increase of 1,122 MW by 2026 per the Integrated Energy Policy Report (“IEPR”), and recognizing the shifting of the peak period to hour ending (“HE”) 8 PM, CAISO concludes that the expected incremental need is approximately 10 GW by

⁷ CalCCA comments at A-3; Golden State Clean Energy (“GSCE”) comments at 6; PG&E comments at 17; Small Business (“SBUA”) comments at 13; Independent Energy Producers Association (“IEP”) comments at 4; and SDG&E comments at 8.

⁸ L. Jan Reid comments at 10; Protect Our Communities Foundation (“PCF”) comments at 10; and TURN comments at 7.

⁹ Hydrostor comments at 7; Long Duration Energy Storage Association of California (“LDESAC”) comments at 7; American Clean Power California (“ACP-California”) comments at 6; Joint Solar Parties comments at 2 and 6-7; Center for Energy Efficiency and Renewable Technologies (“CEERT”) comments at 7-8; and Environmental Defense Fund (“EDF”) comments at 5.

¹⁰ CAISO comments at 5.

2026.¹¹ In this context, the analysis presented by CAISO is essential to move beyond the arbitrary categorizations of mid- and high-need cases as defined by an expedited stack analysis, and instead set procurement directives based on the expected shortfall as identified by stochastic reliability modeling. CAISO’s analysis demonstrates that the capacity shortfall the state will face in the next five years, utilizing the mid-need case assumptions, is closer to 10,033 MW.¹² As such, considering the shortcomings of the stack analysis utilized in the Ruling and the fact that the CAISO only updated certain inputs of the Mid Need case, CESA recommends adopting a rounded total procurement requirement of 10 GW by 2026. The application of this procurement target should be done in line with the proposal submitted by CAISO.¹³

Furthermore, the Union of Concerned Scientists (“UCS”) provided compelling supplemental analysis showing how even without new fossil generation capacity to replace DCPD capacity, the Reference System Portfolio would lead to an increase in greenhouse gas (“GHG”) emissions.¹⁴ To be consistent with SB 1090 and SB 100, environmental parties recommended the adoption of higher levels of procurement consistent with the 38 MMT target of the Reference System Portfolio,¹⁵ aligning generally with the need to minimally pursue 10 GW by 2026 that not only addresses mid-term reliability needs but also advances decarbonization objectives, so long as procurement is limited to new preferred and energy storage resource capacity.

¹¹ *Ibid* at 6.

¹² *Ibid* at 8.

¹³ *See* CAISO comments at 9.

¹⁴ Specht (2021). “Countdown to Shutdown: California’s Clean Energy Future after Diablo Canyon Closes.” Union of Concerned Scientists Research Brief at 4.

<https://www.ucsusa.org/sites/default/files/2021-02/countdown-to-shutdown.pdf>

¹⁵ NRDC; *et al.* joint comments at 19 and California Environmental Justice Alliance (“CEJA”) and Sierra Club comments at 6-7.

Finally, Southern California Edison Company (“SCE”) recommends a more limited procurement order focused on 2024-2025, with additional procurement being authorized for 2026 at a later time with additional analysis.¹⁶ However, deferring procurement that is needed for 2026 to a later time creates risk of being able to meet this commercial online date (“COD”), putting both load-serving entities (“LSE”) and resource developers in the same situation as today where just-in-time procurement raises ratepayer costs and creates deployment risk. For LDES resources to be able to meet the 1,000 MW procurement target, a procurement order is needed that directs LSEs to procure LDES resources by 2026. In a similar vein, Cal Advocates recommends a lower 500-MW procurement target for geothermal and LDES respectively, allowing for more time for further analysis on resource characteristics and time for technological innovation.¹⁷ In response, CESA sees enough data in the Reference System Portfolio and commercial readiness of many LDES technologies to address Cal Advocates’ concerns. The suggested incrementalism with lower procurement targets is thus not needed and would only make it difficult to achieve the full LDES need by 2026 after further investigation.

Like SCE, Cal Advocates, and others, CESA typically favors more robust analysis to justify needs and procurement orders, but at this stage, the luxury of time is currently limited such that a least-regrets strategy must be pursued based on the Commission staff’s and other parties’ stack analysis, at least until a more forward-looking needs analysis and procurement schedule can be established.

¹⁶ SCE comments at 15.

¹⁷ Cal Advocates comments at 17-18.

IV. AN IMMEDIATE FOCUS ON 2027-2030 IS NEEDED TO AVOID JUST-IN-TIME PROCUREMENT AND SUPPORT LONG LEAD-TIME RESOURCES.

Several parties recommended a focus on 2027-2030 to get the state on a regular procurement schedule to support significant and longer-term resource buildout needs, as identified in the SB 100 study, as well as to facilitate long lead-time resource development, such as those for pumped hydro storage (“PHS”), certain LDES resources, and other resource types (e.g., offshore wind) if needed.¹⁸ CESA agrees. The Staff Proposal effectively screens out longer lead-time resources by proposing an accelerated procurement schedule as a default requirement. Contrary to some parties’ recommendations to defer the procurement of long-lead time resources to a later time,¹⁹ CESA sees risk in entirely deferring procurement of such resources to a subsequent decision given the limited lead time to the 2027-2030 period to accommodate the solicitation, contracting, development, and construction timelines of such projects.

