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*Comment Received From: Union of Concerned Scientists  
Submitted On: 9/15/2020  
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**UCS Comments on SB 100 Draft Results Workshop**

*Additional submitted attachment is included below.*

September 15, 2020

California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814-5512

Docket 19-SB-100  
*Submitted via electronic comment system*

**RE: Comments of the Union of Concerned Scientists on the SB 100 Draft Results Workshop**

The Union of Concerned Scientists ("UCS") appreciates the opportunity to submit these comments on the SB 100 draft results workshop, conducted on September 2, 2020.

UCS thanks the California Energy Commission ("CEC"), California Public Utilities Commission ("CPUC"), and California Air Resources Board ("CARB") for their leadership in crafting the first SB 100 Joint Agency Report. UCS appreciates all the hard work that has gone into the creation of the draft results presented at the September workshop, and overall, UCS is encouraged by the wide-ranging analysis conducted thus far.

In these comments, UCS offers three pieces of feedback, which are summarized below:

1. UCS thanks the Joint Agencies for revising their modeling assumptions to align with UCS recommendations and expanding the list of additional study scenarios. UCS believes the Joint Agencies should replace the SB 100 Core Scenario with one of these lower-emissions study scenarios to ensure California achieves its climate change and environmental justice goals.
2. UCS is concerned that the SB 100 Core Scenario may not reduce electric-sector emissions enough for California to reach its economy-wide carbon-neutrality goals by 2045.
3. UCS believes that the resource adequacy assumptions used in the modeling should be examined more closely since these assumptions have a significant impact on the level of natural gas power plant retirements.

First, UCS would like to thank the Joint Agencies for revising their modeling assumptions as recommended in UCS's previous comments,<sup>1</sup> and expanding the list of additional study scenarios. UCS supports the decision to use "all resources" available as the default assumption since it does not erroneously exclude out-of-state and offshore wind. However, UCS does believe that the 12 gigawatt ("GW") limit on out-of-state wind and the 10 GW

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<sup>1</sup> UCS, *Comments of the Union of Concerned Scientists on the SB 100 Modeling Inputs and Assumptions Workshop* (March 9, 2020). Available at: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=232358&DocumentContentId=64354>

limit on offshore wind deserve additional scrutiny to ensure the buildout of those resources is not being unduly constrained.

In addition, UCS thanks the Joint Agencies for the inclusion of additional study scenarios, particularly the "expanded load coverage", "accelerated timelines", "high flexibility", and "no combustion" scenarios. This broad array of scenarios provides very rich insight into the various pathways to 100% clean electricity. However, for the reasons detailed below, UCS believes the Joint Agencies should consider selecting one of these lower-carbon study scenarios in place of the SB 100 Core Scenario to ensure that California achieves its climate change and environment justice goals.

Second, UCS is concerned that the SB 100 Core Scenario may not reduce electric sector emissions enough for California to reach its economy-wide carbon-neutrality goals by 2045. UCS notes that the SB 100 Core Scenario only reduces electric sector emissions to 24 million metric tons ("MMT") by 2045. However, a recent draft report for CARB on achieving carbon neutrality in California shows that, in all three scenarios under consideration, electric sector emissions must be between 0 MMT and 10 MMT by 2045.<sup>2</sup> Thus, UCS believes the Joint Agencies should seriously consider replacing the SB 100 Core Scenario with one of the lower-carbon study scenarios, which will likely prove to be the most viable pathway to achieving California's economy-wide carbon-neutrality goals.

Third, UCS believes that many of the resource adequacy ("RA") assumptions used in the Joint Agency modeling should be examined more closely. These RA assumptions deserve further scrutiny because they have a significant impact on the amount of natural gas power plant capacity that can be economically retired. With half of California's natural gas power plants located in the 25 percent of communities that are most disadvantaged,<sup>3</sup> retiring these plants and reducing their air pollution emissions is an important part of achieving California's environmental justice and air pollution emissions reduction goals.

In particular, UCS offers feedback on the following RA assumptions:

- **Battery Storage Effective Load Carrying Capability ("ELCC"):** The most problematic RA assumption used in the Joint Agency modeling is the battery storage ELCC curve. The Joint Agency modeling uses a battery storage ELCC curve developed by Astrapé Consulting for a 2022 resource portfolio,<sup>4</sup> and the use of this ELCC curve almost certainly underestimates the reliability contribution of battery storage.

