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RE: SCPPA Comments on Draft Scoping Plan Update

The Southern California Public Power Authority[1] (SCPPA) appreciates the opportunity to provide comments on the California Air Resources Board's (CARB) draft Scoping Plan Update (SPU). SCPPA recognizes the tremendous amount of work that has gone into the draft SPU, including designing, modeling, and evaluating the carbon neutrality scenarios.

The final SPU represents a foundational step in charting the state's path to carbon neutrality. The scenario ultimately adopted by the CARB Board in the fall, along with its embedded policy direction and statements, will lay the groundwork for implementation for years to come in rulemakings, programs, and policies at CARB and its sister agencies. It is essential, therefore, that the final SPU reflect an achievable path to carbon neutrality that recognizes the need to safeguard reliable, affordable electricity – the cornerstone to economywide emissions reductions in all scenarios – and fully articulates the uncertainties and risks associated with implementation. SCPPA offers the comments below for CARB's consideration in developing the final SPU. SCPPA also supports and is a signatory to the Joint Utilities Group (JUG) comments on the draft SPU.

I. SCPPA supports Alternative 3 as the most feasible of the paths modeled for achieving statewide carbon neutrality, but further analysis of grid impacts is needed.

The electricity sector plays a central role in achieving carbon neutrality in all four alternatives modeled for the draft SPU. In each scenario, low-carbon electricity enables buildings, transportation, and industry to transition off of fossil fuels and dramatically decrease overall greenhouse emissions. The potential success of each scenario, therefore, relies on the provision of reliable, affordable electricity to power homes, vehicles, and businesses. Due to the unique and pivotal responsibility assigned to the electricity

[1] SCPPA is a joint powers authority whose members include the cities of Anaheim, Azusa, Banning, Burbank, Cerritos, Colton, Glendale, Los Angeles, Pasadena, Riverside, and Vernon, and the Imperial Irrigation District. Each Member owns and operates a publicly-owned electric utility (POU) governed by a board of local officials. Our Members collectively serve nearly five million people throughout Southern California. Together they deliver electricity to over two million customers throughout Southern California, spanning an area of 7,000 square miles.

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sector, SCPPA has repeatedly urged that the pathway to carbon neutrality must not compromise safe, reliable, and affordable electricity.[2]

In the draft SPU, CARB staff identifies "Alternative 3" – carbon neutrality by 2045, using a broad portfolio of new and emerging zero-carbon technologies and leveraging the state's ambitious executive orders – as the recommended pathway. The draft SPU concludes that Alternative 3 is more feasible than the 2035 carbon neutrality alternatives due to the longer timeframes to develop and deploy clean technology and fuels, would achieve significant public health benefits relative to the reference scenario, has the least slowing effect on employment and economic growth, and still meets the Senate Bill (SB) 32 GHG targets in 2030.[3] For the electricity sector, Alternative 3 is consistent with Senate Bill (SB) 100, the state's landmark clean energy policy, and would require the state's utilities to serve 100% of retail sales with renewable and zero-carbon resources by 2045.[4]

Based on the information currently available, SCPPA believes that Alternative 3 represents the most achievable path to carbon neutrality, but there are gaps in the conducted analysis that must be addressed to fully understand the impacts of this scenario on the electricity sector.

a. Alternative 3 includes key features to help support grid reliability and electricity affordability and enable economywide electrification.

SCPPA believes that Alternative 3 is the most feasible of the carbon neutrality pathways modeled because it includes several key features that are crucial for protecting electricity reliability and affordability:

- Broad portfolio of renewable and zero-carbon resources. A diverse mix of technology options is essential for achieving 100% clean electricity while maintaining reliability and mitigating cost impacts. A minimum level of local thermal generation capacity that can be flexibly dispatched will remain essential during the foreseeable future. Such resources are needed to integrate intermittent renewable energy and to ensure there is sufficient supply to meet demand during every hour of the year, including during prolonged days of clouds, low wind, heavy smoke, drought, and more. This is especially important in transmission constrained regions like the L.A. basin. Local generation also provides protection against contingencies like wildfires that may threaten electricity imports through long-distance transmission lines. Emerging technologies like

[2] See April 4, 2022 SCPPA comment letter; November 19, 2021 SCPPA comment letter; October 22, 2021 joint POU comment letter; September 3, 2021 joint POU comment letter; and July 9, 2021 joint POU comment letter.