According to the Scoping Memo, the Commission has indicated plans to issue Ruling(s) in Q2 2021 on longer-term elements of a procurement framework, including plans for long lead-time resources, and on options for Preferred System Portfolio and any associated procurement required, culminating in Proposed and Final Decisions in Q3 or Q4 2021.²⁰ CESA generally supports the Commission’s plans to address these matters upon review of LSE IRP filings, but we are concerned that long lead-time resources may not be able to be delivered in the 2027-2030 timeframe if timely action and orders are not directed in the upcoming Decision on mid-term procurement reliability, especially as long lead-time resources typically require at least 7-10 years to bring fully online.

¹⁸ Form Energy comments at 15; ACP-California comments at 9; Eagle Crest Energy (“ECE”) comments at 6; Green Power Institute (“GPI”) comments at 11; and Hydrostor comments at 11.

¹⁹ See, e.g.; Joint Solar Parties comments at 10-11.

²⁰ *Assigned Commissioner’s Scoping Memo and Ruling* issued on September 24, 2020 in R.20-05-003 at 12-13. <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M347/K608/347608446.PDF>

Importantly, CESA has similarly observed existing transmission availability limitations and transmission upgrade delays at particular locations,²¹ which likely makes it challenging to target an accelerated procurement schedule and will require greater consideration of locational guidance from the CAISO and Commission. As a result, to support a least-regrets strategy toward longer-term needs that direct the development of some level of long lead-time resources in advance to meet 2027-2030 needs, CESA believes that the Commission can point to another reason to adopt a procurement requirement of 10 GW by 2026 and/or based on the High Needs scenario.

V. THE 1,000-MW PROCUREMENT TARGET FOR LONG-DURATION ENERGY STORAGE IS JUSTIFIED AND CONSISTENT WITH THE REFERENCE SYSTEM PORTFOLIO.

CESA reiterates our support for the procurement target of at least 1,000 MW of LDES resources, which is supported by the Reference System Portfolio, the findings of the Joint Agencies' Report on SB 100, and the Local Capacity Requirements ("LCR") Technical Studies. Like some others, we believe that there is strong record evidence that this 1,000-MW procurement target for LDES resources should be affirmed based on need and value to the system.

A. SCE's conclusion that LDES is not cost-effective is based on flawed modeling inputs and assumptions.

In opening comments, SCE advised against the inclusion of specific procurement targets for geothermal and LDES resources. SCE argued they have modeled the inclusion of these resources within their 38 MMT modeled portfolio, which resulted in an increased resource cost of 16%, or about \$543 million, by 2030.²² To estimate the cost impacts of the

²¹ CEERT comments at 10; Geothermal Rising comments at 6; Joint Solar Parties comments at 10; California Wind Energy Association ("CalWEA") comments at 12; ACP-California comments at 3; Calpine comments at 8-9; and PG&E comments at 5 and 13.

²² SCE comments at 23.

procurement of these resources, SCE notes that 1,000 MW of eight-hour batteries were assumed to replace 1,000 MW of four-hour batteries, while 1,000 MW of geothermal were assumed to replace approximately 740 MW of four-hour batteries and 900 MW of wind. These modifications resulted in increases of \$111 million (3% increase) and \$432 million (13% increase) by 2030, respectively.²³ In CESA's assessment, the evidence offered by SCE does not warrant the elimination of the 1,000 MW procurement target for LDES because: (1) its methodology is flawed and based on a narrow interpretation of LDES; and (2) even within SCE's analysis, LDES procurement results in marginal cost increases relative to the impact of geothermal procurement.

SCE's methodology to account for the cost increases associated with the procurement of 1,000 MW of LDES is incorrect, as it assumes the least-cost method to comply with such directive would be to simply double the MWh energy capacity component of four-hour lithium-ion batteries. This is inconsistent with the fact that there are several LDES technologies that have significantly lower energy capacity costs relative to lithium-ion but may have higher power capacity costs, in terms of \$/MW. In fact, the two other energy storage technologies currently considered within the RESOLVE model, flow batteries and PHS, are modeled in a manner that illustrates this cost trade-off. PHS, for example, has a power capacity cost that is 10 to 12 times greater than that of lithium-ion batteries while being assigned an energy capacity cost equal to 0.4 to 0.6 times that of li-ion batteries. These two examples only represent a fraction of the available technologies that could comply with the proposed procurement target for LDES. Thus, the

²³ *Ibid.*

approximation used by SCE ignores the fact that LDES represents a diverse technology class with distinct cost structures and competitive advantages.²⁴

In addition, even if the Commission were to overlook the methodological deficiencies of SCE's analysis, it is clear that the impact of LDES procurement is marginal when compared to that of procuring geothermal resources. As noted above, only 3% of the observed cost increase is related to the procurement of LDES; whereas geothermal procurement accounts for 13% of this increase.²⁵ This highlights the fact that the most recent round of IRP modeling effectively reached a cost-minimizing solution by not requiring incremental geothermal in the system. In fact, the distribution of cost impacts between the procurement of LDES and geothermal assets underscores the fact that any revision of these procurement targets should focus first and foremost on the minimization of the geothermal requirement, not the LDES one. CESA further elaborates on this issue in Section V.C of these reply comments. Additionally, even a marginally higher cost that includes LDES procurement is justified when accounting for yet-to-be- or difficult-to-quantify resource and technology diversity²⁶ and grid resiliency benefits, as well as the potential in certain cases to address local reliability needs.

