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RE: Addressing Reliability in the 2022 Scoping Plan Update

The Joint Utilities Group (JUG) appreciates the opportunity to offer comments to the California Air Resources Board (CARB) regarding the 2022 Scoping Plan Update (SPU). The JUG is a coalition of investor-owned, publicly-owned, and electric cooperative utilities in California.[1][2][3][4][5]

The JUG appreciates the balanced approach CARB has taken in modeling, drafting, and incorporating feedback into the 2022 SPU. The JUG brings forth this supplemental recommendation to CARB for its consideration in the final draft of the 2022 Scoping Plan Update. The JUG urges CARB to include language that supports an urgent build out of clean, firm, dispatchable electricity generating resources and supporting infrastructure, maintaining existing resources until clean reliable substitutes are operational, and encourages electric grid reliability modeling as agencies and others move forward to implement the recommendations of the SPU.

Achieving carbon neutrality within California hinges on the success of decarbonizing the energy sector, while also balancing equitability, affordability, and reliability. All SPU Scenario Alternatives rely on heavy electrification of other sectors of the economy. As larger portions of the state's energy demand transition to electricity, more sectors will depend on a reliable electric grid. Thus, an electricity grid whose resource portfolio can reliably deliver power as demanded 24/7, 365 days a year to end users statewide, is critical. The importance of a reliable grid was recently articulated by CEC Vice-Chair Siva Gunda, "…if we stumble on *keeping the lights on* the whole climate agenda is at risk."[6] As is evident from the Governor's August 31, 2022 emergency proclamation[7], and as California and the Western Interconnection face increasing occurrences of extreme weather events like record-setting heat waves and droughts, the state is already facing challenges in "*keeping the lights on"* during such events. Until firm, dispatchable zero-carbon resources and long-duration storage technologies mature, securing electric reliability in the face of unprecedented peak demand will become

[1] This JUG letter represents the collective comments of the following utilities: Pacific Gas & Electric Company, San Diego Gas & Electric Company, Southern California Edison, Bear Valley Electric Service, Liberty Utilities, Turlock Irrigation District, Southern California Gas Company, PacifiCorp, the Golden State Power Cooperative, the Northern California Power Agency, Southern California Public Power Authority, and the California Municipal Utilities Association.

[2] The Northern California Power Agency (NCPA) is a nonprofit California joint powers agency established in 1968 to construct and operate renewable and low-emitting generating facilities and assist in meeting the wholesale energy needs of its 16 members: the Cities of Alameda, Biggs, Gridley, Healdsburg, Lodi, Lompoc, Palo Alto, Redding, Roseville, Santa Clara, Shasta Lake, and Ukiah, Plumas-Sierra Rural Electric Cooperative, Port of Oakland, San Francisco Bay Area Rapid Transit (BART), and Truckee Donner Public Utility District—collectively serving nearly 700,000 electric consumers in Central and Northern California.

[3] The Southern California Public Power Authority (SCPPA) is a joint powers agency whose members include the cities of Anaheim, Azusa, Banning, Burbank, Cerritos, Colton, Glendale, Los Angeles, Pasadena, Riverside, and Vernon, and the Imperial Irrigation District. SCPPA Members collectively serve nearly five million people throughout Southern California. Each Member owns and operates a publicly-owned electric utility governed by a board of local officials who are directly accountable to their constituents.

[4] The California Municipal Utilities Association is a statewide organization of local public agencies in California that provide electricity and water service to California consumers. CMUA membership includes publicly-owned electric utilities that operate electric distribution and transmission systems. In total, CMUA members provide approximately 25 percent of the electric load in California.

[5] Golden State Power Cooperative (GSPC) is the association representing California's three rural electrical cooperatives: Anza Electric Cooperative, Plumas-Sierra Rural Electric Cooperative (PSREC), and Surprise Valley Electric.

[6] California Energy Commission (CEC) workshop updating the outlook for summer 2022 through 2026 and midterm electric system reliability; May 20, 2022.

