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# **Assembly Bill 525: Evaluating and quantifying maximum feasible capacity of offshore wind and establishing offshore wind megawatt planning goals for 2030 and 2045**

Resources Considered (as of March 3, 2022)

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Assembly Bill 525 requires the California Energy Commission (CEC) to evaluate and quantify the maximum feasible capacity of offshore wind to achieve reliability, ratepayer, employment, and decarbonization benefits and establish megawatt offshore wind planning goals for 2030 and 2045. The CEC is currently working to meet this requirement by conducting an initial literature review of existing publications and research. As CEC staff continue exploring resources and synthesizing information that will help with meeting the requirements of AB 525, including establishing megawatt offshore wind planning goals, we welcome recommendations of additional studies for our consideration.

Included below is a list of resources CEC staff has reviewed to date including those referenced in the [Workshop on AB 525 Strategic Plan for Offshore Wind Energy Planning Goals](#), held on March 3, 2022.

## **California's Climate and Energy Goals and Offshore Wind Potential:**

1. Beiter, Philipp, Walter Musial, Patrick Duffy, Aubryn Cooperman, Matt Shields, Donna Heimiller, and Mike Optis. 2020. The Cost of Floating Offshore Wind Energy in California Between 2019 and 2032. Golden, CO: National Renewable Energy Laboratory. NREL/TP-5000-77384. <https://www.nrel.gov/docs/fy21osti/77384.pdf>.
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8. Bureau of Ocean Energy Management. October 19, 2018. Commercial Leasing for Wind Power Development on the Outer Continental Shelf (OCS) Offshore California—Call for Information and Nominations (Call). U.S. Department of Interior. Docket No. BOEM–2018–0045. Federal Register Vol. 83, No. 203. Notices. <https://www.boem.gov/sites/default/files/regulations/Federal-Register-Notices/2018/83-FR-53096.pdf>.
9. Bureau of Ocean Energy Management. Renewable Energy State Activities: Nominations. California. <https://www.boem.gov/renewable-energy/state-activities/nominations-0>. Accessed February 16, 2022.
10. Bureau of Ocean Energy Management. Wind Energy Commercial Leasing Process. <https://www.boem.gov/sites/default/files/oil-and-gas-energy-program/Leasing/Five-Year-Program/2019-2024/DPP/NP-Wind-Energy-Comm-Leasing-Process.pdf>
11. California Energy Commission, California Public Utilities Commission, and California Air Resources Board. 2021. 2021 SB 100 Joint Agency Report Summary. <https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237168&DocumentContentId=70348>
12. California Energy Commission, California Public Utilities Commission, and California Air Resources Board. 2021. 2021 SB 100 Joint Agency Report Achieving 100 Percent Clean Electricity in California: An Initial Assessment. <https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237167&DocumentContentId=70349>.
13. California Energy Commission. 2021. Electric Generation Capacity and Energy. Data based on CEC-1304 QFER Database as of May 11, 2021. <https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/electric-generation-capacity-and-energy>.

14. California Independent System Operator, California Public Utilities Commission, and California Energy Commission. January 13, 2021. Final Root Cause Analysis: Mid-August 2020 Extreme Heat Wave. <http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf>.
15. California's Fourth Climate Change Assessment. 2018. Key Findings. <https://www.climateassessment.ca.gov/state/overview/>.
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17. Optis, Mike, Alex Rybchuk, Nicola Bodini, Michael Rossol, and Walter Musial. 2020. 2020 Offshore Wind Resource Assessment for the California Pacific Outer Continental Shelf. Golden, CO: National Renewable Energy Laboratory. NREL/TP-5000-77642. <https://www.nrel.gov/docs/fy21osti/77642.pdf>.
18. Severy, M., Ortega, C., Chamberlin, C., & Jacobson, A. 2020. Wind Speed Resource and Power Generation Profile Report. In M. Severy, Z. Alva, G. Chapman, M. Cheli, T. Garcia, C. Ortega, N. Salas, A. Younes, J. Zoellick, & A. Jacobson (Eds.) California North Coast Offshore Wind Studies. Humboldt, CA: Schatz Energy Research Center. [schatzcenter.org/pubs/2020-OSW-R2.pdf](https://www.schatzcenter.org/pubs/2020-OSW-R2.pdf).
19. U.S. Department of Energy. January 2022. Offshore Wind Energy Strategies, Regional and national strategies to accelerate and maximize the effectiveness, reliability, and sustainability of U.S. offshore wind energy deployment and operation. <https://www.energy.gov/sites/default/files/2022-01/offshore-wind-energy-strategies-report-january-2022.pdf>
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21. U.S. Department of Energy Office of Energy Efficiency and Renewable Energy. 2021. Wind Turbines: the Bigger the Better. August 30. <https://www.energy.gov/eere/articles/wind-turbines-bigger-better>.
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## **Environmental Considerations and Ocean Uses:**