²⁴ To this end, CESA points the Commission to CESA's LDES Study attached to our opening comments. LDES was modeled in a technology-neutral way with representative LDES capabilities and cost trade-offs, informed by a literature review of technologies and capturing a representative and aggregated sample of LDES technologies from specific vendors and manufacturers.

²⁵ *Ibid.*

²⁶ Note that statute does require consideration of a "diverse and balanced portfolio of resources" when considering a number of IRP planning objectives. *See* Public Utilities Code Section 454.51(a).

B. LDES consists of a range of technologies and should be viewed as having certain minimum capabilities as part of a broader asset class.

Multiple parties advocate for technology-agnostic approaches that focus on resource characteristics and commercial viability instead of resource- or technology-specific mandates or carveouts.²⁷ Most of the arguments shared by these parties focus on the fact that different technologies could be able to meet the operating characteristics associated with LDES and geothermal assets. In principle, CESA agrees that resource characteristics such as flexibility, responsiveness, and energy and power capacities should be the main driver behind the procurement directives the Commission issues as part of the present proceeding. That being said, CESA disagrees that the Commission's intention to request jurisdictional LSEs to procure at least 1 GW of LDES represents a "technology-specific carveout."

LDES is not a specific resource or technology; rather, it is a resource class comprised of diverse electrochemical, mechanical, thermal, and other storage technologies. LDES encompasses assets as diverse as flow batteries, PHS, gravitational storage systems, compressed/liquid air, molten salt, as well as lithium-ion batteries that are capable of meeting these minimum duration requirements. CESA understands that it is possible parties consider this a "technology-specific carveout" given the Commission has historically modeled LDES by proxy, using the PHS candidate resource within the RESOLVE model. This technical limitation of the current modeling process may have created the impression among parties that only pumped hydro assets could be considered LDES. To clarify, the Commission noted within D.20-03-028, which adopted the 2019-

²⁷ GSCE comments at 8; Joint Solar Parties comments at 9; CalCCA comments at 10 and A-5; Advanced Energy Economy ("AEE") comments at 4; Middle River Power ("MRP") comments at 11; IEP comments at 4; PG&E comments at 3-4 and 22; and SCE comments at 22-23.

2020 Reference System Portfolio, that the 973 MW of optimally selected PHS should be interpreted as one that can be complied with any storage resources with similar characteristics (*i.e.*, 8-12 hours of duration).²⁸ As such, the Commission should recognize that the directive for jurisdictional LSEs to procure at least 1,000 MW of LDES by 2025 does not constitute a “technology-specific carveout” as it: (1) relates to the optimally selected RSP; and, (2) allows LSEs to procure from a wide array of technologies and resources that is capable of and contracted with discharge durations of eight or more hours.

Finally, CESA also agrees with PG&E on the value of establishing a dedicated Energy Storage successor rulemaking to address various issues related to the successful procurement and deployment of emerging and commercial LDES resources, as suggested by PG&E.²⁹ CESA has been calling for a successor rulemaking to address a number of outstanding energy storage topics, of which LDES procurement topics is one of them. Given the long-term need for LDES, as identified in the SB 100 study, CESA sees significant value in establishing a dedicated and standalone proceeding to discuss LDES procurement issues. The launch of this successor Energy Storage proceeding, however, should not serve as a prerequisite for adopting the LDES procurement target and directive in this proceeding, but rather act as a supporting and complementary proceeding that should be coordinated.

²⁸ D.20-03-028 at 63.

²⁹ PG&E comments at 22-23.

C. LDES procurement target should not be met by geothermal or other baseload generation resources due to the complementary roles of solar and storage.

Since LDES does not represent a resource that can serve load on a 24x7 basis, GridLiance West (“GLW”) and California Biomass Energy Alliance (“CBEA”) recommended that the Commission instead require 2,000 MW of geothermal procurement, with LDES only being procured to meet the collective 2,000-MW resource-specific targets if geothermal is not commercially viable. In the alternate, GLW recommends maintaining the 1,000-MW geothermal procurement requirement and broadening the 1,000-MW LDES procurement requirement to allow either geothermal or LDES procurement.³⁰ CESA finds no record evidence in support of this recommendation.