[3] Draft SPU at pp. 51-52

[4] Table 2-2, draft SPU at p. 60

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green hydrogen, as well as renewable fuels that are currently available today in limited supply, can help fill the role of dispatchable zero-carbon resources and must remain options as the state transitions off of fossil fuels, as recognized in the draft SPU.[5]

In addition, modeling from the 2021 SB 100 Joint Agency Report showed that expanding the list of candidate renewable and zero-carbon generation resources could lower the cost of achieving 100% clean energy by roughly $2 billion in annual resource costs in 2045, whereas restricting zero-carbon combustion resources increased costs by approximately $8 billion.[6] While the report did not include any analysis of rate impacts, these costs are ultimately borne by utility ratepayers, and mitigating rate increases is a necessary element of keeping electricity affordable.

- 2045 timeframe for achieving 100% clean energy statewide. Affirming the statewide policy to meet 100% of retail load with clean energy by 2045 is important both to protect against adverse impacts to electricity reliability and affordability, as well as to ensure sufficient time for coordinated planning and conducting the necessary environmental reviews to site new renewable and zero-carbon resources. The SB 100 Priority Actions Report expanded on some of the barriers that must be overcome to realize the SB 100 clean energy policy, including permitting challenges for new generation and energy storage projects, transmission availability and the long lead times to construct new lines, supply chain impacts, net peak reliability challenges, adverse rate impacts, and the extended timeframes needed to develop and mature emerging zero-carbon technologies.[7] In fact, since the Priority Actions Report was released last September, supply chain issues have only intensified.

  Accelerating the 100% clean energy state policy would make addressing the barriers identified in the Priority Actions Report more challenging and could prevent many utilities from realizing the expected reliability and cost benefits associated with emerging zero-carbon technologies and the buildout of new transmission. SCPPA notes that setting a 2045 statewide clean energy policy does *not* preclude individual utilities, including several SCPPA Members, from planning to achieve renewable and zero-carbon goals earlier than 2045.[8] California's POUs vary widely

[5] Draft SPU at pp. 156-157

[6] CEC, CPUC, CARB, Achieving 100 Percent Clean Electricity in California: An Initial Assessment ("SB 100 Joint Agency Report"), https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237167&DocumentContentId=70349. See pp. 12-13.

[7] CEC, Report to the Governor on Priority SB 100 Actions to Accelerate the Transition to Carbon-Free Energy ("Priority Actions Report"), September 2021, https://www.energy.ca.gov/sites/default/files/2021-09/CEC-200- 2021-008.pdf. See pp. 9-19.

[8] For example, the Los Angeles Department of Water and Power is planning to achieve 100% clean energy by 2035, and both Burbank Water and Power and Riverside Public Utilities have 2040 zero-carbon electricity goals.

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based on their service territories, geography, customer demographics, resource portfolios, transmission availability, and local reliability needs. Each utility will face different challenges to support widespread, rapid electrification, and some may determine that earlier clean energy targets are feasible. However, it is of paramount importance that achieving the statewide clean energy policy does not jeopardize reliable and affordable electricity service, and the 2045 timeframe appropriately recognizes the diversity of the state's utilities and the communities that they serve.

- 2045 timeframe for achieving carbon neutrality statewide. A 2045 timeframe for achieving carbon neutrality establishes an ambitious but implementable goal. This timeframe recognizes the need to develop and deploy clean technologies, as noted in the draft SPU, as well as the potential amplification of individual sectoral challenges in an immediate, simultaneous transition. For example, rapid electrification of the transportation, building, and industrial sectors has the potential to exacerbate electricity affordability and reliability challenges for some utilities as electricity usage patterns change and load increases substantially. Electrification will also necessitate major upgrades to electricity distribution systems, which can take extended time due to permitting and environmental review. While utilities are already planning for these upgrades, they will take significant time and cost for many to complete. Moreover, the simultaneous, accelerated transformation of multiple sectors will increase competition for the same resources, including labor, construction materials, and lithium and semiconductors for batteries, that will need to be scaled up and have already been severely impacted by supply chain constraints following the COVID-19 pandemic. Finally, as noted in the draft SPU, there is significant uncertainty in the timeline for deploying engineered carbon removal, a key component in all of the draft SPU carbon neutrality alternatives.

b. Additional analysis is needed to understand impacts on electricity reliability and affordability

SCPPA believes that, based on the information currently available, Alternative 3 is the least likely to create unintended consequences for grid reliability and electricity affordability while still achieving the state's clean energy and economywide decarbonization goals. As such, Alternative 3 appears to represent an implementable statewide path to carbon neutrality. SCPPA cautions, however, that these assessments are based on incomplete information. First, the draft SPU's modeling fails to account for the significant energy needs for electrolysis to produce green hydrogen and for engineered carbon removal, meaning the estimated load increase associated with Alternative 3 is likely a severe underestimate. In addition, rigorous analyses of system and local grid reliability and electricity affordability are currently missing from the draft SPU and the state's other long-term

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planning processes. The final SPU must acknowledge the need for these additional analyses, the importance of which is summarized below.

