

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Continue
Electric Integrated Resource Planning and
Related Procurement Processes.

Rulemaking 20-05-003

**CALIFORNIA WIND ENERGY ASSOCIATION
COMMENTS ON RULING SEEKING COMMENTS ON PORTFOLIOS TO BE USED
IN THE 2023-24 TRANSMISSION PLANNING PROCESS**

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***On behalf of the California Wind
Energy Association***

October 31, 2022

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I. INTRODUCTION AND SUMMARY

Pursuant to Administrative Law Judge Julie Fitch’s Ruling Seeking Comments on Electricity Resource Portfolios for the 2023-24 Transmission Planning Process (“Ruling”) issued on October 7, 2022, the California Wind Energy Association (“CalWEA”) submits these opening comments.

In summary, CalWEA:

- strongly supports the aggressive base case portfolio, together with the sensitivity portfolios, as the basis for transmission planning. We can reasonably expect these portfolios to drive major “least regrets” transmission upgrades in the next (2023-24) CAISO Transmission Planning Process (“TPP”) cycle. Importantly, CalWEA recommends that the Commission request that CAISO develop actual (rather than conceptual) transmission plans independently for each of the scenarios;
- supports the Commission’s encouragement to the CAISO to get a head start on identifying needed transmission in the current (2022-23) TPP cycle, and similarly urges the Commission to swiftly fulfill its requirement under SB 887 to request that the CAISO “identify the highest priority transmission facilities that are needed to allow for increased transmission capacity into local capacity areas;”
- recommends that, for transmission planning purposes, the base case amounts of offshore wind be raised to 5 GW in the Morro Bay WEA and 3 GW in the Humboldt

WEA. This is appropriate given the Energy Commission’s minimum 2045 planning goal of “at least” 10 GW to 14.3 GW, the existing available transmission capacity of 5 GW at the Central Coast, and the reality that planning transmission to the Humboldt WEA will entail 500-kV lines that will accommodate 3 GW of offshore wind. Further, the Commission should be planning for a more diverse resource portfolio, given many associated benefits;

- urges the Commission to strongly support the CAISO’s pending initiative to investigate reforms to its deliverability methodology, which could facilitate immediate additional interconnections onto the *existing* grid, given that California is so far behind in developing new transmission capacity;
- recommends increasing the offshore wind capacity in the “limited wind” scenario; and
- encourages the Commission to reconsider the thermal generation retirement busbar mapping methodology that is contrary to this IRP-TPP effort, and recommends that offshore wind mapped to multiple substations within a certain vicinity.

II. RESPONSES TO QUESTIONS POSED IN THE RULING

1. **Do you recommend any changes to the proposed base case portfolio in Section 2 of this ruling? If so, provide rationale and justification for your recommended changes.**

- a. CalWEA generally supports the aggressive base case portfolio for transmission planning purposes*

CalWEA and other parties have long advocated that the Commission adopt more aggressive portfolios for transmission planning purposes and therefore it is no surprise that, generally, we very much support the 30 MMT, high-electrification base case portfolio.¹ Together with the sensitivity portfolios, we can reasonably expect the next, 2023-24, TPP cycle to drive truly needed, major “least regrets” transmission upgrades. We agree with the rationale in the Ruling (p. 4) that we must plan transmission far ahead of actual resource development. This rationale is understated, given the 10-year lead time for transmission planning and development and the need for major transmission

¹ See below, however, for our recommended changes to the base case scenario, and our concerns that the busbar mapping methodology could interfere with this progress.

investments to achieve the state's SB 100 goals.² Regardless, CalWEA applauds the Commission for getting started planning for transmission in earnest, following more than a decade of inaction. Given that we are now far behind where we should be, CalWEA appreciates that the Commission has provided the CAISO with encouragement, as noted in the Ruling (at pp. 8-9), to use the current 30 MMT "sensitivity" portfolio to "get a 'head start'" on identifying needed transmission in the current 2022-23 TPP cycle. In that same vein, CalWEA urges the Commission to swiftly fulfill its requirement under SB 887 to request that the CAISO "identify the highest priority transmission facilities that are needed to allow for increased transmission capacity into local capacity areas." (Ruling at p. 5.) Conveying this request with the same sense of urgency reflected in the Ruling will strengthen that head start.