Whereas LDES was optimally selected in the 46 MMT and 38 MMT scenarios of the Reference System Portfolio, geothermal was not selected, except in certain sensitivity cases. Furthermore, with significant quantities of solar and wind resources being selected as part of the optimal system portfolio, what is needed is not baseload generation but resources such as energy storage that are capable of absorbing and later dispatching zero-carbon generation. The complementary roles of solar and wind generation and energy storage mean that a simplified displacement of LDES for firm zero-carbon baseload generation cannot be done without undercutting or substantially changing the Reference System Portfolio itself. If firm zero-carbon baseload generation were identified as needed and optimal from a cost, reliability, and decarbonization perspective, it would have displaced the selection of solar and wind generation and energy storage, but unfortunately, it was not in either the IRP Reference System Portfolio or in the longer-term SB 100

³⁰ GLW comments at 3-4 and CBEA comments at 2-3.

studies, as echoed by several parties.³¹ As such, revising the procurement allocation for LDES in favor of additional geothermal development is contrary to the results of more thorough capacity expansion modeling and inconsistent with the expected generation mix and the needs associated to it.

In fact, in contrast to recommendations from GLW and CBEA, a case could be made that the geothermal procurement target should be met by LDES resources. Multiple parties appear to agree that the geothermal procurement target may be narrowly defined, overlooking other potential firm and dispatchable carbon-free resources that are not or less energy limited.³² Rather than more firm baseload generation that is unable to harness energy that would otherwise be curtailed and could exacerbate overgeneration conditions given the levels of solar generation on the grid,³³ LDES resources could better fit the needs of the current 1,000-MW geothermal procurement target due to their charging capabilities and greater energy capabilities. Greater LDES procurement in the currently-proposed geothermal procurement category may also better right-size for what is actually needed to reach the 0.1 LOLE target in 2026 and 2030.³⁴

³¹ CalWEA comments at 6 and City and County of San Francisco (“CCSF”) comments at 6.

³² Shell Energy North America (“Shell”) comments at 6-7; Alliance for Retail Energy Markets (“AREM”) at comments at 10; GPI comments at 9; and IEP comments at 4-5.

³³ *See, e.g.*, CalCCA comments at 11 and SDG&E comments at 11.

³⁴ Whereas the 2,000 MW of perfect capacity was added to meet the 0.1 LOLE target; it resulted in an LOLE of 0.056 in 2026 and 0.016 in 2030; suggesting that an equal number of nameplate MW with a lower NQC could better right-size for the reliability shortfall and still bring the LOLE level down to the accepted target level. In other words; adding 2,000 MW of perfect capacity was clearly excessive in SERVVM modeling. *See* D.20-03-028 at 23-24.

D. SDG&E’s proposed cost cap for LDES procurement is not necessary and would be difficult to determine.

San Diego Gas and Electric Company (“SDG&E”) recommended that a cost cap be placed on geothermal and LDES resources when assessed against “comparable” resources.³⁵ CESA disagrees with the application of this proposal for LDES since the need for these resources has been confirmed by its optimal selection in the capacity expansion modeling conducted within this proceeding. Moreover, CESA disagrees with SDG&E’s proposal as it would create an uneven playing field for LDES assets in an instance in which the Commission has correctly determined that said resources are necessary given the Reference System Portfolio results.

Procurement of LDES resources should instead be assessed against whether they are cost-effective and thus deliver net benefits in excess of its costs. Such an evaluation aligns with the least-cost best-fit evaluation methodology used across Commission-directed or -mandated procurement, as well as part of the overall Energy Storage Procurement Framework established pursuant to Assembly Bill (“AB”) 2514.³⁶ To support such cost-effectiveness assessments, however, timely reforms and coordination is needed between the IRP and RA proceedings such that RA reforms expected for adoption in June 2021³⁷ do not contravene the modeled and proposed need for LDES resources to meet mid-term and long-term reliability and decarbonization goals.

³⁵ SDG&E comments at 9-10.

³⁶ See Public Utilities Code Section 2836(a)(1). CESA recognizes that the selection of resources in the IRP differs from that of the energy storage mandate pursuant to AB 2514, where the former assesses different resources on not only cost-effectiveness but also cost competitiveness with other resources. However, under mandated procurement, it is reasonable to use a cost-effectiveness standard using the least-cost best-fit evaluation methodology where ratepayers realize value where total benefits exceed costs.

³⁷ See, e.g., Energy Division’s Track 3B.1 proposal would eliminate Maximum Cumulative Capacity (“MCC”) Category 2, which incentivizes LSEs to meet a portion of their System RA needs with resources

E. LDES procurement for both System and Local is optimal but System-only procurement should still be allowed and pursued.

Southwestern Power Group (“SWPG”) and Pattern Energy (“Pattern”) caution against directing 1,000 MW of LDES procurement to just meet system needs when they could be optimized to meet future local needs as well.³⁸ On the one hand, CESA agrees that there is significant value stacking of procuring LDES to meet both System and Local RA needs, which is true of all resource types that are procured, not just LDES. Rather than having siloed procurement of System and Local RA needs from two separate projects, the procurement for both system and local attributes from the same resource can generate significant resource benefit. Especially with the CAISO’s Local Capacity Technical Studies highlighting some of the limits of four-hour battery storage procurement and quantifying the energy and charging requirements to displace existing generation in different Local Capacity Areas, LDES procurement would be optimized if procured to address an LSE’s system and local reliability requirements. When sited in or near disadvantaged communities that have persistently suffered from the worst polluting effects of nearby gas generation, there are additional health and socioeconomic benefits to targeting LDES deployment in this targeted way to address both system and local needs.³⁹

On the other hand, LDES procurement should not be confined to instances where it can address system and local reliability needs since the Reference System Portfolio has already identified sufficient value of LDES to be selected as part of the optimal system portfolio. Even with RESOLVE being unable to optimize the system resource mix by

with at least eight hours of continuous discharge, in line with the Commission’s criteria for LDES procurement.