The use of an ELCC curve developed with a 2022 resource portfolio is problematic because battery storage ELCC values depend very heavily on the underlying portfolio of resources and loads. Calculating battery storage ELCC values using a 2022 resource portfolio and applying those ELCC values to 2045 (when we expect over 100 GW of additional renewables by 2045) almost certainly underestimates the

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<sup>2</sup> E3, *Achieving Carbon Neutrality in California: Draft Report* (August 19, 2020), slide 33. Available at: [https://ww2.arb.ca.gov/sites/default/files/2020-08/e3\\_cn\\_report\\_aug2020.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-08/e3_cn_report_aug2020.pdf)

<sup>3</sup> PSE Healthy Energy, *Natural gas power plants in California's disadvantaged communities* (April 2017), p. 1. Available at: [https://www.psehealthyenergy.org/wp-content/uploads/2017/04/CA.EJ\\_Gas\\_Plants.pdf](https://www.psehealthyenergy.org/wp-content/uploads/2017/04/CA.EJ_Gas_Plants.pdf)

<sup>4</sup> Joint Agencies, *Inputs and Assumptions: CEC SB100 Joint Agency Report* (June 2020), pp. 89-90. ("Inputs and Assumptions"). Available at: <https://efiling.energy.ca.gov/getdocument.aspx?tn=234532>

reliability contribution of battery storage. This underestimation of battery storage ELCC values leads directly to the unnecessary addition of other resources and/or the unnecessary retention of natural gas power plants.

For the next SB 100 report, UCS strongly recommends that the Joint Agencies reassess the ELCC of battery storage (using probabilistic modeling tools) to more accurately quantify the reliability contribution of battery storage in resource portfolios with much higher levels of renewables.

- **Import RA:** The Joint Agencies assume that only 5 GW of import RA will count towards California RA requirements.<sup>5</sup> While this assumption is consistent with the import RA assumptions used by the CPUC in the Integrated Resource Planning proceeding, these assumptions deserve further scrutiny to ensure that the role of import RA is not being underestimated (or overestimated). Underestimating the role of import RA leads directly to the retention of excess natural gas power plant capacity.
- **Load Flexibility:** UCS appreciates the inclusion of the "High Flexibility Scenario", which demonstrates how load flexibility can meaningfully alter both the resource buildout and natural gas power plant retention. Importantly, under this scenario, there was a 3.3 GW increase in economic gas retirements.<sup>6</sup> UCS encourages the Joint Agencies to further explore the potential for increased load flexibility<sup>7</sup> and the benefits that accrue in terms of avoided capacity additions and avoided natural gas power plant retention.
- **Local RA Requirements:** The Joint Agency modeling included an assumption that a minimum of nearly 15 GW of gas capacity would remain online indefinitely in order to meet local RA requirements.<sup>8</sup> This arbitrary assumption effectively guarantees a very large amount of gas capacity retention regardless of the need for this capacity. In future SB 100 reports, the Joint Agencies should seek alternative strategies for ensuring local reliability by more accurately quantifying the reliability requirements in each local area so that these requirements can be met by resources other than natural gas power plants. Without this more detailed local reliability assessment, the SB 100 planning process will find no alternatives to retaining all the gas plants in local reliability areas, many of which are also located in disadvantaged communities.

Finally, UCS highly recommends the use of probabilistic modeling tools in the development of future SB 100 reports. Not only would probabilistic modeling tools ensure that system reliability requirements will be met, but such tools could also be used to address at least some of the concerns that UCS has raised in this letter regarding the RA modeling assumptions. The CPUC already uses a probabilistic model (i.e. SERVM) in the Integrated Resource Planning proceeding and the Resource Adequacy proceeding, and the Joint Agencies could build on the work done by the CPUC and utilize a similar model to ensure system reliability in SB 100 planning.

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<sup>5</sup> Inputs and Assumptions, pp. 90-1.

<sup>6</sup> CEC, *SB100 Draft Results* (September 2, 2020), slide 20. Available at: <https://efiling.energy.ca.gov/getdocument.aspx?tn=234549>

<sup>7</sup> For more information, see: UCS, *The Flexible Demand Opportunity* (January 2020). Available at: <https://www.ucsusa.org/sites/default/files/2020-01/Flexible-Demand-Opportunity-Fact-Sheet.pdf>

<sup>8</sup> Inputs and Assumptions, pp. 91-2.

UCS looks forward to further participation in SB 100 implementation, and we thank the CEC, CPUC, and CARB for their consideration of these comments.

Sincerely,

A handwritten signature in black ink that reads "Mark Specht". The signature is written in a cursive style with a horizontal line at the end.

Mark Specht  
Energy Analyst  
Union of Concerned Scientists  
[mspecht@ucsusa.org](mailto:mspecht@ucsusa.org)