



United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT
WASHINGTON, DC 20240-0001

Memorandum

To: Director

From: Doug Boren
Regional Director, Pacific OCS Regional Office

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BOREN

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Date: 2021.11.10
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Subject: Central California Area Identification Pursuant to 30 C.F.R. § 585.211(b)

I. Purpose

This memorandum documents the analysis and rationale used to develop the Morro Bay Wind Energy Area (WEA) offshore San Luis Obispo County, California for environmental analysis and consideration for leasing. Pursuant to Bureau of Ocean Energy Management's (BOEM) 2017 Program Delegations Handbook, the Director has final authority to designate WEAs at the end of the Area Identification (Area ID) process.

II. Area Identified

On October 19, 2018, BOEM published a Call for Information and Nominations for Commercial Leasing for Wind Power Development on the Outer Continental Shelf (OCS) Offshore California(2018 Call).¹ BOEM delineated three geographically distinct Call Areas in the 2018 Call: Morro Bay and Diablo Canyon off the central coast and Humboldt off the north coast. On May 25, 2021, the Departments of the Interior and Defense and the State of California announced identification of an area, known as the "Morro Bay 399 Area" that could support up to 3 gigawatts of offshore wind on roughly 399 square miles (255,487 total acres) off California's central coast within and adjacent to the 2018 Morro Bay Call Area. On July 29, 2021, BOEM delineated two extensions of the Morro Bay Call Area, known as the East and West Extensions and published in the *Federal Register* the "Commercial Leasing for Wind Power Development on the Outer Continental Shelf (OCS) Offshore Morro Bay, California – Call for Information and Nominations" (2021 Call).² This memorandum provides two options for the central coast WEA consisting of portions of the 2018 Morro Bay Call Area and the 2021 Call Area, as described in Table 1 and depicted in Figure 1a and Figure 1b. Option 1 for the WEA area is approximately 255,487 total acres (399 square miles) and located approximately 17 miles from shore; Option 2 is approximately 240,898 total acres (376 square miles) and located approximately 20 miles from shore.

¹ <https://www.boem.gov/sites/default/files/regulations/Federal-Register-Notices/2018/83-FR-53096.pdf>

² <https://www.govinfo.gov/content/pkg/FR-2021-07-29/pdf/2021-16134.pdf>

	<i>Acres</i>	<i>Installation Capacity (MW)³</i>	<i>Homes powered⁴</i>	<i>Power Production (MWh/year): 40% Capacity Factor⁵</i>	<i>Power Production (MWh/year): 60% Capacity Factor⁶</i>	<i>Max Depth (meters)</i>	<i>Min Depth (meters)</i>
Option 1	255,487	3,102	1,085,700	10,869,408	16,304,112	1,300	800
Option 2	240,898	2,924	1,023,623	10,245,696	15,368,544	1,300	900

