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 MID-TERM RELIABILITY ANALYSIS AND PROPOSED PROCUREMENT REQUIREMENTS

Nancy Rader
Executive Director
California Wind Energy Association
1700 Shattuck Ave., #17
Berkeley, CA 94709
Telephone: 510-845-5077 x1
E-mail: nrader@calwea.org

Dariush Shirmohammadi
Technical Director
California Wind Energy Association
1700 Shattuck Ave., #17
Berkeley, CA 94709
Telephone: (310) 858-1174
E-mail: dariush@gridbright.com

On behalf of the California Wind Energy Association

March 26, 2021

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 MID-TERM RELIABILITY ANALYSIS AND PROPOSED PROCUREMENT REQUIREMENTS

I. INTRODUCTION AND SUMMARY

Pursuant to Administrative Law Judge ("ALJ") Ruling Seeking Feedback on Mid-Term Reliability Analysis and Proposed Procurement Requirements issued on February 22, 2021 ("Ruling"), and the email ruling of ALJ Julie Fitch issued on March 12, 2021, granting a request to extend the comment deadline**,** the California Wind Energy Association ("CalWEA") submits these opening comments on the Ruling.

The Ruling recommends the procurement of 7,410 MW of effective capacity additions, rounded up to 7,500 MW, in the 2024-26 mid-term timeframe to address reliability challenges driven by several factors, including the planned retirement of the Diablo Canyon Nuclear Plant, planned retirement of older natural gas plants including those using once-through cooling, suggested modifications to the planning reserve margin, and other factors. The Ruling would accelerate 40 percent of the capacity identified as needed in each year by at least one year ahead, such that 1,800 MW, 3,700 MW, and 2,000 MW of effective capacity is required in 2023, 2024 and 2025 respectively.[1] In meeting these recommended procurement levels, the Ruling recommends that 1,000 MW of geothermal resources and 1,000 MW of long-duration storage be procured. In addition, the Ruling suggests procurement requirements, along with their associated distribution and cost allocation to load-serving entities ("LSEs") and their customers. The

[1] Ruling at Table 2.

Ruling draws from the November 18, 2020, Procurement Framework Staff Proposal ("Staff Proposal") on these issues and poses 33 questions to the parties.

CalWEA primarily offers comments at this time on the Ruling's questions that pertain to Sections 3, 5, and 6, addressing the determination of need, the eligibility of resources to meet the need, and allocation of the need. In summary:

- The Commission must distinguish between system RA needs and system integration needs to properly identify the resources that should be eligible to meet each type of need and to allocate that need among LSEs. Therefore, Energy Division should immediately determine how much of the storage capacity included in the Reference System Plan ("RSP") will be needed for integration needs, as opposed to general capacity needs.
- For system RA resources, the proposed allocation approach is appropriately causation-based. Integration requirements, however, should be allocated in a way that reflects each LSE's contribution to the need for integration resources as required by law. LSEs whose resource portfolios are not sufficiently diverse and not matched to their load variation should be responsible for a larger share of integration resources. CalWEA outlines how the Commission can accomplish such allocation.
- The Commission should require LSEs to sign power purchase contracts that specifically provide for the needed integration services to ensure that required amounts of flexible capacity are made available to the CAISO.
- The Ruling's geothermal resource requirement cannot be supported by its "firm" attribute. What is needed are flexible system-integration resources that can provide ramping services and move energy across the day or days. To the extent that the Commission determines that geothermal resources should provide a portion of system integration needs, the requirement should be for fully dispatchable, not firm, geothermal resources.
- If the Commission is aiming to diversify a portion of system capacity needs, any non-solar, non-battery resource that provides resource diversity should be eligible to satisfy that objective, with particular emphasis on resources that will be needed to achieve SB 100 goals. Limiting a diversity requirement to geothermal resources is not supported by the adopted RSP or studies conducted pursuant to SB 100 and therefore is not "least regrets."
- Given the high potential value of offshore wind resources, and the strategic locational value of Diablo Canyon substations and deliverability transmission rights, the Commission should consider whether and how the use of Diablo Canyon assets can be preserved for potential delivery of offshore wind resources. Given jurisdictional considerations, this may best be done through CPUC restrictions placed on procurements from resources utilizing Diablo Canyon's assets.