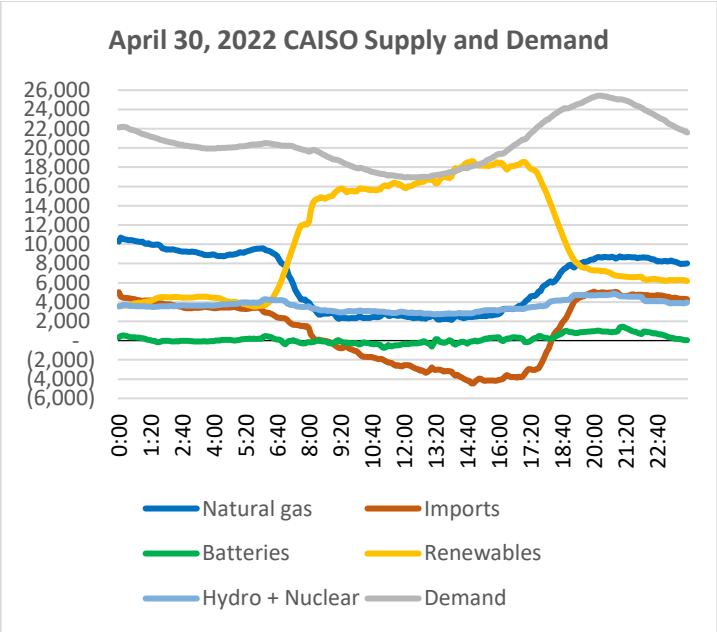
[7] August 31, 2022 Proclamation of a State of Emergency during the August 31st – September 6th Extreme Heat Event https://www.gov.ca.gov/wp-content/uploads/2022/08/8.31.22-Heat-Proclamation.pdf?emrc=78e3fc

even more difficult than it is today. To support economywide electrification, the demand for electricity is expected to grow 59% - 84%[8] while simultaneously, the electricity generation portfolio is expected to increase supply from non-firm, non-dispatchable, intermittent resources. Utilities are committed to supplying their customers with reliable and affordable, clean energy. In order for each utility's new resources and infrastructure to fully and reliably integrate with other private and statewide resource and infrastructure build-outs, the SPU, resource planners, energy agencies, and utilities will need to carefully plan to protect reliability during this unparalleled period of accelerated growth and decarbonization across all of California's Balancing Authority Areas (BAAs). California must plan for a pathway to expand and decarbonize the electric grid while simultaneously maintaining reliability for all BAAs with varying footprints in an affordable and equitable manner. The JUG utilities have unique expertise in understanding the nuances of the electric grid, the benefits and limitations of different electricity generating and storage resource types, and what it takes to reliably grow the grid.

In this letter we raise the urgency of ensuring reliability on the path to a clean zero-carbon electricity supply and significant increase in demand for electricity as well as providing specific suggestions for inclusion in the final Scoping Plan.

The Role of Renewables and Clean Firm Dispatchable Resources in Meeting Electric Grid Reliability

Much attention has been given to records set by high renewable energy contributions to the grid. As utilities, we are contributing to the statewide goal of a 60% renewable portfolio standard by adding renewable and storage resources to our energy supply portfolios. The most recent renewable supply record was at around 2:50 PM on April 30, 2022, when nearly 100% of energy demand on the ISO system was met by renewable energy.