Table 1: Morro Bay Wind Energy Area Option 1 and 2 Statistics

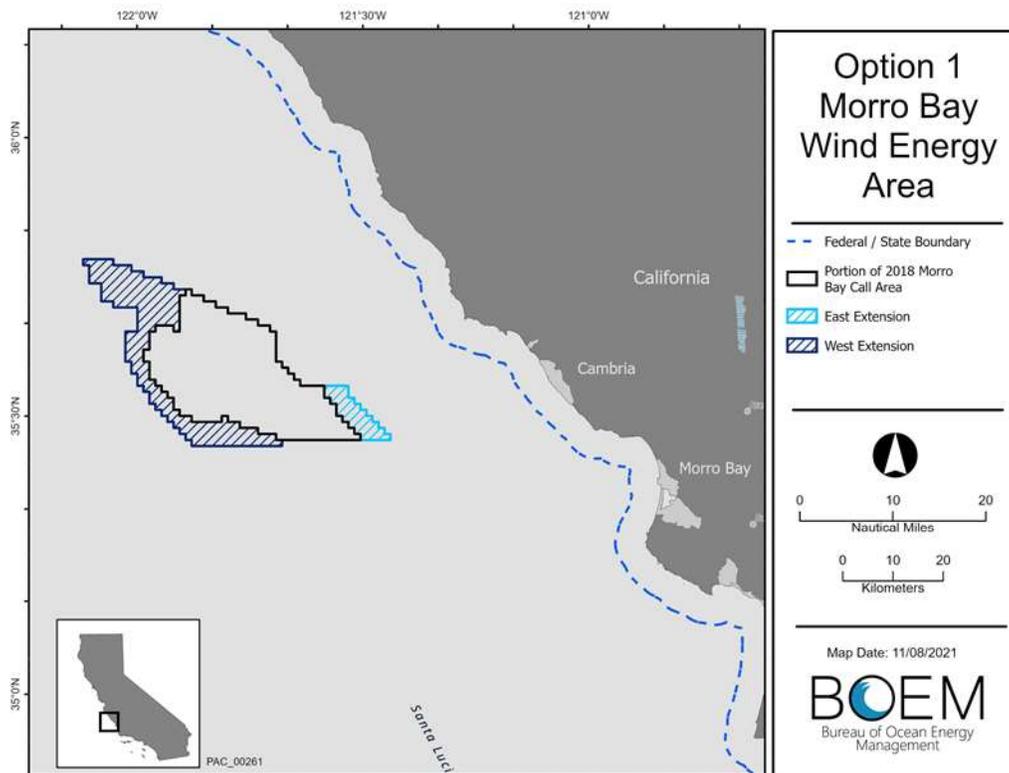


Figure 1a: Option 1 Morro Bay Wind Energy Area offshore California

³Megawatts (MW) based upon 3MW/sqkm

⁴ Based upon 350 homes per MW

⁵ Megawatt hours per year (MWh/yr) Formula = Capacity (MW) * 8760 (hrs/yr) * 0.4 (capacity factor)

⁶ Megawatt hours per year (MWh/yr) Formula = Capacity (MW) * 8760 (hrs/yr) * 0.6 (capacity factor)

