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)

COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON THE PROPOSED DECISION ADOPTING 2021 PREFERRED SYSTEM PLAN

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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 comments on the *Proposed Decision Adopting 2021 Preferred System Plan* ("PD"), issued by Administrative Law Judge ("ALJ") Julie Fitch on December 22, 2021.

I. INTRODUCTION.

CESA appreciates the opportunity to provide comments on the PD detailing the Preferred System Plan ("PSP") the Commission intends to adopt for the current Integrated Resource Planning ("IRP") cycle. As CESA noted in comments to the Ruling issued in this proceeding August 2021 ("August Ruling"), the adoption of a PSP that meets a statewide 38 million metric ton ("MMT") greenhouse gas ("GHG") emission target is an important step in the continued evolution of the IRP proceeding. By adopting a PSP with a more stringent emissions target relative to prior IRP cycles, the Commission has taken a least-regrets pathway to ensure compliance with California's ambitious decarbonization goals.

While CESA generally supports the analysis and sensitivity scenarios developed by the Commission, the proposed PSP could still be enhanced by including more resources and

considering updated transmission information. In addition, CESA offers recommendations regarding the potential modifications to the IRP cycle and model tools, the Commission's actions to ensure the development of storage assets identified in the 2021-2022 Transmission Planning Process ("TPP"), and the potential reservation of deliverability in the Central Coast for the purposes of offshore wind development. CESA's comments can be summarized as follows:

- While the Commission is correct in adopting a PSP based on the 38 MMT GHG target, planning for a more aggressive resource buildout offers reasonable hedges against transmission planning and reliability risks.
- The portfolio used for the 2022-2023 TPP should be revised to reflect the CAISO's intent to pursue the GridLiance West ("GLW") transmission upgrade enhancement.
- If the Commission decides to forego biennial development of a Reference System Plan ("RSP"), the Commission should prioritize better representing hybrid resources and long duration energy storage ("LDES") technologies, as well as developing a modeling framework that considers local area requirements.
- Reserving transmission deliverability associated to the Diablo Canyon Nuclear Power Plant for the development of offshore wind raises discrimination concerns.
- The Commission's proposed action to ensure the development of storage resources identified in the 2021-2022 TPP highlights the need for more robust linkages between the IRP and TPP.

II. WHILE THE COMMISSION IS CORRECT IN ADOPTING A PSP BASED ON THE 38 MMT GHG TARGET, PLANNING FOR A MORE AGGRESSIVE RESOURCE BUILDOUT OFFERS REASONABLE HEDGES AGAINST TRANSMISSION PLANNING AND RELIABILITY RISKS.

In the August Ruling, the Commission presented a series of scenarios and sensitivities based on the 38 MMT GHG target for 2030. In general, the majority of the scenarios based on the forecasts developed by the CEC Integrated Energy Policy Report ("IEPR") resulted in fairly similar builds, varying around the order of 1 GW in magnitude. Despite this relatively small

variance, CESA noted in comments to said Ruling that updating assumptions is essential for a portfolio to reliably reflect the future conditions of the grid.

In particular, CESA highlighted the importance of utilizing the most updated load assumptions determined via the IEPR process. To this end, CESA supported the usage of the 2020 IEPR load forecast, as it includes material updates relative to the 2019 forecast. Namely, as noted by CAISO in comments to the *Administrative Law Judge's Ruling Seeking Feedback on Mid-Term Reliability Analysis and Proposed Procurement Requirements* ("MTR Ruling"), the peak demand in the 2020 IEPR is 1,222 MW higher than in the 2019 IEPR.[1] Moreover, the CAISO underscored that 2020 IEPR also forecasts that the shape of load will change earlier than expected. As described below, based on the 2019 IEPR, the peak hour occurs at hour ending 8 p.m. PDT starting 2024 whereas in the 2020 IEPR forecast the peak hour shifts to 8 p.m. PDT as early as 2023. Notably, the 38 MMT 2020 IEPR case, as detailed in the August Ruling, included 2 GW less solar and approximately 200 MW more of BESS by 2032, relative to the 38 MMT Core portfolio.[2] These differences underscore that utilizing the most updated IEPR load forecast is essential to adequately plan for a changing grid with rising needs later in the evening.