³⁸ SWPG and Pattern comments at 5.

³⁹ CEJA/Sierra Club comments at 9-10 and 34 and SDG&E comments at 11.

accounting for local needs and constraints, the Reference System Portfolio still found sufficient value of LDES as part of the least-cost, best-fit mix of resources by accounting for its system value alone.

F. Given the “non-routine” nature of LDES procurement at this stage, LSEs should be given the flexibility to opt out of self-providing and have the IOUs conduct centralized backstop procurement for LDES.

Though CESA takes no position in principle on whether LSEs should be able to opt-out of procurement for all future procurements, CESA expressed how it may be necessary to support the compressed procurement timeline to meet 2024-2026 needs. CalCCA recommended maintaining this opt-out option for new community choice aggregators (“CCAs”) whereas the AReM recommended this opt-out option be available only as it relates to geothermal and LDES procurement.⁴⁰ While seeing the merits of allowing opt-out in all cases regardless of resource or LSE type if it increases the viability of successful procurement and deployment to meet CODs with short timelines and if it ensures that new resources are contracted under long-term contract terms, CESA supports the opt-out option being available to new CCAs and for any LDES and geothermal procurement, as proposed by CalCCA and AReM.⁴¹

Centralized procurement by the IOUs for both the IOU share of the need and the opt-out allocation from select LSEs may be particularly necessary for “non-routine” resources such as LDES that have not been procured at the scale being contemplated in accordance with the Staff Proposal, leading to the need for longer contract lengths and/or

⁴⁰ AReM comments at 12-13 and 16-17 and CalCCA comments at 9-10.

⁴¹ *See, e.g.*; TURN comments at 13-15 and 19. TURN focuses only on allowing LSE opt-out and IOU frontstop procurement for the geothermal obligation due to limited supply options for geothermal and possible market power concerns; but as they later explain; failure is not an option; so CESA views it reasonable to allow for similar procurement options be extended to LDES obligations.

large-scale procurement to support their deployment. Due to load migration concerns, LSEs may be disinclined to procure large-scale resources if risks related to cost allocation for departing load customers are not mitigated, where an opt-out option and centralized procurement may be simpler, safer, and more efficient for large-scale, non-routine resource procurement. Without this opt-out option at the start, the proposed backstop procurement trigger of August 1, 2023 (or even August 1, 2022 as proposed by CESA in earlier comments) occurs too late in the process to make it even viable for non-routine resources such as LDES from meeting the 2025 or 2026 online dates.⁴² Yet, to the degree that LSEs are able to self-provide for their share of the LDES obligation, the Commission should also allow for this pathway, as evidenced by promising procurement activities launched last year by eight CCAs to procure up to 500 MW of LDES resources by 2026.

Whether the IOUs should play this centralized procurement role not only for backstop purposes but also for frontstop purposes for the opt-out portion of the procurement obligations, CESA has no principled position on the specific entity that should play this role. With the IOUs already positioned to conduct such procurement to address Summer 2021/2022 emergency reliability needs (R.20-11-003), meet 2021-2023 System RA needs, and conduct centralized Local RA procurement, the IOUs ready-made to fill this (potentially interim) role, at least for the procurement associated with the 2024-2026 mid-term reliability procurement order, until alternative options are identified and developed.

⁴² See also SDG&E comments at 12.

G. LDES resources are capable of providing a range of services.

Because of the eight or more hours of discharge of LDES, Protect Our Communities Foundation (“PCF”) contends that LDES is not capable of supplying the “myriad services” that batteries or other storage can provide.⁴³ Such a claim is incorrect, unsupported, and does not reflect how LDES is capable of providing a range of services, including ancillary services, contingency reserves, and, especially in cases where LDES involves inertial mass, frequency response. The greater charge and discharge capability of LDES does not translate to reduced ability to supply a range of services. By this logic, all baseload or non-energy-limited generation resources would have limited value. Such mischaracterizations of LDES should not be used to inform LDES procurement, targets, or requirements.

H. Green hydrogen storage should be eligible for the LDES procurement target.

CESA supports parties’ request to affirm eligibility of green hydrogen storage in the LDES procurement target⁴⁴ because they qualify as an energy storage technology, meet the minimum duration requirement of 8 or more hours, and align with the growing need for resources to provide multi-day resiliency in the face of public safety power shut-off (“PSPS”) events and multi-day low solar irradiance days. So long as green hydrogen storage is cost-effective and can meet the COD requirements like other eligible LDES resources procured to meet the LDES target, green hydrogen storage should qualify.

⁴³ PCF comments at 16.

⁴⁴ EDF Renewables comments at 3-5 and Diamond Generation Company (“DGC”) comments at 7.

