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## POU BAA and CMUA Comments on SB 100 Kickoff Workshop

*Additional submitted attachment is included below.*

STATE OF CALIFORNIA ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

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| In the Matter of:<br>SB 100 Joint Agency Report | Docket No. 23-SB-100 |

**COMMENTS OF**
**PUBLICLY OWNED BALANCING AUTHORITY AREAS AND THE CALIFORNIA MUNICIPAL UTILITIES ASSOCIATION**
**ON THE AUGUST 22, 2023 SENATE BILL 100 KICKOFF WORKSHOP**

## I. INTRODUCTION

The Indicated Public Power Balancing Authority Areas[1] ("POU BAAs") and the California Municipal Utilities Association ("CMUA") (together "Joint Commenters") provide these written comments on the California Energy Commission ("CEC" or "Commission") Senate Bill ("SB") 100 Kickoff Workshop, held August 22, 2023 ("Workshop").

In prior Comments on the Draft 2021 SB 100 Joint Agency Report[2], on the 2021 Joint Agency Workshops on Transmission[3] and on the 2021 Joint Agency Workshops on Non-Energy Benefits, Social Costs, and Reliability[4], we emphasized the need to maintain grid reliability and affordability of electricity rates while striving to meet the state's decarbonization goals. These

[1] Balancing Authority of Northern California ("BANC"), Imperial Irrigation District ("IID"), and Turlock Irrigation District ("TID").
[2] *Comments of the Joint Publicly Owned Balancing Authority Areas on the June 2, 2021 Joint Agency Workshop on Next Steps to Plan for Senate Bill 100 Resource Build*, Cal. Energy Commission, (Jun. 23, 2021), https://efiling.energy.ca.gov/GetDocument.aspx?tn=238453&DocumentContentId=71757. (Docket No. 21-SIT-01, TN#238453.)
[3] *Comments of the Joint Publicly Owned Balancing Authority Areas on the July 22, 2021 Joint Agency Workshop on the Next Steps to Plan for Senate Bill 100 Resource Build – Transmission*, CAL. ENERGY COMMISSION (Aug. 11, 2021), https://efiling.energy.ca.gov/GetDocument.aspx?tn=239273&DocumentContentId=72723. (Docket No. 21-SIT-01, TN# 239273.)
[4] *Comments of the Joint Publicly Owned Balancing Authority Areas on the November 1, 2021 Joint Agency Workshop on Planning for Senate Bill 100 Analysis of Non-Energy Benefits, Social Costs, and Reliability*, Cal. Energy Commission (Nov. 23, 2021), https://efiling.energy.ca.gov/GetDocument.aspx?tn=240701&DocumentContentId=74058. (Docket No. 19-SB-100, TN# 240701.)

Comments on the Kickoff Workshop focus on those topics, as well as process recommendations and reliability modeling suggestions. We also seek clarification regarding proposed non-combustion scenarios.

## II. COMMENTS

### A. The "Pathways" Approach Appropriately Captures the Tension and Tradeoffs Between the Policy Objectives of Affordability, Reliability, and Decarbonization.

Joint Commenters support the Pathways approach described in the Joint Agencies 2025 SB 100 Report Vision. Inherent in the Pathways approach is recognition that the options for achievement of SB 100 goals have varying tradeoffs in terms of impacts on electricity rates, system reliability, speed of decarbonization, social costs, land use, and other factors. Only if we honestly identify each of these tradeoffs up front can we have a transparent discussion about which pathways best balance competing goals on the path toward decarbonization.

### B. Affordability is a Lynchpin of Achieving Decarbonization Goals

It is well-recognized at this point that the overall cost trajectory of electric rates jeopardizes achievement of decarbonization goals.[5] This was recognized in the 2021 Report to the Governor on Priority SB 100 Actions to Accelerate the Transition to Carbon-Free Energy: "As we progress towards achieving SB 100 the affordability of utility electric bills will be critical to consider."[6] This is not simply a matter of rate design, but the overall costs we expect electricity consumers to bear to achieve these goals. Costs affect adoption of electrification.

[5] Severin Borenstein, *The Economics of Decarbonizing Houses*, MILKEN INST. REV. (July 22, 2022), https://www.milkenreview.org/articles/the-economics-of-decarbonizing-houses; Interview by Charlie Wolfson with James Bushnell, Professor of Economics, U.C., DAVIS. (Nov. 6, 2019), https://energy.mit.edu/news/qa-james-bushnell-on-electricity-markets-and-deep-decarbonization/.