- Systemwide reliability analysis. As SCPPA and the JUG have explained in prior comments, the SB 100 resource portfolio underpinning Alternative 3 has not been studied for systemwide reliability impacts.[9] Understanding the impacts to system reliability is necessary because the path to carbon neutrality depends on reliable electricity sources. In addition, based on the AB 32 GHG Inventory Modeling Data Spreadsheet, the electric load in Alternative 3 would exceed the "high electrification" demand used to model the SB 100 core scenario without factoring in electricity needs for hydrogen production and engineered carbon removal. While these are currently assumed to be powered by unmodeled off-grid renewables, they should be addressed in modeling to fully assess the potential load growth associated with Alternative 3.

  The question of systemwide reliability is not a hypothetical issue. In August 2020, during a West-wide extreme heat wave, the state suffered rotating blackouts.[10] Last summer, high temperatures, coupled with unreliable transmission for Northwest imports due to the Bootleg Fire, nearly destabilized the California Independent System Operator (CAISO) system. These conditions led Governor Newsom to issue an emergency proclamation that, among other orders, suspended air quality regulations on backup generators during CAISO grid warning or emergency notices.[11]

  Reliability concerns persist today, even before factoring in the increased load in a high electrification scenario. Concurrent with the release of the draft SPU, leaders from the state energy agencies announced the need for potentially significant contingencies this summer during net peak hours under extreme conditions to avoid blackouts. In response, Governor Newsom proposed $5.2 billion in his revised budget for a "strategic electricity reliability reserve," which could include existing generation capacity that is scheduled to retire as well as new diesel and natural gas backup generators, among other resources.[12] At a subsequent workshop, California Energy Commission (CEC) and California Independent System Operator (CAISO) staff projected that reliability concerns during late summer net peak hours will persist at least through summer 2026.[13]

[9] See November 19, 2021 JUG comment letter; October 22, 2021 joint POU comment letter; and September 3, 2021 joint POU comment letter.

[10] Final Root Cause Analysis of Mid-August 2020 Extreme Heat Wave.

[11] July 30, 2021 Emergency Proclamation

[12] Refer to May Revise Summary, https://www.ebudget.ca.gov/2022-23/pdf/Revised/BudgetSummary/FullBudgetSummary.pdf

[13] Refer to CEC slides and CAISO slides from May 20, 2022 CEC reliability workshop.

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Moreover, SCPPA observes that while summer reliability has been the key focus due to California's summer peaking system, building electrification is projected to increase electric loads in winter during early morning hours, when solar generation is less abundant. Ensuring sufficient supply to meet demand in all hours of the year, under a broad range of conditions, is needed to support reliable electric service. SCPPA supports the recommendation in the JUG comment letter on the draft SPU to include industry standard loss of load expectation analyses, reflecting realistic assumptions about land use limitations and the energy needs for green hydrogen production and engineered carbon removal. The final SPU must acknowledge that the carbon neutrality pathway may need to be adjusted following the completion of this analysis.

- Local reliability and distribution system impacts. In addition to systemwide reliability, impacts to local planning areas and utility distribution systems must also be assessed. The electric system is not uniform across the state, so it is not sufficient to simply identify the amount of new generation that will be needed to support new loads. Analyses must also address how resource generation can be delivered to local loads, factoring in transmission import limits and congestion areas. Moreover, many utilities will need to make significant upgrades to their distribution systems, as noted above, to support increased levels of electrification. While utilities are already planning for these changes, the uncertainty in timing and cost need to be considered.

- Affordability analysis. As noted above, the 2021 SB 100 Report found that achieving 100% clean energy by 2045 was technically feasible, but requires significant costs. However, the report did not include an assessment of the cost impacts on rates or affordability, which was slated for future work. Many utility customers are already seeing significant rate increases associated with hardening the existing grid, transmission costs, and wildfire mitigation measures. The impacts of increased rates, particularly in the context of cumulative increases, could dampen customer adoption of electrification while also increasing the burden on lower-income Californians.

While SCPPA recognizes there is inadequate time to conduct and publicly vet these analyses prior to completion of the final SPU, SCPPA urges CARB and its sister agencies to complete them as early as possible to inform and, as needed, adjust the state's trajectory toward carbon neutrality.

II. The Final Scoping Plan must include a more robust discussion of uncertainties for the electricity sector and the sector's "Strategies for Success" must acknowledge the potential need for adjustments to mitigate risks.