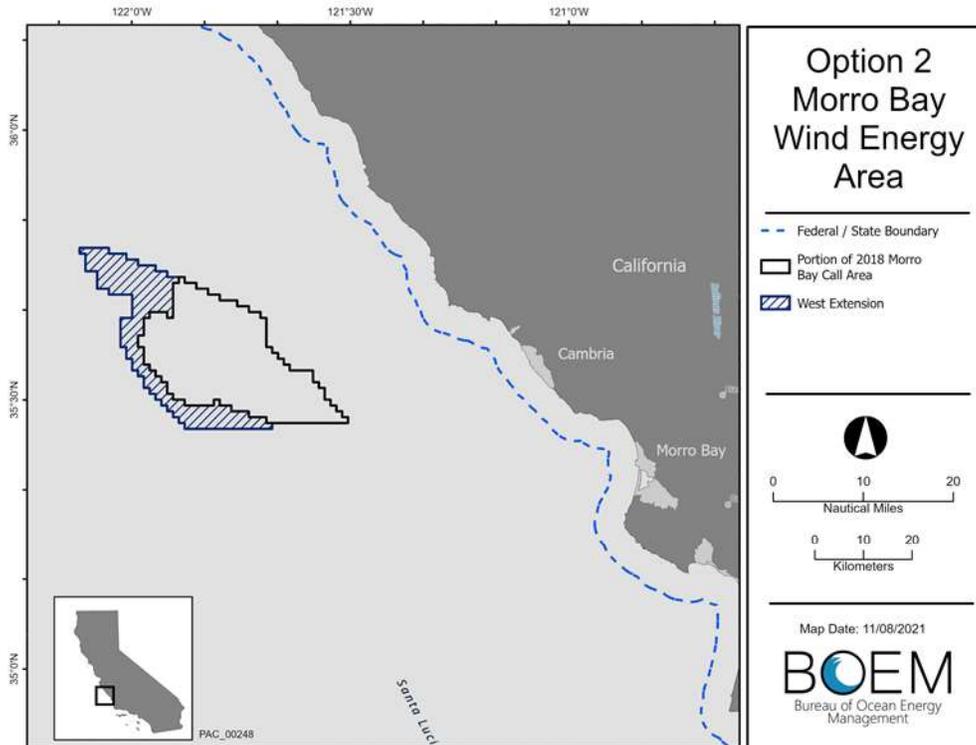


Figure 1b: Option 2 Morro Bay Wind Energy Area offshore California

III. Legal Standard

Pursuant to subsection 8(p) of the Outer Continental Shelf Lands Act (OCSLA), the Secretary of the Interior (the Secretary), in consultation with the U.S. Coast Guard (USCG) and other relevant Federal agencies, may grant a lease, easement, or right-of-way on the OCS for activities that produce or support production of energy from sources other than oil and gas (43 U.S.C. § 1337(p)(1)(C)). The Secretary must ensure that activities under this subsection are carried out in a manner that provides for 12 specific enumerated requirements, including safety, protection of the environment, and consideration of other uses of the sea or seabed. *Id.* § 1337(p)(4)(A)–(L). BOEM has issued regulations governing the leasing process and management of offshore renewable energy projects. *See* 74 Fed. Reg. 19,638 (Apr. 29, 2009); *see also* 30 C.F.R. part 585.

This memorandum documents BOEM’s consideration of OCSLA environmental and multiple use factors at the Area ID stage of its leasing process (43 U.S.C. § 1337(p)(4)(A), (B), (D), (F), (I), and (J)), Executive Order 13175 on Consultation and Coordination with Indian Tribal Governments⁷, and Department of Interior Policy on Consultation with Indian Tribes and Alaska Native Corporations.⁸ The identification of WEAs for environmental analysis does not constitute a final leasing decision, and BOEM reserves the right under its

⁷ Exec. Order No. 13175, 65 Fed. Reg. 67249 (November 9, 2000)

⁸ Department of the Interior 512 DM 4, <https://www.doi.gov/sites/doi.gov/files/512-dm-4-department-of-the-interior-policy-on-consultation-with-indian-tribes.pdf>

regulations to issue leases in smaller areas, fewer areas, different areas, some combination of these, or to issue no leases. BOEM will conduct further analysis under OCSLA and the National Environmental Policy Act (NEPA) at subsequent stages of its regulatory process, including if and when leases are issued, and if and when wind energy facilities are proposed on any leases.

IV. Description of the BOEM Process

A. Planning and Analysis

At the request of Governor Jerry Brown, BOEM established an Intergovernmental Renewable Energy Task Force (Task Force) with California in 2016 to facilitate coordination among relevant Federal agencies and affected tribal, state and local governments throughout the leasing process. Task Force meetings were held on October 13, 2016, September 17, 2018, March 9, 2020, and July 9, 2021.

Following the first Task Force meeting and through the leadership of the California Energy Commission (CEC), BOEM and the State of California engaged in a collaborative, data-based offshore wind energy planning process to foster coordinated and informed decisions about California's shared ocean resources and the many users who depend on them. This outreach consisted of numerous public meetings, webinars, and briefings with coastal communities, fishing communities, federally and non-federally recognized tribes, state and Federal agencies, academia and scientists, environmental non-governmental organizations (NGOs), and the offshore renewable energy industry. A summary of key findings is contained in the first Outreach Summary Report – California Offshore Wind Energy Planning, first published in December 2018 and includes a summary of outreach findings.⁹ Additional information gathered by BOEM and the State of California during the offshore wind energy planning process, including maps and spatially represented data, is available online at <https://caoffshorewind.databasin.org/>.

Data and information gathered during outreach efforts inform potential conflicts with existing ocean uses, viewshed, fishing, and indicate potential impacts to avian and marine mammal species, which generally increase with closer proximity to shore.

B. Call for Information and Nominations

The competitive lease issuance process starts with the publication of a Call, which requests comments from the public about areas of the OCS that it believes should receive special consideration and analysis for the potential development of renewable energy (30 C.F.R. § 585.211(a)).