II. RESPONSES TO QUESTIONS

A. Section 3 Questions on Analysis of Need

Question 6. Comment on whether you agree with the approach proposed here for determining need, which corresponds to the "Need Determination – Reliability – Option 3" in Section 6.5.2 of the Procurement Framework Staff Proposal. If you have an alternative proposal, describe it in detail and/or identify whether it is one of the other options included in the Procurement Framework Staff Proposal.

Response: The problem with the identified capacity need is that it does not distinguish between system RA needs and system integration needs. Identifying each of these two distinct needs is critical for purposes of identifying the resources that should be eligible to meet each type of need and allocating that need, topics that are the focus of questions in Sections 5 and 6 below. Without identifying the amount of each type of system need, it is not possible to properly address these other matters because they are inextricably related.

The RSP adopted in D.20-03-028 identifies a need for nearly 1 GW of long-duration storage and over 6 GW of battery storage by 2026.[2] Storage provides system RA capacity but is also clearly an integration resource that, to some extent, is needed for ramping and for moving energy within the day and across multiple days. The IRP's hourly SERVM analysis accounts for both system RA and integration needs and, while these needs can be separately discerned, this information has not yet been extracted from the model results. The stack analysis conducted for the Ruling, where the available resources (both online and contracted) were stacked up against the reliability need in each year, does not provide such insight. Therefore, Energy Division should immediately investigate SERVM modeling results to determine, at least approximately, what fraction of the storage capacity is needed for integration purposes. This could be done by subtracting the least cost associated with meeting the RA capacity requirement from total storage costs associated with meeting the procurement targets.

The Commission should require LSEs to sign contracts that specifically provide for these services. Contracting for integration services is necessary because, in studying the 200 MW of battery storage that was online early last year, the CAISO discovered a number of problems: CAISO does not currently have a tool to compel a storage resource to charge and be ready for discharge; these resources are not moving significant amounts of energy across different hours of

[2] D.20-03-028 at Table 5.

the day (due in part to high cycling costs compared with revenue opportunities); and batteries bring new integration challenges, among other concerns.[3] In addition, charging patterns do not match the generally anticipated pattern of consistently charging during the "belly of the duck" and discharging on peak.[4]

> **Question 7.** Comment on whether you agree with the recommended Mid-Need scenario, explaining why or why not. If you have an alternative proposal, describe it in detail. Also note that Section 6.6 of the Procurement Framework Staff Proposal includes recommendations for need determination during the current IRP cycle (referred to as Phase 1). Comment on whether you agree with those recommendations, to the extent not already addressed by your responses to the questions above, in the context of the procurement proposed in this ruling and/or related to the remainder of this IRP cycle.

Response: No comment at this time beyond the related point made in response to Question 6.

B. Section 5 Questions on Resources Eligible to Meet Identified Need

> **Question 10.** The process of identifying resource types and amounts that are cost-effective, and can potentially fulfill a procurement need, but have market or other barriers to procurement, is explored in Section 6.5.4 of the Procurement Framework Staff Proposal. Comment on the approach described in this ruling, with reference to the Staff Proposal and/or other approaches you recommend.

Response: The proposed approach is generally reasonable and should be performed to support any resource-specific requirements that are not included in the RSP. The attribute-oriented approach described in Section 6.5.4 of the Staff Proposal is reasonable for evaluating the various large, long lead-time technologies, including offshore wind, pumped hydro, geothermal, and out-of-state resources. An additional consideration that should be included in this process is whether pre-commercial projects could advance longer-term objectives regarding resources that will be needed to cost-effectively achieve SB 100 goals.

---

[3] See CAISO, "Energy Storage and Distributed Energy Resources Initiative (ESDER4) Draft Final Proposal, Stakeholder Web Conference" (May 27, 2020). Available at: http://www.caiso.com/InitiativeDocuments/Presentation-EnergyStorage-DistributedEnergyResourcesPhase4-May27-2020.pdf.