[6] *Report to the Governor on Priority SB 100 Actions to Accelerate the Transition to Carbon-Free Energy, California Energy Commission*, CAL. ENERGY COMMISSION (Sept. 2021), https://www.energy.ca.gov/sites/default/files/2021-09/CEC-200-2021-008.pdf.

Affordability must also account for the total cost of delivered electricity, not just the marginal cost of energy. While the marginal cost of energy may be lowered by resources such as wind and solar[7], we expect substantial increases in transmission and distribution capital investment. [8] A comprehensive examination of overall electric service costs is the critical metric to ensure that electricity rates are affordable for all Californians while pursuing decarbonization goals.

**C. Specific Reliability/Modeling Suggestions**

We support the renewed focus on reliability modeling for this SB 100 study cycle. Joint Commenters strongly support the decision to bring in Electric Power Research Institute ("EPRI") as an independent modeling resource, building on the work done by the CEC and the other state agencies. We believe EPRI will bring strong understanding of the modeling tools needed, particular with respect to modeling resource and load variability and uncertainty, and how this can translate into "imbalance reserve" type products that are now being proposed as part of the CAISO's Day Ahead Market Enhancements.

The study report will be produced in a year from now. For such a complex undertaking, the supporting work for the modeling efforts must get underway immediately. Having experience in these efforts, Joint Commenters can attest to the need for data verification, careful assessment of modeling assumptions, and the actual time to do the computer runs, iterations, and sensitivities (not to mention the actual drafting of the Report). We cannot start soon enough.

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[7] This is an assumption worthy of further discussion. This conclusion must make several assumptions about the future of federal tax and incentive policy and supply chain issues. Also, it would be helpful to test study-assumed price curves against real-world empirical data.

[8] *20-Year Transmission Outlook*, CAL. INDEP. SYS. OPERATOR 3 (Jan. 31, 2022), http://www.caiso.com/InitiativeDocuments/Draft20-YearTransmissionOutlook.pdf; ; Ron Gales, *SCE Details Investments to Advance Electric Grid Reliability, Resilience and Readiness*, S. CAL. EDISON (May 12, 2023), https://energized.edison.com/stories/sce-details-investments-to-advance-electric-grid-reliability-resilience-and-readiness.

Joint Commenters support the use of a production cost model to augment the RESOLVE capacity expansion model. An immediate task in the Report modeling effort may be to define what is meant by "Reliability."

Reliability of the California electrical grid is a multi-faceted issue that spans several disciplines and likely requires multiple tools to analyze and consider properly:

- Resource Adequacy / Sufficiency. The ability of the resource portfolio to meet an acceptable level of reliability measured as a loss of load expectation ("LOLE"), Expected Unserved Energy ("EUE"), and/or other related industry metrics.
- Resiliency / System (Transmission & Distribution) Adequacy. The ability of the transmission system to adequate deliver the portfolio of resources and satisfy all NERC/WECC Reliability Standards/Criteria. This would include the ability of the transmission system and its interconnected resources withstand outages to critical facilities and maintain the expected level of reliability.
- Operational Adequacy. The ability of the power system to provide the expected grid reliability services under planned and unplanned operating conditions.

Resource Adequacy

Resource Adequacy has been the traditional focus of resource planning assessments and focuses on such metrics as the establishment of a planning reserve margin, resource counting rules, resource outage substitution, and related resource adequacy metrics. The historic focus of these programs was on meeting peak demand. The evolving portfolio has brought a different focus on assessing resource adequacy, to move beyond a sole focus on coincident peak load hours to include assessment of adequacy over a broader set of conditions, reflecting the different characteristics of the renewable generation fleet. Resource adequacy must account for the ability of the fleet to produce enough energy in all hours to meet load serving metrics.

California resource portfolios assume projected to have significant behind-the-meter and distribution level resources on a scale not tested before. This is likely to include innovations

such as virtual power plants, vehicle to grid capabilities on a large scale, and other technologies. These resources will be *in lieu* of grid scale resources. Because the overall grid will rely on the contribution of those resources to maintain system reliability, there must be a way to test and model the performance of the resources when assessing overall system reliability.