On October 19, 2018, BOEM published a Call for Commercial Leasing for Wind Power Development on the OCS Offshore California.¹⁰ BOEM delineated the Call Areas in consultation with numerous parties and information sources, including the State of California and the Task Force. During the process of delineating the California Call Areas, BOEM

⁹ <https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/CA/Outreach-Summary-Report-September-2018.pdf>

¹⁰ <https://www.boem.gov/83-FR-53096/>

determined that certain areas would not be appropriate for leasing and development at this time and described the rationale used for determining the Call Areas in the Call. For example, BOEM eliminated areas closer to shore that indicate higher fisheries economic value and usage when initially selecting the call areas. BOEM also solicited public comment for three Call Areas in the Federal Register.¹¹ Two of these Call Areas were located on the Central Coast as shown in Figure 2 below.

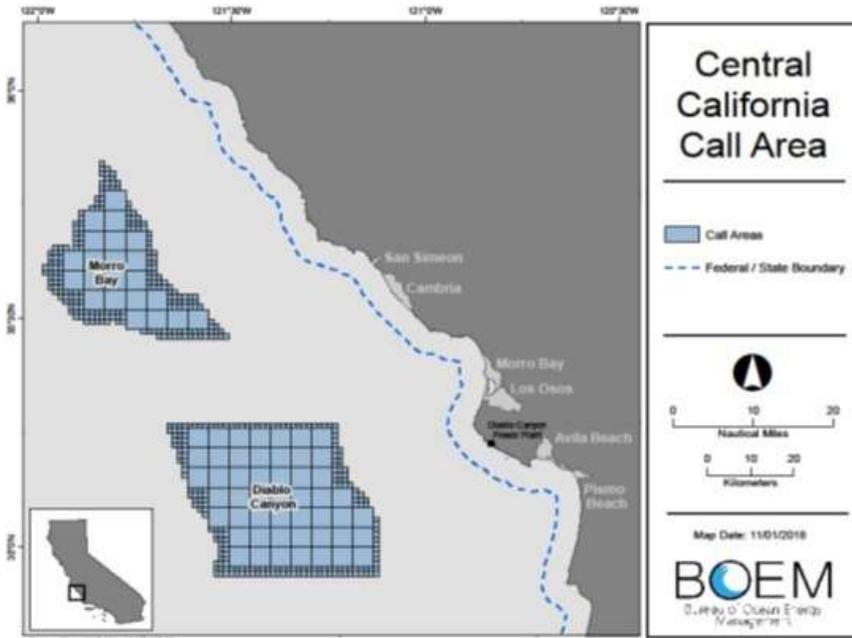


Figure 2: Central California Call Areas identified in 2018

Several concerns related to national security, military testing and training activities were identified by the Department of Defense (DoD) offshore California, including in the two Central California Call Areas. To address these concerns, the Departments of the Interior and Defense and the State of California participated in a series of discussions in 2019 and 2020 to determine if areas offshore the central coast may be compatible with military activities. These discussions focused on the Morro Bay Call Area identified in 2018. Several areas adjacent to the Morro Bay Call Area were identified as potentially compatible with military activities. These areas, known as “Central California Areas of Interest,” are shown in Figure 3 below. BOEM and the State of California collaborated to collect public comment and information on these areas. On February 7, 2020, the California Energy Commission (CEC) issued a Notice of Availability¹² (NOA) for public comment. On March 9, 2020, BOEM shared information on the areas at a Task Force meeting. A summary of key findings of this outreach through June 2021 is contained in BOEM’s second Outreach Summary Report - California Offshore Wind Energy Planning Addendum.¹³ Key concerns focused on potential

¹¹ <https://www.regulations.gov/docket?D=BOEM-2018-0045>

¹² https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/UPDATED-NOA-Outreach-on-Additional-Considerations_0.pdf

¹³ <https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Offshore-Wind-Outreach-Addendum.pdf>

negative impacts on existing ocean uses including commercial fishing, environmental and cultural resources, maritime vessel traffic, and coastal parks and tourism.