[4] See CAISO daily demand and supply data for various dates, available at http://www.caiso.com/TodaysOutlook/Pages/supply.aspx ("supply" tab).

There is no indication that any analysis was performed to support the 1-GW geothermal or the 1-GW long-duration storage requirements recommended in the Ruling, although the long-duration storage requirement is supported by the RSP adopted in D.20-03-028.

> **Question 11.** Comment on whether the suggested amount of geothermal and/or long-duration storage resources should be required to be procured as part of the mid-term procurement requirements.

Response: Resource-specific requirements, if any, should be informed by the resource portfolio in the most recently adopted RSP, integration-resource needs embedded in the RSP, and sensitivity analyses, which will require Energy Division analysis. Requirements would be better focused, however, on resource attributes. As indicated in our response to Question 6, above, system integration needs are addressed by the SERVM model in producing the RSP, however these needs have not been made transparent. Once system integration needs are quantified, we will know how much of the storage capacity in the RSP will be needed for that purpose, as opposed to general capacity needs. Armed with that information, the Commission can then consider whether to diversify the resources that meet each of those needs (integration services and system RA capacity).

There is no indication in the Ruling that any such consideration was made in proposing that 1 GW of geothermal resources be required, whereas the proposal to require 1 GW of long-duration storage is supported by the RSP adopted in D.20-03-028. In recommending a geothermal requirement, the Ruling indicates (at p. 16) that this would serve a "generic capacity" need, simply stating (at p. 17) that, because the retiring Diablo Canyon nuclear plant provides firm capacity, that it should be replaced, in part, with firm capacity. The Ruling further justifies a geothermal requirement because "a great deal of the capacity procured in recent years has been either solar, solar plus storage, or standalone battery storage with declining ELCC values," which "leads to the need for greater resource diversity." The Ruling describes the proposed resource requirements as a "least-regrets" proposal without any further explanation.

The Ruling's geothermal resource requirement cannot be supported by its "firm" attribute (i.e., the fact that geothermal is a 24/7 baseload resource as is Diablo Canyon). "Firmness" is an outdated concept in a system that is increasingly dominated by use-limited resources and the term is not being used, for example, in the discussions regarding structural reform of the Commission's RA program in R.19-11-009. What is needed in such a system are flexible

system-integration resources that can provide ramping services (particularly as the sun sets) and can move energy across the day (or days, in the case of long-duration storage). (By contrast, firm resources are not available for ramping needs and contribute to midday overgeneration.) To the extent that the Commission determines that geothermal resources should provide a portion of system integration needs, then the requirement should be for fully dispatchable geothermal and/or other dispatchable renewable resources, not firm geothermal resources.[5]

However, if the Ruling is aiming to diversify a portion of system capacity needs, then limiting the requirement to geothermal is not justified. As the Ruling points out, recent procurements have been dominated by solar and battery resources. Any non-solar, non-battery resource – e.g., wind (onshore or off), biomass, biogas or geothermal – provides resource diversity and should be eligible to satisfy a resource diversity objective for system RA.[6] We strongly encourage the Commission to develop objective and measurable criteria for resource diversity so that decisions can be supported by specific analysis rather than by a general notion about resource firmness.

Moreover, limiting the proposed diversity requirement to geothermal is not supported by the adopted RSP or the SB 100 studies. In the SB 100 core scenario, only 135 MW of geothermal was selected by 2045, compared with some 22 GW of in-state, out-of-state and offshore wind and 4 GW of long-duration storage.[7] In an expanded load scenario where gas-use is more constrained, the SB 100 results show 2.3 GW of geothermal, beginning in 2035 and 26 GW of the various wind resources and 4 GW of long-duration storage.[8] In view of these results, a 1-GW geothermal mandate cannot be considered "least-regrets" since geothermal capacity was largely found to be uneconomic, compared to wind resources, in the core scenario.