Table 1: IEPR Forecasted Peak Hour 2021-2026 (Hour Ending in Pacific Daylight Time) [3]

	2021	**2022**	**2023**	**2024**	**2025**	**2026**
IEPR 2019	7 PM	7 PM	7 PM	8 PM	8 PM	8 PM
IEPR 2020	6 PM	7 PM	8 PM	8 PM	8 PM	8 PM

In comments to the August Ruling, CESA also advocated for the Commission to adopt a PSP that reflects rising transportation electrification in the form of electric vehicle ("EV") adoption. To this end, CESA urged consideration of the 38 MMT 2020 IEPR + 2020 IEPR High

[1] CAISO Comments on MTR Ruling filed in R.20-05-003 on March 26, 2021 at 7.
[2] August Ruling, Attachment A, at 73.
[3] *Ibid*.

EV (unmanaged) scenario. CESA noted that said portfolio merited further analysis as it only differs from the 38 MMT Core case by approximately 1 GW, mainly due to the amount of solar PV selected, yet it managed to incorporate the most recent load projections and consider high EV load.

As underscored above, the variation between the 38 MMT Core and 38 MMT 2020 IEPR + 2020 IEPR High EV (unmanaged) scenarios presented in the August Ruling was approximately 1 GW. Since then, the composition of these portfolios has changed. As noted in the PD, relative to the 38 MMT Core portfolio, the 38 MMT Core using the 2020 IEPR mid with High EVs includes 1,452 MW of fewer resources.[4] Notably, a comparison of the figures presented in the PD's Tables 2 and 5 reveals that this difference is mostly due to the selection of 1,180 MW fewer of battery storage by 2032.[5] As such, the difference between the 38 MMT Core and 38 MMT 2020 IEPR + 2020 IEPR High EV (unmanaged) scenarios has grown by almost 500 MW since the August Ruling, without significant explanation.

While the adoption of a PSP based on the 38 MMT GHG emissions target is assuredly a step in the right direction, CESA considers that planning for aggressive investments in preferred resources offers a significant hedge for reliability and transmission planning risks. As underscored in CESA's comments to the August Ruling, production cost modeling ("PCM") of the aggregate portfolios revealed that the loss-of-load expectation ("LOLE") of the 46 MMT aggregation was 24% higher in 2026 and 66% higher in 2030, relative to the 38 MMT aggregation.[6] This indicates that, in addition to advancing decarbonization, pursuing more aggressive planning targets provides a reasonable hedge against potential capacity shortfalls.

[4] PD at 89.
[5] *See* PD at 87 *and* PD at 100.
[6] August Ruling at 10.

Moreover, considering significant investments in the PSP better prepares the CAISO to adequately plan for and execute transmission investments.

In this context, CESA recommends the Commission to consider revising the proposed PSP with approximately 2 GW of incremental storage resources. CESA offers a specific recommendation on this subject in Section III of these comments. Furthermore, CESA urges the Commission to continue the IRP process by solely focusing on the 30 MMT scenario in future cycles, as they most closely represent the future envisioned by Senate Bill ("SB") 100 and reflect the urgency of stemming the fallout of recent emergency and extreme events (*i.e.*, drought, heatwaves, wildfires) magnified in magnitude and frequency by climate change. To this end, CESA welcomes the Commission's commitment to ask load-serving entities ("LSEs") to submit plans for how they would achieve their proportionate share of both the 38 and 30 MMT GHG targets by September 2022;[7] as well as the Commission's endorsement of a collaborative effort to develop a portfolio compliant with the 30 MMT GHG constraint with high electrification assumptions that are based on the IEPR demand forecast, and not a PATHWAYS model forecast.[8] CESA is convinced that these steps are essential to allow the Commission and the CAISO to better plan for the significant resource and transmission buildout required to attain California's climate goals and looks forward to contributing to their development.

III. THE PORTFOLIO USED FOR THE 2022-2023 TPP SHOULD BE REVISED TO REFLECT THE CAISO'S INTENT TO PURSUE THE GLW TRANSMISSION UPGRADE.

As previously noted, CESA considers that it is essential to utilize the most updated load, transmission, and cost assumptions in order to ensure that the IRP process yields robust and cost-

[7] PD at 70.