There are several well-established modeling tools that can assess Resource Adequacy and Sufficiency (e.g., E3's RECAP and Astrape's SERVM models). Whatever tools are chosen, the analysis should do the following:

- Analyze net peak loads (peak load after netting our renewable production)
- Account for prolonged periods of limited renewable output (extended low-solar, low-wind periods)
- Account for resource adequacy challenges during faster larger than expected ramping periods (both up and down)
- Account for the added impact of wildfires on transmission line ratings/outages and fuel delivery for thermal resources
- Account for extreme heat waves and cold snaps in the hourly load forecast
- Account for severe drought conditions in hydro production

<u>Resiliency / System (T&D) Adequacy</u>

Delivery of power from other regions in the West, and from remote resource regions to load centers during challenging system conditions, improves region-wide resilience. It also enables greater diversity of resources, encourages the development of zero-carbon resources at more economic scale, and can be highly cost effective.

The transition to greater distributed resources, increased reliance on utility-scale renewables, and retirement of (or reduced production from) larger thermal resources is likely to strain the transmission and distribution system in new ways. In addition, climate-related system conditions, such as heat waves that increase load and lower thermal line ratings, wildfires that can force transmission assets out of service, conservative operation of transmission assets to reduce risk of wildfire, and reduced production from large hydro facilities due to drought, will

also tend to increase strain on the transmission and distribution infrastructure in the future. Resiliency and transmission/distribution system adequacy will measure the ability of grid infrastructure to adapt to new system conditions and bounce back from more frequent outages. Contingencies that align with evolving system conditions and risks can be identified, and the ability of the grid to withstand contingencies or combinations on contingencies, analyzed.

Modeling tools currently exist (e.g., load flow models currently used to analyze transmission system reliability and conduct transmission planning) and are utilized to demonstrate reliable operations from a transmission and distribution perspective to meet the various regulatory requirements.

Operational Adequacy

It is not enough for the portfolio of resources to represent enough capacity and be able to produce enough energy to meet hourly energy needs. The portfolio must also be able to respond to changing grid conditions in order to meet reliability criteria spelled out in North American Electric Reliability Corporation ("NERC") standards, specifically the ability to maintain frequency, Area Control Error, and to respond to system disturbances to restore frequency of the BAAs and the interconnection. This requires flexible resources that can be committed (to be online) and that are capable of frequency response during all possible system conditions, including low-load periods that can make it challenging to commit generating units with sufficient flexibility to address ramping needs.

This type of operational adequacy can be modeled using production cost simulation tools, such as Power System Optimizer ("PSO"), that are used in other contexts. However, to really test the operational adequacy of the system under future resource portfolios and with future transmission infrastructure, these models need to be operated at a high level of detail. For

example, the production cost simulation models should simulate one-minute intervals, day-ahead unit commitment, intra-day recommitment decisions, and 5-minute and 15-minute energy imbalance market ("EIM") dispatch, subject to minute-by-minute transmission constraints and accounting for day-ahead, intra-day, and real-time uncertainties.

There is a lot of work to do in a very short period of time. Joint Commenters suggest the immediate formation of working groups led by the agencies in collaboration with the BAAs and industry participants to scope out a work plan for the reliability modeling in the Report, assess what can be accomplished within the time allotted, and provide a vehicle for collaboration on this critical and complex topic.

### D. Better Alignment of Permitting Can Help Avoid Costly Missteps as Portfolio and Transmission Investment

While the SB 100 Report cannot change siting processes, it is important to recognize and support the observations the California Council on Science & Technology made at the Workshop regarding the challenges created by the needed build out of energy resource additions, and the temporal disconnect with transmission infrastructure permitting and siting.[9] Joint Commenters would add that this disconnect threatens to result in higher costs and what might be called "stranded Pathways" if considerable time and resources are spent on a resource type that requires significant transmission upgrades or has other dependencies, and those upgrades are delayed or not approved. Joint Agencies should consider as part of the SB 100 Report incorporating a qualitative risk factor for resources that are dependent upon challenging siting determinations, or at a minimum articulate the need to better harmonize siting timelines with resource development timelines.

[9] Michael Mastrandea & Rhianna Hohbein, *Key Challenges for California's Energy Future: An Energy Primer for California's Policymakers*, Cal. Council of Sci. & Tech. (Aug. 22, 2023), https://efiling.energy.ca.gov/GetDocument.aspx?tn=251710&DocumentContentId=86707, at 8.