---

[5] We note that the Commission has previously stated that "every resource that requires procuring" is an integration resource. (See D.19-04-040, issued May 1, 2019, at p. 136.) To the extent that the Commission defines integration resources more broadly than their flexible characteristics, then any resource that meets the definition should be eligible to fulfill the need. See also Staff Proposal at p. A-22 - A-23.

[6] Note that California's wind fleet of approximately 6 GW performed at its expected ELCC value of about 20% during the evening net-peak period during the August 14 and 15, 2020, Stage 3 Emergency. The August 15, 2020, Stage 3 Emergency "was cancelled because wind production had increased more than 500 MW" above the expected ELCC value. See California ISO, Final Root Cause Analysis, Mid-August 2020 Extreme Heat Wave at Figure 3.5 and p. 31 (Jan. 13, 2021).

[7] California Energy Commission, 2021 SB 100 Joint Agency Report at p. 75, CEC-200-2021-001 (March 2021).

[8] *Id.* at p. 76.

By contrast, a requirement for wind resources by 2026 would be a least-regrets action because these resources will be needed to cost-effectively achieve SB 100 goals and, indeed, 2.7 GW of wind is included in the adopted RSP by 2026. Further, to the extent that offshore wind energy can be deployed in the mid-term timeframe, these procurements will have substantial value in setting the stage for further deployment of offshore wind.[9] A wind energy requirement would be warranted given that, as of November 2020, only 902 MW of new wind resources had been contracted.[10] Moreover, the need for integration resources will be reduced as LSEs diversify their procurements with non-solar resources.[11] Certainly, wind resources, as well as long-duration storage (above 1 GW) and geothermal, should be eligible for any resource diversity requirement.

At the March 10, 2020, workshop on this Ruling, Energy Division staff was asked to clarify the Ruling's statement (at p. 18) that out-of-state wind and offshore "could also count towards the requirements proposed in this ruling." Staff's response was that wind could count toward the generic capacity requirement but not the "firm" requirement.[12] Given that clarification, the Commission's statement is of no consequence**,** unless the Commission was planning to disqualify LSEs from counting wind resources towards their mid-term NQC requirements. To be meaningful, wind and other non-solar, non-battery resources must be allowed to count towards any diversity requirement, whether aimed at system RA or integration needs (provided that, to be eligible for the latter, resources must be able to perform the needed integration services).

> **Question 12.** Describe the risks you see, if any, in relying on specific resource types to fill the proposed procurement need, as well as provide suggestions for how they could be mitigated. For example, there could be some type of identified future juncture where LSEs and/or the Commission could evaluate risks prior to moving forward fully with procurement. As part of this, describe any challenges you see (for example, supply chain

[9] In particular, pre-commercial developments for floating offshore wind turbines may be a key step in developing onshore floating-foundation assembly capabilities before advancing to large projects. Two such projects have been proposed near the Vandenberg Air Force Base and may be able to deliver energy in the 2025-26 timeframe. See, https://www.offshorewind.biz/2020/11/19/california-state-lands-commission-reviewing-two-floating-wind-applications/.

[10] CPUC Energy Division, "Status of New Resources Expected" at Slide 13 (Nov. 2020).

[11] *See, e.g.,* Figure 16 in: 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.

[12] CPUC March 10, 2021, Workshop, Response of Nathan Barcic to question posed by Nancy Rader.

issues, siting challenges) that may impact the ability to come online with the timing and amounts proposed.

In addition to the concerns raised about the proposed geothermal requirement described in response to Question 11, limiting the diversity requirement to geothermal resources could also lead to market power concerns if there is a lack of geothermal resources that could be constructed by 2025. Currently, for example, there are no active interconnection applications for geothermal resources in the CAISO queue.

Question 13. Comment on the proposal for all LSEs to engage in joint procurement of geothermal and/or long-duration storage, with the potential for IOUs to be required to backstop such procurement. This suggestion corresponds to Section 7.2.2 of the Procurement Framework Staff Proposal. If you have an alternative proposal, describe it in detail and/or identify whether it is one of the other options included in the Procurement Framework Staff Proposal. In addition, comment on whether identifying need for backstop procurement in 2023 would allow sufficient time to contract for and build these resources by 2025, and, if not, how you would propose to address this timing issue.