b. The base case scenario should include more offshore wind capacity

The Ruling notes (p. 4) that "the Commission may adopt a TPP base case resource portfolio with a more stringent GHG target than previously adopted as part of the Preferred System Plan (PSP)" because the IRP-TPP base case portfolio is serving the "distinct purpose" of planning for long-lead-time transmission so that it is available when generation or storage is developed. Consistent with that premise, CalWEA recommends that, for transmission planning purposes, the base case amounts of offshore wind be raised to 5 GW in the Morro Bay Wind Energy Area (WEA) and 3 GW in the Humboldt WEA. This is appropriate for many reasons.

First, in its report on AB 525 planning goals, the Energy Commission adopted a minimum planning goal for 2045 of "at least 10 GW to 14.3 GW" and recommended establishing a "preliminary planning goal" of 25,000 MW of offshore wind by 2045.³ That report highlighted the most recent NREL study, conducted for BOEM, that indicates that the two lease areas in BOEM's Humboldt WEA could support *at least* 3 GW of capacity and the Morro Bay WEA could support *at least* 5 GW of offshore wind capacity, given current industry power densities.^{4,5} The offshore wind

² This transmission need is evidenced by the Joint Agencies' SB 100 Report and CAISO's 20-year Conceptual Transmission Plan.

³ Flint, Scott, Rhett deMesa, Pamela Doughman, and Elizabeth Huber. 2022. Offshore Wind Development off the California Coast: Maximum Feasible Capacity and Megawatt Planning Goals for 2030 and 2045. California Energy Commission. Publication Number: CEC-8002022-001-REV. (See pp. 58 and 62.) Available at: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=244285&DocumentContentId=78261>. (Emphasis added.)

⁴ *Supra* note 3 at p. 54 and footnote 119.

⁵ National Renewable Energy Laboratory's "Assessment of Offshore Wind Energy Leasing Areas for Humboldt and Morro Bay Wind Energy Areas" indicate densities of at least 5 MW/km². Available at:

capacities optimally selected by RESOLVE for the Morro Bay and Humboldt WEAs in the base case were based on outdated assumptions of significantly lower power densities, which lead to the selection of only 1.6 GW and 3 GW for the Humboldt and Morro Bay WEAs, respectively.

Second, with the retirement of Diablo Canyon, sufficient transmission capacity is already available for 5 GW of deliverable offshore wind capacity at the Central Coast.⁶ (The deliverability capacity could be further increased with reforms to the CAISO's deliverability methodology, discussed below.) The offshore wind developers that secure leases in BOEM's December auction can capture this available deliverability capacity, particularly if the CPUC provides procurement certainty for these resources.⁷

Third, it is more efficient to plan transmission for 3 GW (vs. 1.6 GW) of offshore wind capacity at the North Coast. Upgrades to the CAISO-controlled transmission grid to accommodate the Humboldt WEA can be expected to involve major 500-kV backbone upgrades from the Humboldt Bay area to the Greater Bay Area – e.g., a new 500-kV transmission line from the newly approved Fern Road Substation to the 500-kV Tesla Substation. Based on rough calculations, CalWEA believes that such an upgrade can readily transfer up to 3 GW of additional wind from the Humboldt WEA to the Greater Bay and other load centers in California. In other words, for generally the same transmission investment, the state can benefit from twice as much offshore wind generation capacity. RESOLVE's simple modeling of the transmission system does not capture such critical factors.

Fourth, as the Energy Commission's AB 525 planning goals report states, the largest economic development benefits of an offshore wind industry would come from having a local supply chain for manufacturing components used in project development; a local supply chain would also make California less vulnerable to global supply chain bottlenecks and better positioned to achieve offshore wind deployments at scale.⁸ CalWEA has written elsewhere that driving the

<https://www.nrel.gov/docs/fy22osti/82341.pdf>. NREL has indicated that several planned OSW projects in the U.S. are achieving densities of up to 6.5 MW/km². See Walt Musial (NREL) presentation during CEC offshore wind workshop on June 27, 2022 (Slide 8). Available at:

<https://efiling.energy.ca.gov/GetDocument.aspx?tn=243707&DocumentContentId=77539>.