[8] PD at 117.

effective results for future system planning. This is crucial as omitting updates regarding this information could cause capacity expansion results to identify sub-optimal resource investments, affecting busbar mapping processes and ultimately increasing ratepayer costs. In this context, CESA recommends the Commission to revise the portfolios considered for the 2022-2023 TPP to include the GLW Transmission Upgrade enhancement which could allow the interconnection of over 2 GW of additional energy storage, enabling the development of substantial amounts of preferred resources. Moreover, including this upgrade and the associated 2 GW of additional storage in the PSP would result in a more robust portfolio that can offer assurances with regards to reliability and transmission planning, per CESA's comments in Section II.

The GLW Transmission Upgrade, located in Southern Nevada, has been studied by CAISO staff for two TPP cycles. CESA is aware that CAISO staff intends to recommend approval of this upgrade to the CAISO Board noting that it cost-effectively upgrades primarily existing corridors and facilities. Moreover, this upgrade would unlock access to areas with rich renewable resource potential, primarily for solar PV generation, and has significant commercial interest.

Consideration of the GLW Transmission Upgrade enhancement is warranted at this time. Communicating a portfolio for the 2022-2023 TPP that does not contemplate this incremental transmission will would result in a planning exercise that does not consider greater renewable buildout in the Southern Nevada area. As such, this omission could result in the CAISO Board ultimately delaying approval of the enhancement to 2024. As such, CESA requests the Commission to revise the portfolios considered for the 2022-2023 TPP to include the GLW Transmission Upgrade enhancement and include 2 GW of incremental energy storage mapped at this location, in line with our comments in Section II.

IV. IF THE COMMISSION DECIDES TO FOREGO BIENNIAL DEVELOPMENT OF A RSP, THE COMMISSION SHOULD PRIORITIZE BETTER REPRESENTING HYBRID RESOURCES AND LDES TECHNOLOGIES, AS WELL AS DEVELOPING A MODELING FRAMEWORK THAT CONSIDERS LOCAL AREA REQUIREMENTS.

In the PD, the Commission notes that it will eliminate the need to conduct a full set of RESOLVE and SERVM modeling on an RSP to be adopted every two years in order to retain the IRP's biennial schedule. The Commission also notes that it will reserve the adoption of an RSP to times when it determines that planning may shift in such a way as to require an overall look at the State's goals and options for achieving them.[9] CESA understands the importance of retaining a two-year cycle for the IRP process. Considering the ambitious level of resource development necessary over the next decade, converting the IRP's schedule to a three-year process could introduce uncertainty and risk. This being said, the Commission must be cautions in eliminating the RSP as this step of the IRP process has been specifically designed to identify optimal investments at a systemwide level. Without an RSP, the Commission risks the IRP process failing to recognize resources that should be developed to minimize costs and emissions but may not be considered by LSEs in their individual portfolios due to the lack of Commission guidance and analysis. As such, eliminating the RSP could result in technology lock-in, increased ratepayer costs, and suboptimal procurement. In this context, if the Commission decides to move forward with eliminating the RSP, CESA urges the Commission to utilize the additional time it will have ahead of the September 2022 individual LSE IRP submissions to focus on improving three key aspects of the modeling tools utilized for the purposes of this proceeding: the representation of hybrid resources, the representation of candidate LDES technologies, and the consideration of local area needs. CESA expands on these elements below.

[9] PD at 70.

Today, the Commission captures the commercial interest in hybrid resources as part of the busbar mapping approach, in which it optimizes battery storage mapping considering solar mapping results. This process seeks to capture the locational effects of commercial interest in hybrid assets, but it fails to account for the economic advantages these arrangements pose in comparison to standalone deployments. In order to capture the economic benefits of these applications, the Commission should represent variable energy resources ("VERs") paired with BESS as candidate resources with their own cost assumptions within RESOLVE. This should be improved by, *ad minimum*, assuming two hybrid candidate resources based off the heuristic shared by E3 and Astrape Consulting in the Incremental ELCC Study for the purposes of Mid-Term Reliability Procurement. The Incremental ELCC Study demonstrates that solar-plus-storage assets with a 1:1 installed capacity ratio and wind-plus-storage assets with a 2:1 capacity ratio, are capable of reliably maintain the storage component charged for the majority of the time. As a result, this sizing assumption could ease the consideration of paired assets as candidate resources.