Response: No comment at this time.

Question 14. Comment on how fossil-fueled resources should be treated for purposes of compliance with the procurement requirements proposed in this ruling. Include responses to the potential limitations suggested above and/or propose additional restrictions, if you feel that fossil generation should count but be subject to limits.

Response: No comment at this time.

Question 15. Comment on whether firm imports should be allowed to count towards the required capacity proposed in this ruling, and if such resources should be required to be committed to California via pseudo-ties or dynamic scheduling. Include any other limitations you would propose.

Response: In considering whether firm imports should be allowed to count towards its mid-term capacity requirements, the Commission should consider whether such imports would merely be replacing imports that would otherwise serve California. There is congestion on existing lines between CAISO interconnection points and California load centers, which makes obtaining additional maximum import capability ("MIC") rights difficult. Absent transmission upgrades, which are not anticipated in the mid-term period, if MIC rights are secured by a newly importing RPS resource, the import will likely displace imports currently serving California's reliability needs (while offering lower NQC value for the same MW of transmission capacity at the CAISO interface point), rather than adding to California's reliability

resources. Therefore, the Commission should consider the circumstances, if any, under which such imports should be eligible to meet the mid-term reliability requirement.

C. Section 6 Questions Regarding Need Allocation to LSEs

Question 16. Comment on the appropriate way to handle allocation of responsibility to LSEs for purposes of the reliability capacity needs identified in this ruling. The approach proposed here corresponds to "Need Allocation – Specific – Option 2" in Section 7.1 of the Procurement Framework Staff Proposal. If you have an alternative proposal, describe it in detail and/or identify whether it is one of the other options included in the Staff Proposal.

Response: The proposal to base system RA needs on each LSE's proportional contribution to the determined need is appropriate; however, state law requires that integration resource requirements be allocated based on causation. As discussed in response to Question 6 above, the Commission must identify how much of the overall capacity requirement is needed for integration purposes and how much for system RA before it can allocate either obligation. For system RA resources, the proposed allocation approach based on each LSEs' proportional contribution to the determined need is appropriate and causation-based and, as the Ruling suggests (at p. 22), it is equitable to LSEs who may have already proactively procured (or are in the process of procuring) additional capacity to serve their load. Similarly, integration requirements must be allocated in a way that reflects each LSE's contribution to the need for integration resources. LSEs whose resource portfolios are not sufficiently diverse and not matched to their load variation should be responsible for a larger share of integration resources. Assigning integration needs based on causation is also required by law,[13] but the relevant code section was not referenced in the Ruling or Staff Proposal nor apparently considered. The Staff Proposal does recognize, however, the need to address integration requirements and resource diversity in the IRP Procurement Framework.[14,15] We note that

[13] AB 1584 (2019) required the Commission to develop and use methodologies for allocating electrical system integration resource procurement needs to each load-serving entity based on the contribution of that entity's load and resource portfolio to the electrical system conditions that created the need for the procurement. See P.U. Code § 397.

[14] Staff Proposal at p. A-45.

[15] Peninsula Clean Energy ("PCE") also recommended that the Commission explicitly address, in this proceeding, the development of methodologies to assess LSE contributions to system integration needs and responsibility for any shortfalls, noting P.U. Code § 397. See PCE Reply Comments on the Prehearing Conference at p. 2 (July 24, 2020).

allocating integration requirements on a "causer pays" basis will promote resource diversity because more-diverse resource portfolios are likely to require fewer integration resources that LSEs will have to pay for.