VI. THE 10-YEAR CONTRACT TERM LENGTH MINIMUM MUST BE MAINTAINED, WITH GREATER LENGTHS PROPOSED FOR LONG-DURATION ENERGY STORAGE RESOURCES.

Due to load migration concerns, energy service providers (“ESPs”) recommend shorter-duration supply commitments for new resources and/or limited contract terms to minimally cover the three-year mid-term procurement period of 2024-2026.⁴⁵ PCF recommended a similar limitation on utility contracts due to stranded cost concerns.⁴⁶ Meanwhile, SDG&E opposed the minimum 10-year contract requirement for new resources due to the risk of emerging technologies being locked into initially over-priced contracts, similar to the early Renewables Portfolio Standard (“RPS”) contracts.⁴⁷

CESA respectfully disagrees and recommends that the Commission maintain the 10-year minimum contract term length for any mid-term reliability procurement, regardless of LSE, which is necessary to drive new resource procurement.⁴⁸ The Commission has recognized the need for long-term contracts, at least 10 years in length, for a long period of time in order to promote the development of new resources.⁴⁹ For similar reasons, D.19-11-016 adopted these minimum contract requirements.⁵⁰ Without long-term contracting, new resources will be unable to secure financing to support new-build projects. For long-lived or new resource types, in fact, longer-term contract term lengths of 20 or more years is necessary to access lower-cost capital and, in some cases, defray new technology risks. EDF raises this important point that some resource types

⁴⁵ AReM comments at 19 and Shell Energy North America (“Shell”) comments at 3 and 13.

⁴⁶ PCF comments at 21 and 28-29.

⁴⁷ SDG&E comments at 21.

⁴⁸ Middle River Power (“MRP”) comments at 18. *See; e.g.*; TURN comments at 22: “There is little dispute that the financing of new build resources requires long-term offtake commitments.”

⁴⁹ *See* D.06-03-016 at 58; D.06-10-019 at Conclusions of Law (“COL”) 14-16 and Ordering Paragraphs (“OP”) 16-17; Public Utilities Code Section 399.13(a)(6) and Section 399.13(b); *and* D.17-06-026 at COL 1-3 and OP 1.

⁵⁰ D.19-11-016 at 47, COL 28, and OP 10.

require longer contract terms, greater than 20 years in length to support long-lived assets and/or emerging technologies.⁵¹ Otherwise, with shorter-term contract lengths below the 10-year minimum for new resources, only existing resources will be able to meet mid-term reliability procurement requirements, consisting mostly of thermal generation that does not advance the state’s long-term decarbonization goals and likely already have a significant portion of its fixed costs recovered through previous long-term contracts. If ESPs or other LSEs are unable to meet the minimum contract length requirements, then they should opt-out of procurement pursuant to 2024-2026 mid-term reliability needs and have the IOUs procure on their behalf, with the associated procurement costs passed onto them through the identified cost allocation mechanism.

VII. BEHIND-THE-METER RESOURCES SHOULD BE PURSUED TO THE GREATEST EXTENT POSSIBLE TO MEET 2024-2026 SYSTEM RELIABILITY NEEDS.

In citing the loading order and/or resource diversity needs, EDF and CEERT advocated for the procurement of energy efficiency (“EE”), demand response (“DR”), virtual power plants, and microgrids as the “highest priority” in any procurement.⁵² CalCCA similarly recommended that the Commission expressly permit both market-integrated and non-market-integrated demand-side resources to be procured as part of the mid-term procurement order, so long as incrementality to the baseline is demonstrated.⁵³

CESA wholly agrees and believes that BTM resources should be pursued to the greatest extent possible to meet mid-term reliability needs. In addition to adding resource diversity, BTM resources have the potential to be deployed on relatively quick timeframes as a result of not having

⁵¹ EDF comments at 7.

⁵² EDF comments at 6 and CEERT comments at 11.

⁵³ CalCCA comments at 13.

to proceed through long and complicated cluster study processes and/or wait for significant infrastructure upgrades to be built to support deliverability. Storage-backed demand response (“DR”) resources in particular have a track record of highly reliable performance that does not deteriorate as a result of customer fatigue, leading to fast and frequent dispatches as needed. If exports are enabled and counted, additional stranded capacity could be realized. Rather than seeking incremental capacity from existing fossil generation through efficiency upgrades, an immediate source of incremental clean capacity could be realized through the development and adoption of export counting methodologies and rules for directly-metered BTM energy storage resources.

VIII. CONCERNS ABOUT ENERGY STORAGE OPERATIONS IN THE WHOLESALE MARKET ARE NOT SUBSTANTIATED.

In opening comments, CalWEA expresses concern of energy storage resources regarding their state of charge (“SOC”) management to discharge during periods of need.⁵⁴ Other parties, such as SDG&E, also highlighted the need for additional LOLE studies as there will be a considerable amount of energy storage and “it is unclear whether the system will be able to provide the charging energy for all of this new battery storage or whether the battery storage will have the state of charge to provide the needed capacity during the peak and net peak summer months.”⁵⁵ These arguments are speculative and without merit, particularly in light of recent regulatory and participation modifications pursued by the CAISO. CESA has worked with the CAISO on new SOC parameters to support energy storage operations, allowing scheduling coordinators (“SCs”) to manage the state of charge of their assets to ensure compliance with day-ahead (“DA”)

⁵⁴ CalWEA comments at 3-4.