Joint Commenters have in the past made process suggestions on how the modeling work in particular can be organized. While recognizing the resource constraints of both our organizations and that of the state agencies, it may be useful to start a Working Group process to help communicate progress on the modeling effort, seek feedback on assumptions and data questions, and solicit input.

### E. The Non-Combustion Scenario Requires Clarification

Further discussion is needed on the usage and inclusion of the term "non-combustion" when discussing eligible resources. The Joint Commenters recommend that Joint Agencies clarify that the non-combustion scenario section is only being provided as an extreme case to provide a full range of analytics of the scenario. The State, along with many entities, has recognized the importance of firm renewables and zero-carbon resources, including those that involve combustion, in achieving broader decarbonization goals. For example, the 2022 California Air Resources Control Board ("CARB") Scoping Plan Update relies on hydrogen and carbon capture to enable emissions reductions in multiple sectors, including the electricity sector. SB 1075 calls on the Joint Agencies to further investigate the role of hydrogen in meeting the state's climate goals. The state has been carefully exploring the positive potentials of hydrogen, including by the CEC as part of the Integrated Energy Policy Report ("IEPR") process. Indeed, the CEC's September 7 workshop on SB 1075 featured significant discussion on the importance of hydrogen, including a presentation from California Governor's Office of Business & Economic Development ("GO-Biz") on the state's participation in Alliance for Renewable Clean Hydrogen Energy Systems ("ARCHES") and the desire to develop a hydrogen hub. The Joint Parties note these things because they are at odds with any scenario that excludes the combustion

of renewable hydrogen and summarily dismissing hydrogen by embracing a non-combustion scenario in the SB 100 would fly in the face of state and federal policy directives in this regard.

Furthermore, in the 2021 study, the Commission stated that natural gas is a likely component of the fleet into 2040s.[10] However, the last report discussed a linear retirement of all combustion resources and no availability of combustion resources. This is inconsistent with other resource investments and strategies. The need for firm clean resources is imperative. Public and private entities throughout the West, including CMUA members, are making significant investments with support from federal and state policymakers, in new technologies to provide this capability. For example, the Los Angeles Department of Water and Power ("LADWP") is converting the Intermountain Power Project from coal to an 820 MW blended hydrogen/natural gas facility that will transition to full hydrogen by 2040.[11] LADWP is part of the Western Green Hydrogen Initiative, along with the State of California. NCPA is transitioning to blended hydrogen at its Lodi Energy Center.[12] SMUD has entered into a Memorandum of Agreement that provides principles for a purchased power agreement for the output of the Sutter Energy Center Carbon Capture and Sequestration project.[13] Dispatchable resources like these, with long duration capabilities, are necessary to advance the state towards its clean energy and decarbonization goals. It seems incongruous if Pathway scenarios were advanced that would discourage the development of these technologies and related policies being supported by the

[10] *2021 Senate Bill (SB) 100 Joint Agency Report*, CAL. ENERGY COMM. (Mar. 15, 2021), at 17, https://efiling.energy.ca.gov/EFiling/GetFile. aspx?tn=237167&DocumentContentId=70349.
[11] *Intermountain Power Project & Green Hydrogen*, LOS ANGELES DEPARTMENT OF WATER & POWER (July 2020), https://ww2.arb.ca.gov/sites/default/files/2020-07/ladwp_cn_fuels_infra_july2020.pdf.
[12] *NCPA plans hydrogen-fueled power plant*, AM. PUB. POWER ASS'N (Mar. 13, 2020), https://www.publicpower.org/periodical/article/ncpa-plans-hydrogen-fueled-power-plant.
[13] *Calpine's Proposed Carbon Capture & Storage Project*, SACRAMENTO MUN. UTIL. DISTRICT (May 2, 2023), https://www.smud.org/-/media/Documents/Corporate/Environmental-Leadership/ZeroCarbon/2023-05-02_Proposed-Carbon-Capture-Workshop.ashx.

State and federal government. We ask for clarification of the details of non-combustion scenarios and how they would treat these critical resources.

## III. CONCLUSION

The Joint Commenters appreciate the opportunity to provide these comments and look forward to continuing to work with the Joint Agencies in this proceeding.

Dated: September 15, 2023

Respectfully submitted,

*/s/ Tony Braun*
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