Integration-cost allocators could be determined most simply by using the adopted RSP as the basis for determining the marginal integration impacts imposed by each LSE's load and non-dispatchable resources (i.e., wind and solar resources). In theory, the RSP has "optimally" identified the integration resources needed to address all hourly ramping needs and any need to shift supply from periods of overgeneration to times of system need. The marginal impacts of each non-dispatchable resource type can be determined in the RESOLVE model by forcing an additional block of each specific resource into the RSP and noting the associated change in system cost. From that exercise, integration allocators can be developed (e.g., $X/MW for each additional MW of wind and $Y/MW for each additional MW of solar). This method is possible because wind and solar resources will largely behave the same for all LSEs. With load, on the other hand, load shape can vary significantly from LSE to LSE. Therefore, to keep the process of developing allocators manageable, it will be necessary to develop a few representative profiles into which LSEs will be classified (e.g., four profiles representing coastal and inland areas for northern and southern California). With those profiles, allocators for each load shape can be determined in the RESOLVE model by adding a block of load, using each of the load profiles, and noting the change in system cost, less the cost associated with additional RA capacity (resulting in a $/MW allocator for each additional MW of load). Using these integration cost allocators for load and non-dispatchable resources, each LSE can be assigned an overall fraction of the integration resource requirement based on their total load and their total contracted/owned non-dispatchable resource capacity. The Commission could perform this analysis itself and develop the integration cost allocators or could request that CAISO do so.

To ensure that the needed integration resources are procured, the Commission should require that LSEs' power purchase contracts for integration resources obligate the seller to make available to the CAISO the needed system integration services as discussed in response to question 6.

Question 17. Comment on the best way to handle load migration during the period of a Commission order and the online dates proposed in this ruling. If you support the concept of using a PCIA approach, what vintage dates should apply?

Response: No comment at this time.

D. Section 9 Questions on Methods of Compliance

Question 25. Comment on whether marginal or average ELCCs should be used for counting LSEs' procurement and assessing compliance with the procurement requirements proposed.

Response: This issue is being considered simultaneously in the Resource Adequacy proceeding and the Commission should take this important opportunity to align both proceedings on the use of marginal ELCC values. Using marginal ELCC values is necessary to provide a critical market signal to LSEs reflecting the sharply declining reliability contribution of additional solar resources, as documented in a Commission-directed ELCC study conducted by Astrapé Consulting.[16] Absent such a market signal, LSEs will have no reason, in their procurement decisions, to account for the lack of RA capacity contribution from additional solar resources and, in the process, fail to improve system reliability. Moreover, the declining average solar ELCC value will harm LSEs who previously procured solar resources because of their higher RA capacity contributions. Failing to account for the marginal value will deter LSEs from procuring resources with higher actual marginal RA capacity contributions.

Question 26. Comment on the proposed minimum ten-year contract requirement for new resources.

Response: The proposed ten-year minimum contract requirement is essential to enable reasonably priced financing for new, capital-intensive resources. In addition, for the reasons stated in response to Questions 6 and 16, the Commission should identify needed integration resources and require that LSEs' power purchase contracts for integration resources obligate the seller to make available to the CAISO the needed system integration services.

Question 27. Comment on how imports should be treated for counting and compliance purposes for the procurement proposed in this ruling.

Response: Please see our response to Question 15, above.

Question 28. Comment on whether you think that any fields in the baseline generator list need to be kept confidential when staff updates it with new in-development resources

[16] Energy Division Track 4 Proposal at p. 4, citing the ELCC study directed in D.19-09-043 (conducted by Astrapé Consulting) that was transmitted in SCE Advice Letter 4243-E.

identified from the Resource Data Templates in LSE plans, as proposed to serve as the baseline for the procurement proposed in this ruling.

Response: No comment at this time.

E. Section 12 Questions on Relationship with Potential Procurement Emanating from Preferred System Portfolio

Question 32. Parties are invited to comment on or propose alternative compliance regimes to the proposals in this ruling to address the longer-term system reliability requirements identified in the IRP context.

Response: No comment at this time.

Question 33. Comment on any other aspects of the Phase 1 recommendations in the Procurement Framework Staff Proposal not already addressed in your responses to prior questions.