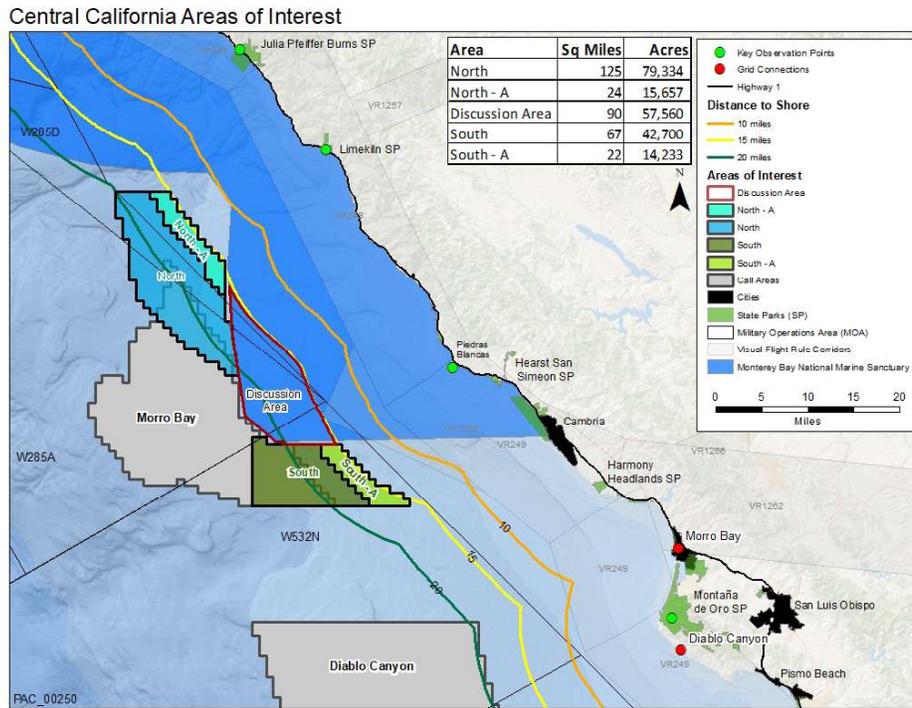


Figure 3: Central California Areas of Interest for additional consideration based on discussions with the Departments of the Interior and Defense and the State of California in 2019 and 2020

To contribute towards the Biden Harris Administration’s goal to deploy 30 GW of offshore wind by 2030 and achieve net zero emissions by 2050, on May 25, 2021, the White House, Departments of the Interior and Defense and the State of California announced identification of an area, known as the “Morro Bay 399 Area” that will support 3 gigawatts¹⁴ of offshore wind on roughly 399 square miles off California’s central coast, northwest of Morro Bay, enabling a path forward for areas within and adjacent to the Morro Bay Call Area. A map of the “Morro Bay 399 Area” is shown in Figure 4 below. Two portions of this area were not included in the 2018 Call and BOEM determined it would publish an additional Call to solicit additional public comment and any new nominations of interest.