⁶ This is the assessment of CalWEA's expert grid-interconnection consultants at GridBright, who found that approximately 5.0 GW of FCDS capacity is available for resources located in Central California interconnecting directly at the 500kV level. There is no deliverability at 230kV after QC13.

⁷ Other resources are competing for this available capacity. Approximately 4.4 GW of solar and storage resources are currently awaiting study results in Queue Cluster 14 in addition to approximately 5 GW of offshore wind resources at Morro Bay.

⁸ *Supra* note 3 at p. 49.

development of a local supply chain will require establishing targets sufficient to achieve economies of scale and using demonstration projects to lay the foundation for scale-up of California's industrial capacity to build floating platforms.⁹

Finally, the Commission should be planning for a portfolio with greater resource diversity. As the Energy Division workshop slides for this IRP-TPP process show, the higher offshore wind sensitivity portfolio reduces solar by 13.2 GW and storage by 5.8 GW – and reduces overall capacity by over 11 GW.¹⁰ This reduced overall need for capacity is, in and of itself, a major benefit of a diverse portfolio, as it will reduce overall demand for land and sea space and will reduce the overall raw material requirements for achieving our SB 100 goals. In so doing, it will reduce the challenges associated with meeting these goals and increase the odds that California will meet them.

A study from UC Berkeley¹¹ looking at much higher levels of offshore wind estimated the potential reliability impacts of wildfire smoke on a solar-dominated portfolio: a potential 35-40 GW drop in solar production, with effects that could extend over a week. The economywide costs of an unreliable grid are difficult to quantify, but as we have seen recently with the authorized extension of Diablo Canyon's life, a reliable grid is highly valued in California.

Similarly, a recent GridLab report¹² noted the need to evaluate other very important, but harder to quantify, risks from a solar-heavy portfolio, such as limitations on, and conflicts over, land availability. To CalWEA's knowledge, the Commission has yet to carefully consider these and other resource diversity benefits, such as supply chain and operational risks, that will be present with a grid that is heavily reliant on solar and batteries.¹³

⁹ See CalWEA's "Comments following March 3, 2022, [Energy Commission] Workshop on Assembly Bill 525 Strategic Plan for Offshore Wind Energy Planning Goals" (March 11, 2022). Available at: <https://www.calwea.org/public-filing/comments-ab-525-implementation-offshore-wind>.

¹⁰ Energy Division slides for October 20, 2022, workshop. See slides 20 and 23. The high offshore wind portfolio also reduces geothermal resources by 0.7 GW. CalWEA would have no objection to maintaining the higher geothermal value as part of a more diverse base case portfolio.

¹¹ Paliwal Umed, Nikit Abhyankar, David Wooley, Amol Phadke (2022). "The Offshore Report: California, Plummeting offshore wind costs can accelerate a diverse net-zero grid", Working Paper 1, Center for Environmental Public Policy, Goldman School of Public Policy, University of California, Berkeley.

Available at: https://gspp.berkeley.edu/assets/uploads/page/CA_OSW_Assessment_Working_Paper_CEPP.pdf

¹² GridLab, 2022, Reliability reaching California's clean electricity targets: Stress testing an accelerated 2030 clean portfolio. Available at: https://gridlab.org/wp-content/uploads/2022/05/GridLab_California-2030-Study-Technical-Report-5-9-22-Update1.pdf. Workshop presentation at: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=243711&DocumentContentId=77543>

¹³ The Commission did, however, arbitrarily add 1 GW of geothermal resources to the mid-term

Given the Energy Commission’s planning goal of “at least” 10 GW of offshore wind by 2045, the benefits of a more resource-diverse portfolio, and the high likelihood that at least 8 GW of offshore wind is very likely to be developed for California, it makes sense to begin planning transmission for at least this amount of capacity in the base case scenario.

c. Deliverability reform should be pursued immediately given the current lack of deliverable capacity and long lead-times for new transmission