Currently, RESOLVE has architecture and candidate resource limitations that overlook the value of LDES. First, RESOLVE makes capacity expansion decisions looking at 37 independent (*i.e.*, non-consecutive) days. CESA has long noted that RESOLVE's architecture makes the model unable to fully capture the reliability value of LDES. Second, RESOLVE only models LDES assets by proxy utilizing availability and cost assumptions associated with pumped hydro storage. These assumptions are not adequate to capture the potential for other LDES technologies, many of them commercially available today. These deficiencies of the RESOLVE model must be addressed in the near-term since growing decarbonization will require increasing

storage durations.[10] As such, conducting planning exercises with deficient modeling could overlook the benefits of LDES assets, posing a risk to reliability and potentially ignoring the ratepayer benefits of timely LDES procurement. In order to address these deficiencies, CESA urges the Commission to collaborate with Energy + Environmental Economics ("E3") and the California Energy Commission ("CEC") to ensure the progress done in their docket Strategies to Model Long Duration Storage (20-MISC-01) is reflected in the model utilized for IRP purposes. Specifically, CESA recommends the following revisions to RESOLVE:

- **The University of North Carolina – Chapel Hill's ("UNCCH") exploration of LDES technologies should be considered when creating new candidate resources for RESOLVE:** The findings shared by UNCCH during the November 17, 2021 Workshop hosted by the CEC regarding the types of LDES available and the key drivers behind specific business models (land footprint, idle losses, and average capital costs) should be utilized by E3 in order to develop new, technology-neutral, candidate resources for the RESOLVE model. These updates should be incorporated as soon as possible to the planning venues where RESOLVE is used, such as the Commission's IRP proceeding and the Joint Agencies' SB 100 reports.
- **RESOLVE's optimization horizon must be increased to capture multi-day and seasonal arbitrage:** During the November 17, 2021 Workshop held by the CEC, UC San Diego underscored that utilizing longer optimization horizons (*i.e.* using increasingly longer ranges of consecutive days for storage balancing) in capacity expansion models results in the selection of increasingly higher storage

[10] *See* Strategen Consulting, *Long Duration Energy Storage for California's Clean, Reliable Grid,* 2020.

durations. CESA considers these findings demonstrate the urgency of improving E3's RESOLVE model, which currently looks at 24-hour snapshots and is utilized in the key planning venues across California.

Finally, in the PD, the Commission expresses its intention to develop a more sophisticated modeling toolkit beginning in 2022. The PD notes this modeling toolkit would be capable of local analysis, to help the Commission better understand how to advance the policy objectives of reducing reliance on Aliso Canyon, reducing dispatch of natural gas generation, and contributing to an "orderly" retirement of the fossil-fueled generation fleet as it ages.[11] CESA is fully supportive of the development of such tools. As noted in comments to the August Ruling, CESA, with the support of a subset of our membership, has partnered with Strategen Consulting and the Pacific Northwest National Laboratory ("PNNL") to develop a modeling approach that can identify a diverse and optimal portfolio of zero-carbon generation and energy storage in the LA Basin to support local reliability while advancing decarbonization. This project will utilize first-in-class capacity expansion modeling with enhanced geographical and temporal granularity. CESA looks forward to share on an ongoing basis the findings of our Los Angeles Local Area Storage Study ("LASS") in the future to inform R.20-05-003.

V. RESERVING TRANSMISSION DELIVERABILITY ASSOCIATED TO THE DIABLO CANYON NUCLEAR POWER PLANT FOR THE DEVELOPMENT OF OFFSHORE WIND RAISES DISCRIMINATION CONCERNS.

In the August Ruling, the Commission asked parties to comment on the potential reservation of transmission deliverability rights associated with Diablo Canyon Power Plant ("DCPP") for offshore wind or other resources to utilize. In opening comments, a number of

[11] PD at 162.

parties highlighted that the Commission does not have the necessary jurisdiction to ensure such reservation as Transmission Planning Deliverability ("TPD") capacity rights are under the jurisdiction of the Federal Energy Regulatory Commission ("FERC"). Moreover, some parties noted that, even if the Commission were able to coordinate with the CAISO, PG&E, and other applicable regulators and stakeholders, reserving deliverability rights for offshore wind is not recommendable.

