



***Offshore Wind California* (OWC) Comments to California Independent System Operator (CAISO)  
Regarding 2022-2023 Transmission Planning Process Update**

July 20, 2022

*Offshore Wind California* supports the California Public Utilities (CPUC) and California Energy Commission's (CEC) joint request for CAISO, as part of its 2022-2023 Transmission Planning Process (TPP), to use the 2021 Integrated Energy Policy Report (IEPR) Additional Transportation Electrification as its load assumptions for the base and sensitivity case studies and to study the 30 million metric ton (MMT) High Electrification policy-driven sensitivity portfolio.<sup>1</sup> Analysis of these sensitivity portfolios is critical for the State to accurately consider the transmission impacts of a higher electrification future driven by its ambitious SB 100 clean energy policy.

The CPUC's 2022-2023 TPP High Electrification Policy-Driven Sensitivity Portfolio RESOLVE Results include 4,707 MW of offshore wind generation by 2035. *Offshore Wind California* generally agrees with this analysis, though we urge CAISO to more closely consider and follow the policy outcomes of the AB 525 process and the CEC's establishment of higher offshore wind planning goals for 2030 and 2045. These will be considered at the CEC's business meeting on August 10, 2022. In its May 2022 Draft AB 525 Report, CEC proposed planning goals of 3,000 MW by 2030 and 10,000–15,000 MW by 2045.<sup>2</sup> Before finalizing its report, the CEC decided to consider additional studies and stakeholder comments that advocate for increasing the State's offshore wind planning goals to as much as 5,000 MW by 2030 and 20,000 MW or more by 2045. These policy developments demonstrate a need for CAISO to more fully account for and accurately reflect in its TPP the CEC's updated planning goals.

CAISO's 20-Year Transmission Outlook has already analyzed the transmission development and integration of up to 10,000 MW of offshore wind by 2040, including 2,300 MW in the existing Humboldt and Morro Bay call areas. These findings should be updated to reflect recent National Renewable Energy Laboratory (NREL) findings<sup>3</sup> regarding capacity and included in this TPP cycle.<sup>4</sup> These figures, shared by NREL at the CEC workshop on June 27, 2022, show capacity densities of 4,875 MW for the Morro Bay WEA, and 2,680 MW for the Humboldt WEA. NREL noted that it updated density assumptions based in part on East Coast wind farm data. This is significant as the MW capacity in the Morro Bay and Humboldt lease areas would increase from 4,533 to 7,555 MW. NREL reports that offshore wind developers on the East Coast are already utilizing power densities at this or higher ranges. This significant shift in industry norms should be factored into CAISO's ongoing analysis and planning for offshore wind in the State's clean power portfolio. The NREL slide is reproduced below.

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<sup>1</sup> CPUC and CEC Transmittal Letter to CAISO for 2022-23 TPP High Electrification Portfolio,

<http://www.caiso.com/InitiativeDocuments/2022-2023TransmissionPlanningProcess-PortfolioTransmittalLetter.pdf>.

<sup>2</sup> CEC Draft Commission Report on Offshore Wind Energy Development off the California Coast, May 2022.

<sup>3</sup> Offshore Wind Research Summary – California Study Results, National Renewable Energy Laboratory (NREL), Walt Musial, Presentation to California Energy Commission Workshop, June 27, 2022, p. 8.

<sup>4</sup> CAISO 20-Year Transmission Outlook, May 2022.

## Floating Cost and Capacity Findings

- Costs range \$68/MWh to \$57/MWh
- Costs assume a viable port located on the Central and North coasts (Humboldt Bay, TBD near Morro Bay)
- Morro Bay has adequate transmission connection.
- Humboldt WEA/North Coast will need transmission build.
- Five study areas can conservatively support 21,172 MW at 3 MW/km<sup>2</sup>
- Industry norms suggest developers may increase power density to 5 MW/km<sup>2</sup> or more.