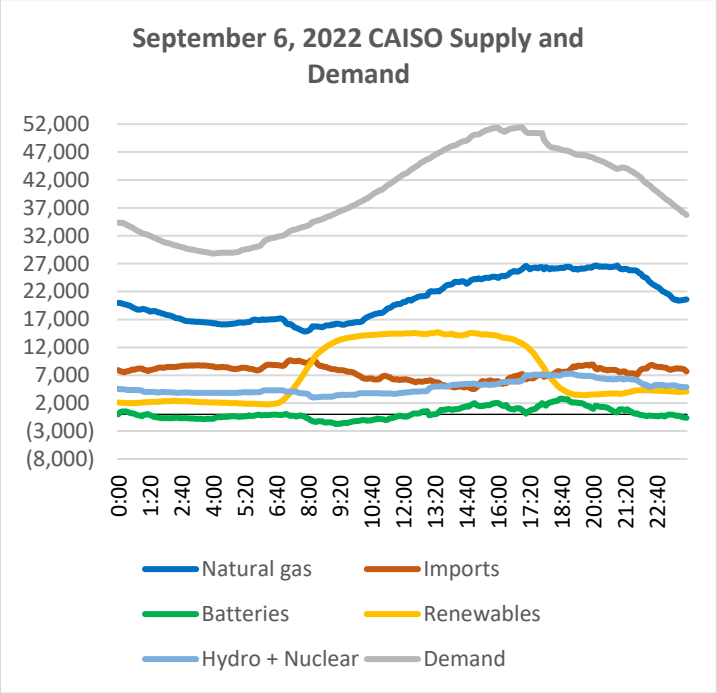


Days like April 30th highlight the progress we are making toward decarbonizing the grid and the significant contribution from renewable energy resources under an optimal set of conditions. But we must not make the mistake of assuming this cool, sunny Spring-day achievement is a recipe for decarbonizing the entire grid for all

[8] CARB's SPU modeling data Alternatives 1-4 would result in 59% - 84% increase in electricity demand over a 25-year period of 2020 – 2045.

24 hours, 365 days a year. Even on milestone days like April 30th, mornings and evenings were served by other (non-renewable) sources of energy. These other resources are necessary to maintain grid reliability.

To ensure a reliable and resilient electricity supply, we must look at the most challenging hours and days. Determining how to reliably decarbonize on days and hours when renewables are limited (e.g., cloudy winter days) or when the grid is strained to meet reliability (i.e., Peak Load days) will demonstrate the path to decarbonization. Peak Load events such as the 4:55pm September 6, 2022, CAISO demand peak of 51,425 MW are an example of the need for additional firm dispatchable resources. Renewables are an important and growing source of electricity for California. They contributed 25% of the supply at the time of the peak, and batteries contributed 2%. However, the bulk of the energy at 4:55pm and the rest of the day was met by dispatchable natural gas, imports, clean firm resources like large hydro and nuclear, and consumer conservation. To continue meeting reliability needs, the grid must be able to call on sufficient amounts of firm dispatchable resources for the foreseeable future.



External studies agree on the need for firm dispatchable energy. Independent modeling by The Brookings Institution, CATF, E3, EDF, Stanford University, Princeton University, and UC San Diego conclude that the path to carbon neutrality can only be met **if sufficient clean firm dispatchable electricity resources are available.**[9]

The JUG agrees that California needs to transition to cleaner fuels and resources. In order to retire resources or transition to decarbonized fuel, California needs a sufficient supply of clean fuels, other clean, firm dispatchable resources, and their necessary infrastructure to provide the essential reliability support currently delivered by fuel-based generators. Until these additional firm clean resources are developed and implemented, it is critical

[9] Ibid

that firm dispatchable resources (including natural gas) remain online as needed to maintain reliability. Note that reliability resources like natural gas generation will likely be dispatched less frequently in the future as their need will shift only to critical days and hours when renewables and batteries are unable to meet the electricity demand. In short, we must address reliability and re-evaluate the timeline for removing resources that are essential to keeping the lights on.

The JUG recommends that through the SPU, CARB convey the urgency for development of clean fuels, clean firm dispatchable resources, and the infrastructure necessary to allow California to transition to cleaner fuels and resources. Inter-agency coordination and funding can help spur this development. However, building new resources and the infrastructure to deliver the output of these new clean resources will take time. Moreover, many potential firm, zero-carbon technologies are nascent and still need time to develop and mature. CARB can help by using the Scoping Plan as a call to action for streamlining permitting, approvals, and planning and forecasting proceedings, as well as for state funding to support research, development, and deployment of demonstration projects for firm, dispatchable zero-carbon resources. The JUG utilities will be ready to respond by helping build and contract clean energy sources and supporting infrastructure to ensure reliability while decarbonizing the grid.

Planning for Electric Reliability

The JUG recommends CARB coordinate with the energy system planning agencies (CAISO, CEC, CPUC) to model and assess the reliability of scenarios that are consistent with the final Scoping Plan scenario as soon as possible after the Plan is adopted.