In the PD, the Commission make clear our policy interest in ensuring that at least a portion of the central coast transmission capacity can be utilized for offshore wind development.[12] To that end, the Commission will also require PG&E to consult with, at a minimum, the Commission's Executive Director and/or Deputy Executive Director for Energy and Climate Policy, before taking any action that would impact its transmission deliverability assets associated with Diablo Canyon.[13]

CESA considers that this policy interest raises significant discrimination concerns. This is because potential offshore wind resources should be subject to CAISO transmission and interconnection processes and tariff requirements equally to all other resources and should not receive special treatment relative to the Federal Energy Regulatory Commission's ("FERC") Open Access Transmission Tariff. As such, instead of prematurely reserving deliverability for a specific type of asset, the Commission should more broadly expand the inquiry to assess which resources would best benefit California ratepayers through the preservation of these deliverability rights.

[12] PD at 142.
[13] PD at 143.

VI. THE COMMISSION'S PROPOSED ACTION TO ENSURE THE DEVELOPMENT OF STORAGE RESOURCES IDENTIFIED IN THE 2021-2022 TPP HIGHLIGHTS THE NEED FOR MORE ROBUST LINKAGES BETWEEN THE IRP AND TPP.

In the PD, the Commission notes that the 2020-2021 TPP identified two transmission projects that can potentially be replaced by appropriately-sited battery storage, both in Pacific Gas and Electric Company's ("PG&E") service area: a 95 MW 4-hour storage resource on the Kern-Lamont 115 kilovolt (kV) system; and a 50 MW 4-hour storage resource at the Mesa 115 kV substation. The Commission further notes that the CAISO has put the two transmission projects "on hold" pending development of storage resources at the required locations, but that if the storage resources are not built, the CAISO will pursue the more expensive transmission projects.[14]

In this context, the Commission states in the PD that it will direct PG&E to actively pursue these resources. For the Kern-Lamont asset, the Commission will require PG&E to conduct a competitive solicitation as the CPE for its territory under the local resource adequacy procurement mechanism already established in D.20-06-002. PG&E would need to show significant progress by August 1, 2022, showing that this resource will be online by Summer 2023 to meet the transmission needs found by the CAISO. The Commission also notes that it shall allow a deviation from the "all-source" requirement for local resource adequacy, included in D.20-06-002, to allow PG&E specifically to solicit four-hour storage, because it was identified in the 2020-2021 TPP.[15] For the Mesa project, the Commission will allow PG&E to identify a suitable project that meets these requirements under the procurement ordered for MTR purposes by April 1, 2022. If PG&E fails to identify such a project, the Commission will require PG&E to

[14] PD at 154.
[15] PD at 157.

expedite procurement of a storage project to meet this reliability need, requiring PG&E to file a Tier 2 Advice Letter by the end of 2022 seeking approval for a project that will meet the needs identified by the CAISO.[16]

CESA agrees with the need for Commission direction regarding these projects. As underscored in the PD, procurement of these assets is in the interest of reliability and ratepayers. While the Commission's intent with these actions is welcome, CESA considers that the compressed timelines to meet these targets underscores the need for a programmatic way to have TPP findings inform IRP procurement with a regular, timely cadence. Given the current status of the CAISO's interconnection queue and the urgent need for near-term procurement, the actions proposed by the Commission in the PD do not offer a clear pathway to competitively meet these needs. Compressed timelines would allow only a small number of projects that are most likely already in the queue to provide these benefits. The lack of a programmatic approach thus hinders the effectiveness of the Commission's action and highlights that transmission deferral planning should be better integrated in the IRP process. As such, while CESA is supportive of the procurement pathways described in the PD for the purposes of these projects, we request the Commission consider means to allow TPP results to timely inform IRP procurement directives with significant lead time, as to ensure competitive solicitation processes.

[16] PD at 158.

VII. CONCLUSION.

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

Respectfully submitted,

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