



California Wind Energy Association

September 5, 2023

California Energy Commission
Docket No. 23-SB-100
1516 Ninth Street
Sacramento CA 95814

Via email to docket@energy.ca.gov

Re: Comments Following SB 100 Kickoff Workshop

Elaborating on our comments at the workshop, CalWEA encourages the Joint Agencies to consider evaluating a substantially more diverse resource portfolio for the myriad risk-reduction benefits that greater resource diversity could bring we strive to meet the state's SB 100 goals.

The proposed Pathway Concept on Resource Diversification (slide 13 of the "2025 SB 100 Report Vision" presentation) considers diverse resources, but those resources are limited to distinct emerging technologies including offshore wind, hydrogen, and long-duration storage each of which will be evaluated separately. In contrast to these evaluations, the Joint Agencies should model and evaluate a more resource-diverse portfolio that includes non-solar/non-battery resources that are not necessarily emerging. Some benefits will require additional qualitative consideration apart from the models.

A "high resource-diversity" portfolio could, for example, increase levels of many diverse resources, including onshore and offshore wind, geothermal, bioenergy, long-duration storage, and, depending on the model's capabilities, DER resources. This can easily be done by simply limiting total solar resources available to the model and running it to find the most optimal portfolio with greater resource diversity.¹ This portfolio should not eliminate combustion resources so that the impact on the need for combustion can be observed.

The critically important benefits of resource diversity include:

- **Mitigating the supply chain, price, and operational risks** that will be present with a grid that is heavily reliant on solar and batteries.
- **Using significantly less land**, which will reduce risks related to limitations on, and conflicts over, land availability in solar-heavy portfolios. Offshore wind obviously is not

¹ See note 2 *infra* at point b.

on land, onshore wind has a very small land footprint, geothermal is very energy-dense in its footprint, and DER resources require little, if any, land.

- **Reducing the overall need for capacity, thus increasing the odds of achieving SB 100 goals.** Many studies have shown that a highly diverse portfolio can reduce the overall need for capacity by tens of gigawatts.² This benefit can come from a better wind-solar balance as well as from baseload or dispatchable-baseload resources. This reduced capacity need is, in and of itself, a major benefit that would increase the odds that California will meet its clean-energy goals. It would also likely reduce transmission needs since many fewer resources would require interconnection.
- **Reducing the need for raw materials.** By reducing overall capacity requirements, a more diverse portfolio would substantially reduce the raw materials – copper, lithium,

² For example:

- a) A 2022 study by UCB's Goldman School of Public Policy found that 50 GW of offshore wind in 2045 would reduce solar and storage deployments by 121 GW (77 GW and 44 GW, respectively). As 10 GW of offshore wind was in the base case, the remaining capacity was replaced by 40 GW of offshore wind, and the overall capacity requirement was reduced by 61 GW (121 GW - 40 GW). See Goldman School of Public Policy, UC Berkeley's "The Offshore Report: California," presented at a June 27, 2022, Energy Commission AB 525 Workshop. Presentation available at: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=243710&DocumentContentId=77544>.
 - b) SCE showed, in an individual IRP filing for the CPUC, that a systemwide plan generated by a 24-hour RA framework produced an optimal portfolio that included substantially more offshore wind and substantially less solar and battery capacity than was included in a comparable 2021 Proposed System Plan and was significantly less expensive. That optimal portfolio included ~15,100 MW less incremental capacity overall in 2035 – a 27 percent reduction in incremental capacity that saved \$1.7 billion annually – than the Commission's comparable portfolio. SCE IIRP at p. 47 and Table III-7. (The 27 percent figure was calculated by CalWEA.) See CPUC R.20-05-003, 2022 Integrated Resource Plan of Southern California Edison Company (Nov. 1, 2022). Available at: <http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=498072233>
 - c) CalWEA testified in CPUC R.20-08-020 that reducing the assumed level of customer-side solar additions by half resulted in a portfolio with more wind and geothermal energy and produced savings of nearly \$1.26 billion per year. CalWEA used the SB 100 RESOLVE model just as it was used by the Joint Agencies. Available at: <http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=404292212>.
 - d) The Energy Commission's 2018 *Deep Decarbonization* study showed that the resource diversity provided by out-of-state wind would reduce needed solar and storage by approximately 40 percent. See Mahone, Amber, Zachary Subin, Jenya Kahn-Lang, Douglas Allen, Vivian Li, Gerrit De Moor, Nancy Ryan, Snuller Price. 2018. *Deep Decarbonization in a High Renewables Future: Updated Results from the California PATHWAYS Model*. California Energy Commission. Publication Number: CEC-500-2018-012. (See Figure 16.) Available at: <https://www.energy.ca.gov/publications/2018/deep-decarbonization-high-renewables-future-updated-results-california-pathways>
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steel, cement, etc. – needed to achieve our goals, which will be sourced largely from around the world. This is a global equity issue that California should be mindful of.

The SB 100 study update will miss these benefits if we do not intentionally study a pathway that relies on a portfolio that is substantially less dependent on solar and battery resources. We saw in the first Joint Agency Report that a more resource-diverse portfolio costs less. A substantially more diverse portfolio may or may not cost more, but in any case, the Joint Agencies should consider whether the benefits are worth any additional cost.

CalWEA appreciates this additional opportunity to comment and urges earnest consideration of the concept above.

Sincerely,

A handwritten signature in cursive script that reads "Nancy Rader".

Nancy Rader
Executive Director
California Wind Energy Association
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