Response: Diablo Canyon Should Be Repurposed to Realize SB 100 Goals. In the Commission proceeding in which the cost issues associated with the decommissioning of the Diablo Canyon Power Plant are being evaluated, PG&E stated that it has engaged the local community in discussions about repurposing the 230 kV and 500 kV systems associated with the Diablo Canyon Power Plant and will include feasible repurposing opportunities in its 2021 Nuclear Decommissioning Cost Triennial Proceeding.[17] While these local discussions are no doubt important, the repurposing of this remarkably valuable infrastructure must also be addressed in this IRP proceeding. Specifically, the Commission should consider whether total procurements utilizing Diablo Canyon assets should be limited until siting determinations regarding offshore wind energy are made by the Bureau of Ocean Energy Management later this year or early next. This should be an integral part of the Commission's consideration of long lead-time and/or large-scale resources, and of resource diversity.

The infrastructure at the Diablo Canyon nuclear power plant, particularly the 230 kV and 500 kV systems, as well as PG&E's rights to deliverability transmission capacity from the Diablo Canyon generation site, are rare assets that would be extremely difficult to reproduce today anywhere along the California coastline. The Commission must ensure that these assets are put to their most valuable use. While other uses can be conceived of, it is hard to imagine a

[17] A.8-12-008, "Pacific Gas and Electric Company 2018 Nuclear Decommissioning Cost Triennial Proceeding Rebuttal Testimony – Revised," Exhibit No. PGE-12 (August 15, 2019, rev. Sept. 17, 2019) at p. 4-2.

more strategic use for these assets than for the interconnection and delivery of the proximate offshore wind resources. The wind resources off the Central Coast are the subject of intense consideration by California, the federal government, and the offshore wind industry, given the high resource quality and relative proximity to load centers compared with other offshore wind resource areas.[18] The Joint Energy Agencies' SB 100 study included 10 GW of offshore wind in the core scenario.[19] In addition, two other studies, taken together, demonstrate that offshore wind holds substantial promise for achieving SB 100 goals at least cost:

- The Energy Commission's 2018 *Deep Decarbonization* study showed that the resource diversity provided by out-of-state wind would create potential savings of $19 billion per year by 2050, as compared to a portfolio dominated by solar and battery resources.[20]

- An E3 study performed for Castle Wind LLC found that offshore wind's proximity to in-state electricity demand and existing transmission infrastructure makes it a "least-cost resource option even if out-of-state wind is developed in the future.[21]

Together, these study results indicate that offshore wind has the potential to deliver savings on the order of at least $19 billion per year if incorporated into California's SB 100 goals.

Given the high potential value of offshore wind resources, and the strategic locational value of Diablo Canyon substations and deliverability transmission rights, the Commission should consider whether and how the use of Diablo Canyon assets can be preserved for potential delivery of offshore wind resources. Given jurisdictional considerations, this might best be done through CPUC restrictions placed on procurements from resources utilizing Diablo Canyon's assets. Additionally, the Commission should consider the role that these assets could play in conjunction with a subsea cable proposal

[18] See National Renewable Energy Laboratory, *Potential Offshore Wind Energy Areas in California: An Assessment of Locations, Technology, and Costs* (December 2016; NREL/TP-5000-67414). https://www.nrel.gov/docs/fy17osti/67414.pdf

[19] Note 7 *supra*.

[20] 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.)

[21] Energy+Environmental Economics, *The Economic Value of Offshore Wind Power in California*. August 2019.

that may be studied in the current CAISO TPP cycle pursuant to the CPUC's Offshore Wind Sensitivity Case.[22]

Respectfully submitted,

/s/ Nancy Rader

Nancy Rader
Executive Director
California Wind Energy Association
1700 Shattuck Ave., #17
Berkeley CA 94709
Telephone: (510) 845-5077 x1
Email: nrader@calwea.org

On behalf of the California Wind Energy Association

March 26, 2021

[22] D.21-02-008 (Feb. 11, 2021) at p. 12.

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 Mid-Term Reliability Analysis and Proposed Procurement Requirements" 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 March 26, 2021, at Berkeley, California.

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