¹⁴ A gigawatt is equivalent to 1,000 MW

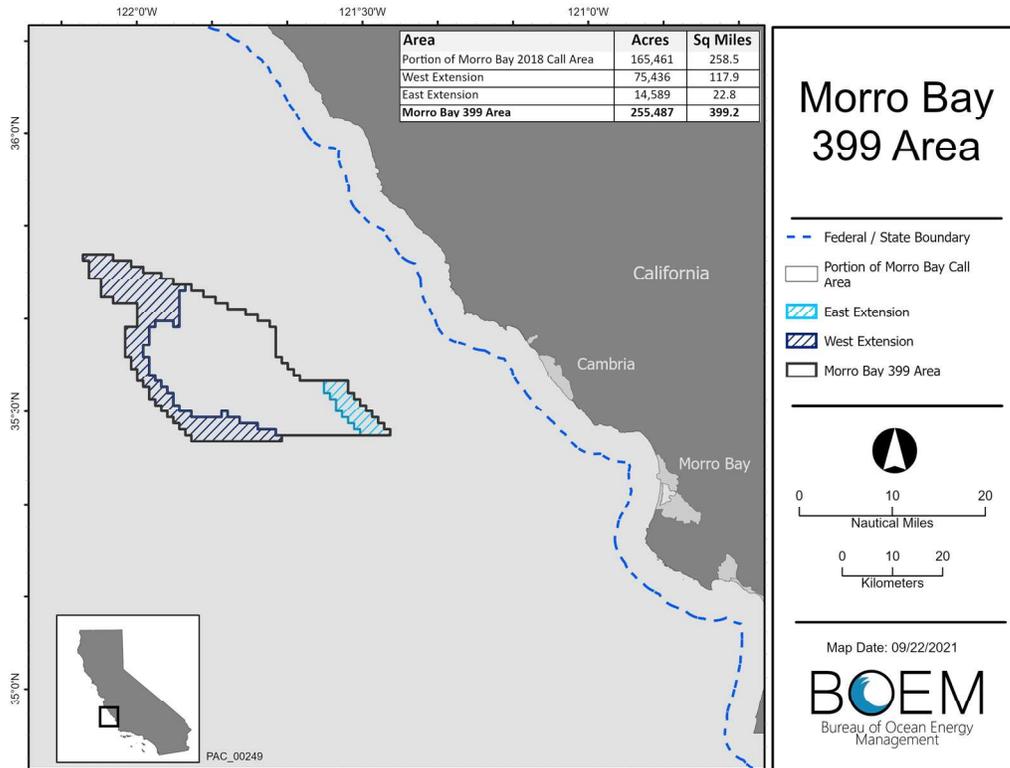


Figure 4: Morro Bay 399 Area consisting of portions of the Morro Bay Call Area and additional areas called East Extension and West Extension

On July 29, 2021, BOEM published an additional Call for Commercial Leasing for Wind Power Development on the OCS Offshore Morro Bay, California, East and West Extensions for public comment in the *Federal Register*.¹⁵ BOEM delineated two extensions of the 2018 Morro Bay Call Area, known as the “East Extension” and “West Extension” (Morro Bay Call Area Extensions). BOEM held meetings with the Task Force, the Pacific Fishery Management Council and federally recognized and non-recognized Chumash tribes describing the extensions. A map of the Morro Bay Call Extensions is shown in Figure 5 below.

¹⁵ <https://www.federalregister.gov/documents/2021/07/29/2021-16134/commercial-leasing-for-wind-power-development-on-the-outer-continental-shelf-ocs-offshore-morro-bay>

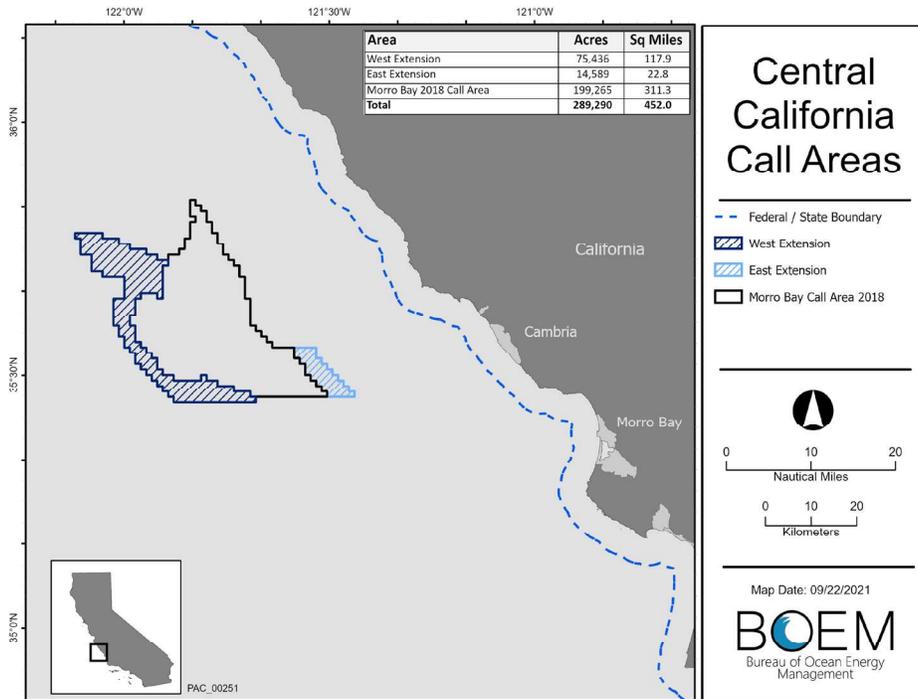


Figure 5: Morro Bay Call Area East and West Extensions with Morro Bay Call Area 2018 shown for reference