Even with immediate action on transmission planning, however, a severe lack of deliverable transmission capacity now exists and will persist for many years, stymieing thousands of megawatts of projects that could otherwise have reached commercial operation to address our mid-decade reliability needs. California is now so far behind in developing new transmission capacity that it is imperative that reform of CAISO’s deliverability methodology be fully investigated.¹⁴ This investigation should consider whether adopting reasonable reforms could facilitate immediate interconnections of substantial additional capacity on the *existing* grid and provide full deliverability status for the nearly 1 GW of operating, or soon to be operating, resources with Partial Deliverability Capacity or Energy Only status. The Commission should strongly support this potential CAISO initiative as a critical potential means of achieving its mid-term reliability goals. In addition, the Commission should support reforms to CAISO’s deliverability study assumptions for offshore wind resources.¹⁵

2. Do you recommend any changes to the proposed sensitivity portfolios in Section 3 of this ruling? If so, provide rationale and justification for your recommended changes.

a. CalWEA strongly supports development of “least-regrets” transmission based on three distinct portfolios, which should be studied separately

CalWEA strongly supports the Ruling’s proposal (pp. 11-12) to identify “least regrets” transmission upgrades that are common across three significantly different resource mix futures. (As discussed above, however, we recommend modifications to the base case scenario to better

reliability requirement on resource diversity grounds. It also replaced new gas capacity with geothermal in the base case scenario at issue here without explanation, but presumably for similar reasons. (Ruling at p. 7.)

¹⁴ CAISO is now considering whether to consider such reforms in its [Policies Initiatives Catalog process](#), as advocated by CalWEA, the California Energy Storage Alliance and other stakeholders.

¹⁵ CalWEA urges the CAISO to review the deliverability study assumptions for offshore wind resources. Offshore wind resources are assessed at full nameplate capacity under the high system need scenario, while they would only have up to 56.2% qualifying capacity.

reflect the state’s minimum planning goals for offshore wind and to account for the realities of planning major backbone transmission facilities.) CalWEA has advocated this least-regrets approach in our IRP-TPP comments for many years, as well as before the CAISO.¹⁶ Importantly, however, CalWEA recommends that the Commission request that CAISO independently develop actual (rather than conceptual) transmission plans for each of the scenarios, as opposed to developing a single transmission plan and using conceptual sensitivities simply to reinforce the base case scenario. Sensitivity cases have historically not driven major transmission upgrades.

CalWEA has further recommended to the CAISO that the upgrades that are common to all three scenarios immediately move forward in the annual TPP cycle for presentation to the CAISO board for approval. Upgrades that are common to two out of the three scenarios should be considered in the annual TPP cycle as replacement (and potentially more costly) solutions to address reliability, economic and/or policy upgrades that are identified in the TPP.

CalWEA expects such a least-regrets approach will identify the backbone upgrades that will be needed to achieve the state’s SB 100 goals regardless of resource mix. Such upgrades will be needed to deliver renewable energy and storage from any of multiple possible locations. Some backbone upgrades, particularly subsea upgrades that connect to major load centers, such as the Humboldt Bay area to the Bay Area, and the Morro Bay area to the LA Basin and San Diego areas, can also relieve backbone and local transmission constraints to all the major load centers in California, thereby accommodating the major load growth expected in these areas due to transportation, household, and industrial electrification, while reducing the need for the operation GHG emitting resources in these load centers.

b. Offshore wind capacity at Morro Bay should be increased for the “limited” wind scenario

While CalWEA understands that the “limited out-of-state and offshore wind” scenario is an extreme low-capacity case, 4 GW at Morro Bay, rather than 2 GW, of offshore wind through 2035 would be more reasonable for such a case for several reasons. As noted above, the Morro Bay lease area can accommodate *at least* 5 GW of offshore wind capacity and sufficient transmission capacity is available for at least 5 GW of deliverable capacity at the Central Coast. Given that the development process for offshore wind will commence after BOEM issues leases in December, and assuming the CPUC will provide for timely procurement assurances allowing developers to secure

¹⁶ See, e.g., CalWEA’s February 2, 2022, comments on the CAISO’s 20-year conceptual plan, available at: <https://www.calwea.org/public-filing/comments-draft-20-year-transmission-outlook>.

that deliverability (“TPD”) capacity, 4 GW of offshore wind at the Central Coast (only) is a reasonable low-capacity case for offshore wind.