23. Bureau of Ocean Energy Management. August 2021. "ADRIFT: Spatial and Temporal Distribution of Cetaceans in the California Current Ecosystem Using Drifting Archival Passive Acoustic Monitoring (PC-20-04). Environmental Studies Program: Ongoing Study. [https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/environmental-analysis/PC-20-04\\_0.pdf](https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/environmental-analysis/PC-20-04_0.pdf).
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25. California Ocean Protection Council. February 2020. Strategic Plan to Protect California's Coast and Ocean 2020-2025. <https://www.opc.ca.gov/webmaster/ftp/pdf/2020-2025-strategic-plan/OPC-2020-2025-Strategic-Plan-FINAL-20200228.pdf>.
26. Hayley Farr, Benjamin Ruttenberg, Ryan K. Walter, Yi-Hui Wang, Crow White. 2021. Potential environmental effects of deepwater floating offshore wind energy facilities. Ocean & Coastal Management. Volume 207, 105611, ISSN 0964-5691. <https://doi.org/10.1016/j.ocecoaman.2021.105611>.
27. Maxwell, Sara M., Francine Kershaw, Cameron C. Locke, Melinda G. Conners, Cyndi Dawson, Sandy Aylesworth, Rebecca Loomis, and Andrew F. Johnson. "Potential impacts of floating wind turbine technology for marine species and habitats." Journal of Environmental Management 307 (2022): 114577. <https://doi.org/10.1016/j.jenvman.2022.114577>.
28. Humboldt State University is conducting a CEC-funded research project (EPC-19-011) entitled "Seabird 3D Distribution and Relative Risk from California Offshore Wind Turbines." The project is scheduled to be completed in June 2023. <https://www.energizeinnovation.fund/projects/seabird-3d-distribution-and-relative-risk-california-offshore-wind-turbines>.
29. Integral Consulting, Inc. is conducting a CEC-funded research project (EPC-19-009) entitled "A Risk Assessment Framework to Evaluate Effects of Offshore Wind Farms on the California Upwelling Ecosystem." The project is scheduled to be completed in December 2023. <https://www.energizeinnovation.fund/projects/risk-assessment-framework-evaluate-effects-offshore-wind-farms-california-upwelling#tab-overview>.

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### **Transmission and Port Infrastructure:**

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33. California Independent System Operator. August 2021. 2020 Annual Report on Market Issues and Performance. <http://www.caiso.com/Documents/2020-Annual-Report-on-Market-Issues-and-Performance.pdf>.

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35. California Independent System Operator. January 2022. Draft 2021-2022 Transmission Plan. <http://www.caiso.com/InitiativeDocuments/Draft-2021-2022TransmissionPlan.pdf>.

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37. California Public Utilities Commission. 2021. Decision Transferring Electric Resource Portfolios to California Independent System Operator for 2021-2022 Transmission Planning Process. Decision 21-02-008 in Rulemaking 20-05-003. February 11.  
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<https://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=451412947>.

39. National Renewable Energy Laboratory. 2020. New Reference Turbine Gives Offshore Wind an Upward Draft. News release. February 12.  
<https://www.nrel.gov/news/program/2020/reference-turbine-gives-offshore-wind-updraft.html>.

40. Porter, A., and S. Phillips. 2016. Determining the Infrastructure Needs to Support Offshore Floating Wind and Marine Hydrokinetic Facilities on the Pacific West Coast and Hawaii. US Department of the Interior, Bureau of Ocean Energy Management, Pacific OCS Region, Camarillo, CA. OCS Study BOEM 2016-011. <https://www.boem.gov/sites/default/files/environmental-stewardship/Environmental-Studies/Pacific-Region/Studies/BOEM-2016-011.pdf>
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