### Nameplate Capacities (MW) for California Offshore Wind Energy Areas and Study Areas

	Area (km <sup>2</sup> )	2020 Modeled Scenario			Probable Scenario	
		Capacity (MW)	Capacity (MW)	Capacity (MW)	Capacity (MW)	Capacity (MW)
		3 MW/km <sup>2</sup>	4 MW/km <sup>2</sup>	5 MW/km <sup>2</sup>	4 MW/km <sup>2</sup>	5 MW/km <sup>2</sup>
		NREL Study			No Diablo	No Diablo
Diablo Canyon Call Area	1,441	4,323	5,764	7,205	0	0
Morro Bay WEA	975	2,925	3,900	4,875	3,900	4,875
Humboldt WEA	536	1,608	2,144	2,680	2,144	2,680
Cape Mendocino Study Area	2,072	6,216	8,288	10,360	8,288	10,360
Del Norte Study Area	2,202	6,606	8,808	11,010	8,808	11,010
<b>Totals (MW)</b>	<b>7,226</b>	<b>21,678</b>	<b>28,904</b>	<b>36,130</b>	<b>23,140</b>	<b>28,925</b>

Empire Wind (NY): 6.5 MW/km<sup>2</sup>  
 Dominion CVOW (VA): 5.8 MW/km<sup>2</sup>

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In its presentation to the June 27, 2022 CEC Workshop, CAISO also indicated that it has studied the offshore wind resource off California's North Coast, which raises the total offshore wind potential that CAISO has studied in its outlook to 21,100 MW.<sup>5</sup>

Regarding interconnection, CPUC Busbar mapping indicates offshore wind from Morro Bay, which NREL estimates can generate 4,875 MW at the probable 5 MW/KM<sup>2</sup> power density scenario, is planned to come ashore at Diablo Canyon to utilize excess transmission capacity and the availability of a 500 kV system. *Offshore Wind California* agrees it is logical to interconnect Morro Bay offshore wind at Diablo Canyon, and further underscores the need for Morro Bay offshore wind—as a geographically constrained resource—to receive preference in the interconnection queue at Diablo Canyon.

Failure to reserve these deliverability rights for offshore wind development could undermine the State's opportunity to launch an offshore wind industry in a timeframe that allows California ratepayers to benefit from the investment tax credit for offshore wind as currently configured. Loss of interconnection opportunities on the Central Coast would also reduce renewable resource diversity, with negative consequences for system reliability. *Offshore Wind California* recommends that CAISO consult with the CPUC and collaborate on interagency and stakeholder discussions needed to assess the need for deliverability rights reservations for offshore wind and implement such reservations, as needed, in a manner consistent with FERC's authority to approve and enforce interconnection provisions of the CAISO tariff.

Regarding possible extension of the planned shutdown of the Diablo Canyon nuclear power plants, CAISO previously estimated that there is 5,000-6,000 MW of available transmission capacity at the location. If the Diablo Canyon nuclear plants keep running beyond their scheduled 2025 shutdown, that would reduce available transmission to 2,800-3,800 MW. This still leaves sufficient capacity for much of

<sup>5</sup> CAISO Presentation - Transmission Planning for Offshore Wind - AB 525 CEC Workshop, June 27, 2022.

the initial build of the 4,875 MW NREL estimates in projected offshore wind generating capacity at the Morro Bay WEA, which could begin coming online as early as 2028-2030. If the planned shutdown of the Diablo nuclear plants is extended to 2030 or soon thereafter, there shouldn't be an issue with available transmission. If the Diablo shutdown is extended beyond that, CAISO may have to plan for more transmission to fully accommodate both power sources. CAISO should work with the offshore wind industry and other stakeholders to manage the timing of this transition and explore the possibility of reducing potential delay between Diablo Canyon power plant shutdown and interconnection of offshore wind resources.

*Offshore Wind California* further recommends that once the CEC has set the State's offshore wind planning goals for 2030 and 2045 this summer, as required by California state law, that CAISO commence a public policy planning study for the needed onshore and offshore transmission to enable the public policies set out in California law. This public policy planning cycle should be updated if necessary to reflect any extension in the operating life of Diablo Canyon.

*Offshore Wind California* appreciates this opportunity to comment on the CAISO 2022-2023 Transmission Planning Process Update.