⁵⁵ SDG&E comments at 11.

commitments related to RA⁵⁶. Moreover, CESA actively engaged with CAISO to develop a minimum state of charge (“MSOC”) requirement as an interim measure for the next two years to provide backstop assurances that there will be sufficient SOC ahead of critical and defined circumstances until longer-term economic and market-based solutions (e.g., energy shifting product) are established.⁵⁷

The Commission should note that energy storage performance during the August and September 2020 heat wave events was scantily reported in the Final Root Cause Analysis Report, pointing to not only the small level of energy storage resources being online at the time (*i.e.*, just over 200 MW) but also highlighting how energy storage performance was not an issue.⁵⁸ As the needs of the grid evolve and a more diverse resource mix is used to serve California’s load, the Commission, just as the CAISO, should engage with stakeholders to ensure the successful integration of the resources identified as optimal within the state’s planning processes rather than limit their opportunity and forego their benefits.

⁵⁶ *Energy Storage and Distributed Energy Resources Phase 4: Final Proposal* published by CAISO on August 21, 2020 at 3-15. <http://www.aiso.com/InitiativeDocuments/FinalProposal-EnergyStorage-DistributedEnergyResourcesPhase4.pdf>

⁵⁷ *Resource Adequacy Enhancements Final Proposal - Phase I* published on February 17, 2021 and updated on March 23, 2021 at 23-27.

<http://www.aiso.com/InitiativeDocuments/ResourceAdequacyEnhancements-PhaseIFinalProposal.pdf>

The CAISO will soon be launching an Energy Storage Enhancements Initiative in April 2021 to initiate the development of longer-term solutions: “In the future, the CAISO will look at other market enhancements to address this concern and allow for additional real-time market participation flexibility, noting that shown resource adequacy battery storage devices will still have flexibility under this proposal to re-bid in real-time any capacity not committed in the day-ahead market.”

⁵⁸ *Final Root Cause Analysis: Mid-August 2020 Extreme Heat Wave* published on January 13, 2021 at 6-7 and 59-60. <http://www.aiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf>

IX. STORAGE CAPACITY COUNTING VALUES SHOULD BE UPHELD BASED ON CURRENT AND EXPECTED PENETRATION LEVELS THROUGH 2030.

Cal Advocates seeks clarification on the capacity counting for energy storage resources given the effective load carrying capability (“ELCC”) curve used in the IRP RESOLVE modeling.⁵⁹ CESA does not believe that values need to be revisited at this time or for the purposes of the mid-term reliability procurement order, particularly considering the expected penetration of energy storage by 2030 and the shape of the ELCC curve used in RESOLVE. Instead, CESA affirms that energy storage should retain its full effective capacity value, a 100% ELCC. This is reasonable as even after accounting for storage procurement pursuant to D.19-11-016 and those related to this mid-term reliability procurement, storage penetration levels on the grid are unlikely to exceed the approximately 20% penetration level as a percentage of system peak, after which the ELCC curve steps down.⁶⁰

Moreover, as CESA has previously noted, the energy storage ELCC curve used within the IRP process has significant limitations: it does not take into account variations related to the availability of renewable energy and duration of the storage assets.⁶¹ These factors are essential; in a 2019 study, National Renewable Energy Laboratory (“NREL”) points out that the peaking capacity of storage assets is primarily influenced by the penetration of storage technologies and the penetration of wind and solar generation.⁶² NREL’s analysis concludes that, for California, a system with 35% PV penetration and 0% wind penetration could have up to 8 GW of 100% ELCC

⁵⁹ Cal Advocates comments at 30.

⁶⁰ See Astrape Consulting, *Astrape Battery Storage ELCC Analysis for IRP RESOLVE Model Use*, available at ftp://ftp.cpuc.ca.gov/energy/modeling/CPUC%20ES%20Final_2-12-20.pdf

⁶¹ CESA, *Comments of the California Energy Storage Alliance on the Administrative Law Judge’s Ruling Seeking Comment on Proposed Reference System Portfolio and Related Policy Actions*, filed under Rulemaking (“R.”) 16-12-007 on December 17, 2019, at 6-7.

⁶² See NREL, *The Potential for Battery Energy Storage to Provide Peaking Capacity in the United States*, available at <https://www.nrel.gov/docs/fy19osti/74184.pdf>

four-hour storage.⁶³ Considering that battery energy storage currently represents around 200 MW of all assets fully integrated to the CAISO system and that this Ruling actually directs the procurement of a set of resources with durations above four hours, CESA believes this issue is not an urgent matter and should not be revised for the purposes of the Ruling. Thus, the Commission should maintain the 100% ELCC for the purposes of mid-reliability analyses and procurement.

X. LONG-TERM FOSSIL GENERATION CAPACITY SHOULD BE PROHIBITED FROM PROCUREMENT TO MEET 2024-2026 MID-TERM RELIABILITY NEEDS.