C. Area ID

Area ID is the second major step in the competitive wind leasing process and results in BOEM designating WEA(s) on which it will conduct an environmental review under NEPA for potential lease issuance. See 30 C.F.R. § 585.211(b). The goal of the Area ID process is to identify one or more OCS areas that appear most suitable for wind energy leasing and development. The objective of Area ID is to balance commercial project viability with potential impacts to the human, marine, and coastal environment, including consideration of existing OCS users. Subsection 8(p)(4) of OCSLA requires BOEM to strike a rational balance between Congress’s enumerated goals, i.e., a variety of uses. BOEM analyzes potential impacts of a specific proposed renewable energy facility in the identified areas during review of a proposed Construction and Operations Plan (COP), when project-specific information is available.

The Call comment period for the 2018 Call ended on January 28, 2019, and the Call comment period for the 2021 Call ended on September 13, 2021. BOEM received 118 comments and 14 nominations in response to the 2018 Call and 62 comments and 6 additional nominations in response to the 2021 Call. Comments received on both Calls are available at <https://www.regulations.gov/> [Docket No. BOEM-2018-0045] and [Docket No. BOEM-2021-0044]. Comments include submissions from tribal governments; private citizens; Federal, state, and local government agencies; environmental and other advocacy groups; industry groups; and wind developers. During the Area ID process, BOEM considered the following non-exhaustive list of information sources:

- Comments and nominations received in response to the 2018 Call
- Comments and nominations received in response to the 2021 Call
- BOEM California Intergovernmental Renewable Energy Task Force meetings
- California Offshore Wind Energy Planning Outreach Summary Report and Appendices¹⁶
- Input from state and Federal agencies
- Comments received via consultation meetings and written comment from federally recognized Tribes
- Comments from Tribal outreach meetings with federally and non-federally recognized Tribes, led by the California Energy Commission (CEC)
- Comments from relevant stakeholders, including the maritime community, environmental NGOs, offshore wind developers, and commercial fishing industry
- State and local renewable energy goals
- Domestic and global offshore wind market and technological trends
- California Offshore Wind Energy Gateway¹⁷ data and information (Data Basin)
- Outreach meetings and comments received under the CEC Notice of Availability of Outreach on Additional Considerations for Offshore Wind Energy off the Central Coast¹⁸
- California Offshore Wind Energy Planning Outreach Summary Report Addendum¹⁹

D. Environmental Review Process following Area ID

After the Area ID process, but prior to a lease sale, BOEM will conduct environmental review pursuant to NEPA to assess the potential environmental impacts associated with leasing some or all of the WEA.²⁰ The Area ID process informs the environmental review process by identifying and informing the geographic scope of that environmental analysis for any future lease sales in the area. If BOEM holds a lease sale for some or all of the WEA, the issuance of a lease would grant the lessee the exclusive right to submit for BOEM’s review a plan proposing development of the leasehold. The lease itself does not authorize any activity within the lease area. Therefore, BOEM does not consider the issuance of a lease to constitute an irreversible and ir retrievable commitment of agency resources toward the construction of a wind energy facility.

BOEM will perform an environmental analysis, typically in the form of an Environmental Assessment (EA), and conduct appropriate consultations before any lease sale. These analyses will primarily consider the potential impacts from site characterization activities

¹⁶ <https://www.boem.gov/California-Outreach-Summary-Report/>

¹⁷ <https://caoffshorewind.databasin.org/>

¹⁸ The original Notice of Availability of Outreach on Additional Considerations for Offshore Wind off the Central Coast of California (TN 231989) filed to the CEC’s Offshore Renewable Energy Docket on February 7, 2020 is available at: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=231989&DocumentContentId=63852>

¹⁹ California Offshore Wind Energy Planning Outreach Summary Report, Updated June 20210; <https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Offshore-Wind-Outreach-Addendum.pdf>

²⁰ 42 U.S.C. §§ 4321 *et seq.*

(such as biological, geological, geotechnical, and archaeological surveys) and site assessment activities (such as meteorological and oceanographic buoy deployment).