As the JUG and others have commented previously, hourly probabilistic and stochastic reliability modeling must be performed to develop a clean and reliable electric grid 24 hours per day and 365 days a year. Meeting the September 6, 2022, record-breaking load requirements was possible due to consumer demand response prompted by calls for conservation, and because planners built a reserve of additional resources for high demand days. Extreme weather events, such as the 2022 heatwave, are becoming more common. Assessing additional energy reserves to meet load during extreme weather events requires robust reliability modeling that considers reliability standards along with procurement delay risks and climate change risks. Robust reliability modeling must also address the multiple BAAs in California that are responsible for balancing load and generation over a smaller footprint. As such, to maintain a reliable grid, agencies implementing the SPU will need to conduct comprehensive reliability modeling, including sensitivities around extreme weather events.

The JUG recommends that the final SPU include language acknowledging that reliability assessments have not yet been completed for the electricity sector portfolios. As such, future adjustments for the electricity sector may be needed. The final SPU should include recommendations for implementors to incorporate reliability assessments across CAISO and other BAAs which include climate change risks as the plan for a clean energy future develops. These assessments should also include constraints within local distribution systems. We also recommend that such assessments be completed before agencies update their electricity sector GHG targets.

Moreover, CARB should continue engaging with the state agencies responsible for planning the energy system and leverage inter-agency activities such as the Joint Agency Steering Committee to lead and coordinate the modelling that can be used in respective system planning processes. This past year's Inter-Agency Working

Group process that developed long-term high electrification and decarbonization scenarios is a helpful template and process for the respective agencies to assess planning needs to meet decarbonization goals.[10]

To better align the assessment of energy system needs with long-term decarbonization goals, the Inter-Agency Working Group developed a set of scenarios that reflect those needs for the state's resource, transmission, and distribution planning processes. While those scenarios were an improvement and more accurately reflected longer-term decarbonization goals than previous assessments, the most aggressive of the scenarios met 2030 targets but did not achieve 2050 goals – let alone carbon neutrality by 2045.[11] The JUG recommends the Scoping Plan call for an additional new '2022 scoping plan carbon neutrality by 2045' scenario to be developed by the Inter-Agency Working Group to help the state and respective agencies understand and assess system and reliability needs to meet state goals.

CARB collaboration with the Inter-Agency Working Group can incorporate the lessons learned from this latest demand scenario development exercise to ensure that the right agencies are well coordinated and aligned to the same goal in their structured processes which ultimately determine the system needs for maintaining reliability in a decarbonized future.

Additions to the Scoping Plan

To this end, the JUG recommends the following additions be included in the SPU "Strategies for Success" for the clean electricity grid:

- Complete systemwide and local reliability assessments across CAISO and other BAAs, using realistic assumptions for land use, build rates, statewide and distribution system level constraints, and energy needs. Such assessments should be completed before state agencies update their electricity sector GHG targets.

- Prioritize actions to mitigate impacts to electricity reliability and affordability and provide sufficient flexibility in the State's decarbonization roadmap for adjustments as may be needed.

Conclusion

The JUG recognizes the many hours spent by CARB staff, CARB consultants, the Environmental Justice Advisory Committee, and stakeholders on the SPU; all have contributed to a robust and passionate stakeholder process since the June 2021 kick-off of the SPU process. Months of modeling, workshops, discussions, stakeholder feedback, government direction, and incorporation of that feedback have culminated in the 2022 SPU. The JUG appreciates this opportunity to provide additional feedback on how grid reliability is an integral requirement for the success of the final Scoping Plan and looks forward to partnering and working with CARB and the energy agencies on implementing a clean, reliable, and safe electric grid of the future.

[10] CEC IEPR Staff Workshop on Demand Scenarios: https://www.energy.ca.gov/event/workshop/2022-04/iepr-staff-workshop-demand-scenarios
[11] CEC Adoption of Demand Scenarios presentation: https://efiling.energy.ca.gov/GetDocument.aspx?tn=243222