While recognizing the role of fossil generation capacity in supporting near-term reliability, CESA agrees with several parties who do not support fossil generation eligibility to meet 2024-2026 reliability needs because it would contradict the Commission’s determinations made regarding the replacement of Diablo Canyon Power Plant (“DCPP”) with carbon-free resources and place undue emphasis on reliability over decarbonization.⁶⁴ At minimum, due to risks of contract or development failure and/or insufficient supply, available but uncontracted fossil generation capacity may be needed as an interim measure and procurement strategy, where the Commission should only allow for short-term contracts for fossil generation capacity, not to exceed three years covering the 2024-2026 period consistent with D.19-11-016, and to require demonstrations that the LSE has also procured replacement capacity for new preferred and energy storage procurement to come online by 2027 or immediately after the short-term contract period.

Furthermore, several parties highlight the role of renewable drop-in fuels, such as biogas, hydrogen, or renewable natural gas (“RNG”), as supporting the transition of the fossil fleet to zero-

⁶³ *Ibid*, at 20.

⁶⁴ GSCE comments at 3; GPI comments at 17; PCF comments at 18; NRDC; *et al.* joint comments at 5-6; and CEJA/Sierra Club comments at 8.

or low-carbon generation resources, thus supporting their eligibility for mid-term procurement and retention.⁶⁵ While recognizing the potential for renewable drop-in fuels to support an eventual transition over time to a 100% renewable fuel blend, CESA is concerned about long-term contracting to retain fossil generation capacity with loose commitments to do so. Parties even acknowledge that pipeline delivery of green hydrogen is in the early stages, with the need to develop pipeline injection standards and tariffs,⁶⁶ and high levels of blending is still in the early stages of understanding commercial feasibility and ratepayer costs such that even those who see great potential in this transition pathway are uncertain of committing to a full or high renewable blending future for these generation units.⁶⁷ Given these uncertainties, CESA believes that long-term contracting for fossil generation capacity should not be eligible at this time for the 2024-2026 mid-term procurement requirements until further technical and policy development is achieved to make this a viable pathway.

XI. A STREAMLINED CONTRACT REVIEW PROCESS VIA TIER 2 OR 3 ADVICE LETTERS CAN BE SUPPORTED WITH UPFRONT REVIEW CRITERIA AND IS NECESSARY TO ENSURE TIMELY RESOURCE DELIVERIES.

CESA agrees with several parties that an advice letter process, particularly for new preferred and energy storage resources, is needed for projects to meet their required COD milestones.⁶⁸ The Commission and stakeholders should generally have due process rights and the time to review contracts submitted for approval, as recommended by Cal Advocates,⁶⁹ but this need must be balanced against efficient and timely review. D.19-11-016 recognized this need, and

⁶⁵ DGC comments at 4-5 and 8; IEP comments at 8; Calpine comments at 11; MRP comments at 15; and SDG&E comments at 13-14.

⁶⁶ DGC comments at 9.

⁶⁷ IEP comments at 9-10.

⁶⁸ *See; e.g.*; GPI comments at 21-22.

⁶⁹ Cal Advocates comments at 28.

similarly, the Commission should adopt a balanced process here due to the limited lead time to 2024-2026. Rather than adopting a limited Common Resource Valuation Methodology (“CRVM”),⁷⁰ upfront procurement parameters and demonstration requirements should be established for inclusion in the advice letters to streamline review with “pre-approved” criteria and standards and mitigate the back-and-forth of data requests.

By contrast, CESA reiterates our view that new fossil generation capacity should be prohibited, and at most, only short-term contracts should be pursued for fossil generation capacity seeking efficiency improvements, repowering without energy storage, and/or redevelopment. In this way, the Commission would avoid making stranded investments in polluting resources longer than necessary as the state strives to meet its long-term decarbonization goals. If the Commission allow for long-term contracting with fossil generation capacity for 2024-2026 mid-term procurement based on this renewable blending potential, such contracts should be subject to an Application review process (as opposed to the otherwise Tier 2 or 3 Advice Letter process) for approval. Under an Application review process, CESA believes that the Commission and stakeholders will be able to verify incremental emissions reductions, review the long-term commitments and plans to transition fossil generation capacity to use renewable drop-in fuels, and ensure sufficient accountability measures are in place. As some parties have noted,⁷¹ such a process could also ensure consideration of disadvantaged communities and implementation of a long-term transition for cleaner fuels and/or replacement plans for clean resource capacity. In this way, the Commission can avoid long-term commitments to fossil generation resources under false pretenses and/or paper commitments that fail to materialize the transition to using cleaner fuels over time.

⁷⁰ *Ibid* at 27.

⁷¹ EDF comments at 2 and 11 and CEJA/Sierra Club comments at 36.

XII. CONCLUSION.

CESA appreciates the opportunity to submit these reply comments to the Ruling and looks forward to working with the Commission and stakeholders in this proceeding.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Jin Noh', written in a cursive style.

Jin Noh
Policy Director
CALIFORNIA ENERGY STORAGE ALLIANCE

Date: April 9, 2021