3. Do you recommend any changes to the busbar mapping methodology or process described in Section 5 of this ruling and in Attachment A? If so, provide rationale and justification for your recommended changes.

CalWEA is concerned that the thermal generation retirement methodology (section 10 of the Ruling’s Attachment) could weaken the purpose of these portfolios, which is to identify the need for new transmission. Step 3 of the methodology states that staff will assemble a list of thermal generation to be retired “that does not create additional transmission needs,” which is not only contrary to the point of the IRP-TPP portfolios, but also contrary to the legislative intent of SB 887.¹⁷ Under the high-electrification future envisioned by the proposed scenarios, loads will likely be flatter; if so, 4-hour, or even 8-hour, batteries will not be sufficient to achieve reliability standards. CAISO studies have already shown that a lack of charging capacity in constrained areas limits the degree to which we can rely on batteries to meet reliability needs.¹⁸ The result will be greater reliance on gas-fired plants – and thus higher emissions, and possibly failure to meet reliability standards.

Instead of seeking to avoid transmission, the methodology should promote comprehensive solutions that make system-RA resources (including a greater diversity of long-duration storage resources that are not feasible in load centers) available to meet local capacity needs while also providing the transmission infrastructure needed for charging local storage additions. Such planning will ensure that reliance on gas plants is minimized and will create the possibility of retiring these plants. Strategically locating storage resources along with transmission development is likely to be more efficient than either solution individually.

¹⁷ In adopting [SB 887](#), the Legislature finds and declares, in part, that “(4) Reducing the use of nonpreferred resources in disadvantaged communities has been a priority for those communities, and they would benefit from increased access to electricity from new renewable energy resources and zero-carbon resources delivered to serve in-city loads” and “(6) New transmission facilities should be planned proactively to support delivery to load centers from expected locations for future renewable energy resource and zero-carbon resource development, where those locations are identified in the integrated resource planning process pursuant to Sections 454.52 and 9621 or as part of longer range planning processes pursuant to Section 454.53.”

¹⁸ CAISO found significant battery-charging limitations in the LA Basin, for example, where four-hour batteries were found to be capable of meeting just 420 MW of the local reliability need on a one-for-one basis. See CAISO presentation, *Preliminary Policy and Economic Assessments, 2020-2021 Transmission Planning Process Stakeholder Meeting* at PDF-page 163 (November 17, 2020).

Lastly, we are pleased that the methodology seeks to locate storage to relieve congestion during high solar production. (Ruling Attachment at pp. 20-21.) This is an important parallel goal to reforming the CAISO's deliverability methodology.

- 4. Do you recommend any changes to the specific busbar mapping criteria and their implementation described Section 5 of this ruling and in Attachment A? If so, provide rationale and justification for your recommended changes.**

To better utilize existing transmission capacity and avoid increasing system reserve requirements under a single-line contingency, it is preferable to have offshore wind mapped to multiple substations within a certain vicinity. As an example, the Central Coast offshore wind should be mapped to Diablo 500kV, Morro Bay 500kV and Moss Landing 500kV buses. With such mapping, the transmission system can easily support 5GW offshore wind at the Central Coast.

- 5. Describe any concerns you have about the preliminary busbar mapping results described in Section 6 of this ruling.**

No comment at this time.

- 6. Include any comments in response to this ruling that are not covered in Questions 1-5 above.**

No further comment at this time.

Respectfully submitted,

/s/ Nancy Rader
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On behalf of the California Wind Energy Association

October 31, 2022

VERIFICATION

I, Nancy Rader, am the Executive Director of the California Wind Energy Association. I am authorized to make this Verification on its behalf. I declare under penalty of perjury that the statements in the foregoing copy of “California Wind Energy Association Comments on Ruling Seeking Comments on Portfolios for the 2023-24 Transmission Planning Process” are true of my own knowledge, except as to the matters which are therein stated on information and belief, and as to those matters I believe them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 31, 2022, at Berkeley, California.

/s/ Nancy Rader
Nancy Rader
Executive Director
California Wind Energy Association