SCPPA appreciates that the draft SPU includes an initial discussion on uncertainty, citing permitting wait times, local ordinances, and interconnection delays as potentially affecting the buildout of utility-scale

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renewable resources and commercial operations achievement. However, this discussion has major gaps. The final SPU must also acknowledge the uncertainties stemming from potential systemwide reliability, local reliability, and affordability impacts due to lack of sufficient analysis, as any of these could jeopardize the state's ability to achieve its electrification, and thus emissions reduction, goals.[14] SCPPA also recommends that the uncertainty discussion in the final SPU address the supply chain issues that are impacting multiple sectors today, which could hinder timely progress toward the state's carbon neutrality goals.

In addition to acknowledging these uncertainties, the draft SPU must identify and seek to mitigate the associated risks. SCPPA agrees with the draft SPU that the costs and risks of inaction are significant; it is imperative that California take all feasible actions to reduce emissions. However, it is also imperative that the state does not rush into action without regard for grid operations and inadvertently increase the risk of blackouts or saddling electricity consumers with excessive costs.

Under the draft SPU, electricity is the backbone of the state's economy and the fuel source for Californians' homes and businesses.[15] If utilities are unable to maintain reliable, affordable electric service due to policies that do not adequately accommodate operational needs, there may be serious negative impacts to the state's ability to achieve its decarbonization goals and serve as a model for other jurisdictions, and to the Californians that rely on electricity for all aspects of their daily lives. The final SPU must identify these risks and also acknowledge the need for flexibility to make adjustments to avoid compromising electricity reliability or affordability.

SCPPA recommends, therefore, the following additions to the final SPU uncertainty section:

- Expand the discussion to include the unknown impacts to system and local grid reliability and electricity affordability.
- Expand the discussion to include impacts associated with supply chain disruptions.
- Identify the risks associated with compromising electricity reliability and affordability, including potential impacts to public health and safety, the state's ability to achieve our own climate goals, and the state's ability to serve as a model for other jurisdictions.
- Acknowledge the potential need for adjustments in future SPUs, based on additional analyses, to ensure that the path to carbon neutrality does not compromise grid reliability or electricity affordability.

[14] While SCPPA appreciates that the "Clean Electricity Grid" section of the draft SPU (pp. 158-159) acknowledges there are operational challenges associated with integrating renewable resources and shifting net peak, a fuller discussion of risk and uncertainty is needed.
[15] Draft SPU at p. 156.

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SCPPA also recommends the following additions to the "Strategies for Success" for the clean electricity grid:

- Complete systemwide and local reliability assessments for Alternative 3, using realistic assumptions for land use, build rates, and energy needs.
- Prioritize actions to mitigate impacts to electricity reliability and affordability and provide sufficient flexibility for adjustments as may be needed.

III. Accelerated carbon neutrality timeframes and constraints on zero-carbon generation resource would pose serious risks to the electric grid.

As noted above, the 2045 timeframe for achieving carbon neutrality, the 2045 timeframe for achieving 100% clean energy statewide, and the inclusion of a broad portfolio of renewable and zero-carbon resources are essential components of an implementable path to carbon neutrality. Restricting resource eligibility or accelerating these timeframes will not be feasible for some utilities.

A no-combustion restriction on renewable and zero-carbon generation resources would fail to account for electric system reliability needs. As noted above, a minimum amount of dispatchable thermal generation is necessary for reliability and resiliency. A no-combustion scenario would eliminate green hydrogen and renewable fuel combustion turbines as renewable and zero-carbon resources. While local solar generation, batteries, fuel cells, and load flexibility may all help minimize the need for renewable and zero-carbon combustion resources, there are significant limitations that must be addressed – for example, the duration of commercially available batteries, space constraints in built-out urban areas and the lower power density of solar, the need for hydrogen fuel distribution infrastructure and technology costs for fuel cells, and customer adoption. Eliminating green hydrogen and renewable fuel combustion options for electricity generation would require a significant overbuild of solar and batteries to meet projected forecasted electric demand, at significant cost to ratepayers and without the reliability benefits provided by local thermal generation.

In addition, accelerated clean energy and carbon neutrality timeframes would likely exacerbate grid reliability and electricity affordability challenges for many utilities. A statewide 2035 clean energy timeframe would not recognize the lengthy time horizons needed to permit (including completing environmental reviews), site, and build new transmission, distribution, storage, and generation resources, all of which will be needed to provide reliable electricity service to new load. An accelerated carbon neutrality timeframe may compound existing challenges related to supply chain and labor availability. Moreover, it would not provide adequate opportunity for technologies to mature and costs to come down, which could have significant cost impacts for communities and ratepayers.

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IV. Conclusion.

Thank you for the opportunity to provide feedback on the draft SPU. SCPPA looks forward to working with CARB to refine the final SPU to reflect an implementable path to achieve carbon neutrality.