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Offshore Wind Energy Development: Maximum Feasible Capacity and Megawatt Planning Goals for 2030 and 2045

Scott Flint

June 27, 2022



AB 525 Offshore Wind Strategic Plan Directives

- Evaluate and quantify the maximum feasible capacity of offshore wind to achieve reliability, ratepayer, employment, and decarbonization benefits
- Establish megawatt offshore wind planning goals for 2030 and 2045
- Identify sea space, port and transmission infrastructure and workforce needs to achieve planning goals for offshore wind
- Consider potential impacts to and identify strategies to address those impacts
 - Coastal resources
 - Fisheries
 - Native American and Indigenous peoples
 - National defense
- Complete Offshore Wind Strategic Plan for California by June 30, 2023



Required Factors for Establishing Megawatt Offshore Wind Planning Goals

1. Findings from the Joint Agency 2021 SB100 Report
2. Need to initiate long-term transmission and infrastructure planning
3. Need for renewable energy to accommodate California's shifting peak load
4. Generation profile of offshore wind off the coast of California
5. Potential impacts on coastal resources, fisheries, Native American and Indigenous peoples, and national defense and strategies to address them
6. Potential to attract supply chain manufacturing for components in the Pacific region
7. Need for economies of scale to reduce costs of floating offshore wind
8. NREL finding that California has 200 GW of offshore wind technical power potential
9. Need to develop skilled and trained offshore wind workforce
10. Availability of federal tax incentives
11. Opportunity for California to participate in federal offshore wind megawatt goals
12. Executive actions from the Governor



Studies Referenced in the Draft Report

National Renewable Energy Laboratory (NREL)

- [2020 Offshore Wind Resource Assessment for the California Pacific Outer Continental Shelf](#)
- [The Cost of Floating Offshore Wind Energy in California Between 2019 and 2032](#)

California Public Utilities Commission

- [Decision Adopting 2021 Preferred System Plan](#)
- [Attachment A: Modeling Assumptions for the 2021-2022 Transmission Planning Process](#)

California Independent System Operator

- [20-Year Transmission Outlook](#)
- [2021-2022 Transmission Plan](#)



Need for Long Term Infrastructure Planning

CAISO 20 Year Outlook

10 GW of Offshore Wind : North Coast (4 GW) and South-Central Coast (6 GW)

CPUC

- IRP: 8.3 GW of Offshore Wind:
 - Humboldt 1.6 GW
 - Morro Bay 2.3 GW
 - Diablo Canyon 4.4 GW
- CPUC's preferred system planning identified 1.7 GW by 2032

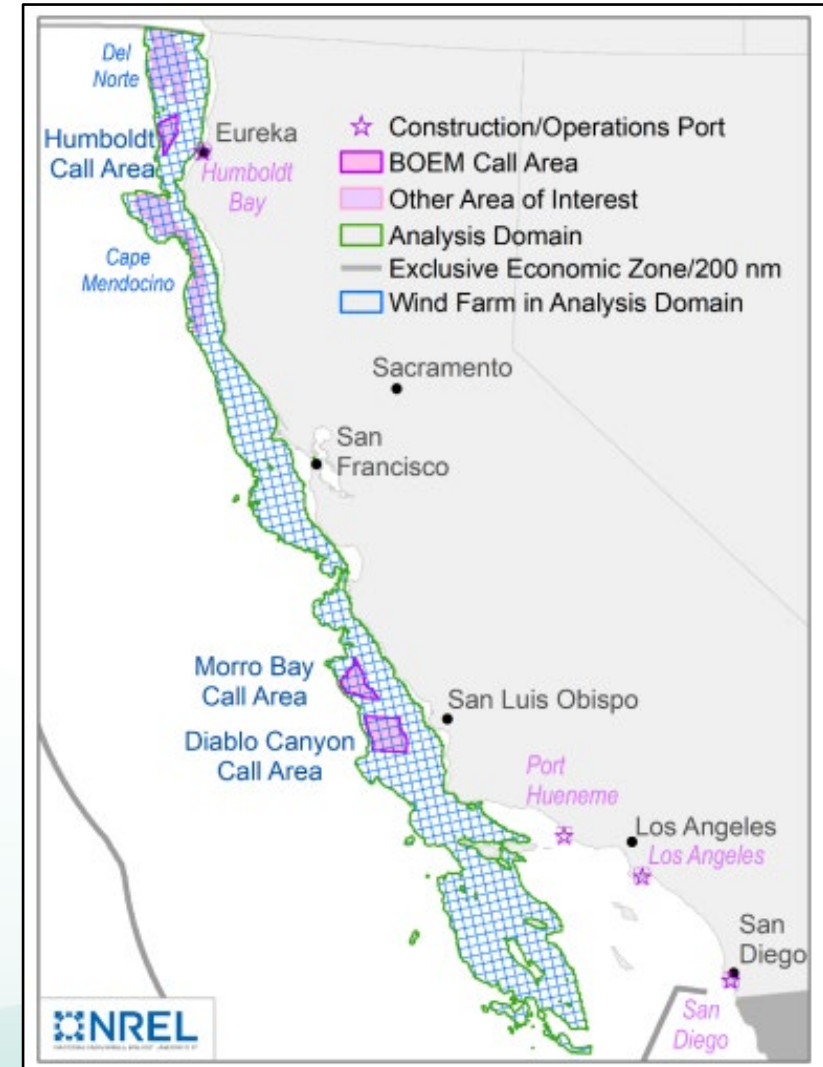
Humboldt State University

- Humboldt Call Area:
 - Evaluated project scenarios 30 MW to 1.86 GW
 - 2030 estimated load
 - Transmission upgrades required for fully deliverable



Maximum Feasible Capacity Report Findings

- References 21,800 megawatts (21.8 GW) of **technically feasible** offshore wind potential
- Does not represent the quantification of maximum feasible capacity for offshore wind; it is the total capacity that has been studied in existing reports
- Sets a reference point for AB 525 strategic plan evaluations of:
 - Sea space
 - Impacts
 - Transmission
 - Waterfront facilities and port infrastructure
 - Workforce and supply chain



Source: NREL, November 2020



Potential Impacts to Consider and Address

- Requires the CEC to consider potential impacts to:
 - Coastal resources
 - Fisheries
 - Native American and Indigenous peoples
 - National defense
- ...and identify strategies to address those impacts...



Preliminary Offshore Wind Megawatt Planning Goals

- Preliminary 2030 and 2045 planning goals are for developing the AB 525 Offshore Wind Strategic Plan
- Draft Report recognizes potential for 20 GW Beyond 2045





Studies Docketed Following the May 18th Workshop

National Renewable Energy Laboratory (NREL)

- [Assessment of Offshore Wind Energy Leasing Areas for Humboldt and Morro Bay Wind Energy Areas](#)

GridLab, Telos Energy, Energy Innovation

- [Reliably Reaching California's Clean Electricity Targets: Stress Testing Accelerated 2030 Clean Portfolios](#)

The Goldman School of Public Policy, UC Berkeley

- [The Offshore Report: California](#)

The Nature Conservancy

- [Power of Place West](#), forthcoming publication by the Nature Conservancy