NEPA encourages agencies to have an open process to determine the scope of environmental analysis.²¹ Accordingly, BOEM will initiate public scoping for environmental analysis upon the announcement of WEAs and will solicit public input on the environmental analysis. The EA and associated consultations may also lead to the identification of lease stipulations that would reduce or eliminate environmental impacts associated with site characterization and site assessment activities.

E. Future Steps in BOEM Leasing Process

If BOEM decides to move forward with the leasing process upon completion of its environmental analysis, BOEM would publish the proposed area(s) for lease, associated terms and conditions, and a proposed format of the competitive auction in a Proposed Sale Notice (PSN) issued pursuant to 30 C.F.R. § 585.216. A formal public comment period follows issuance of the PSN. BOEM will review any comments received to help develop the final lease sale terms and conditions published in the Final Sale Notice (FSN). BOEM may use information from its environmental analysis, as well as information gathered in response to the PSN, to further refine lease areas and develop lease terms and conditions.

If a lease is issued and a lessee submits a COP on that lease, BOEM would perform the necessary consultations with the appropriate state, federal, local, and tribal governments solicit input from the public and Task Force members; and perform an independent, comprehensive, project-specific environmental analysis under NEPA. This separate project-specific environmental analysis for a COP would provide additional opportunities for public involvement. BOEM would use this information to evaluate the potential environmental impacts and related socioeconomic considerations associated with the proposed project, which would inform its decision to approve, approve with modification, or disapprove a lessee's COP pursuant to 30 CFR § 585.628.

V. Background on the Call Area

A. California's Renewable Energy Goals

The State of California is the most populous state in the United States and home to an estimated 39 million people²² and two of the top ten largest metropolitan population centers in the United States,²³ representing significant energy demand. In 2002, the State of California established a Renewables Portfolio Standard (RPS), which mandates that a certain percentage of the state's energy must be generated from renewable resources. California expanded the RPS in 2015 through passage of California Senate Bill 350, the Clean Energy and Pollution Reduction Act, and in 2018 through passage of California Senate Bill 100 (SB 100). SB 100 increases the state's existing RPS to 50 percent by 2025 and 60 percent by 2030 and requires that 100 percent of the State's electricity be generated using zero-carbon resources by December 31, 2045. California's RPS is one of the most ambitious renewable

²¹ 40 C.F.R. § 1501.9.

²² https://factfinder.census.gov/faces/nave/jsf/pages/community_facts.xhtml

²³ https://www.census.gov/content/dam/Census/newsroom/releases/2015/cb15-89_graphic.jpg

energy standards in the country.

In addition, California aims to be carbon-neutral by 2045.²⁴ Because of these state policies and goals, California has been investing heavily in renewable energy generation since 2014, primarily in solar energy. At the same time, California is decreasing its generation of nuclear energy, and forecasts that the last nuclear power plant in the state will be offline by 2025,²⁵ representing a loss of approximately 10% of in-state energy production.²⁶

Diversifying renewable energy generation can help reduce the cost for California to meet its renewable energy targets, and offshore wind can complement the state's vast solar and land-based wind resources. Figure 6 shows how offshore wind may help mitigate challenges associated with the "Duck Curve."²⁷ This figure shows net loads (modeled loads minus land-based wind and solar generation) on March 31 in years 2012 – 2020.²⁸ As more solar generation is added to the grid during this time, it is able to meet an increasingly large portion of daytime load, but the grid also requires increasing amounts of other generation to ramp up and meet evening peaks as the sun goes down. Preliminary investigation of possible California offshore wind sites indicates that available offshore wind peaks in the late afternoon into the evening, with substantial generation throughout the evening hours. Diversifying the state's renewable energy portfolio with offshore wind could reduce evening ramping requirements and ease achievement of the state's goal of 100% carbon free electricity by 2045.²⁹

²⁴ California Senate Bill No. 100, approved September 10, 2018.

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100

²⁵ California ISO website, https://caiso.com/Documents/AnnouncedRetirement_MothballListPosted.html.

²⁶ California Energy Commission website,

https://ww2.energy.ca.gov/almanac/electricity_data/electric_generation_capacity.html

²⁷ The Duck Curve is a graph of power production over the course of a day that shows the timing imbalance between peak demand and renewable energy production. The term was coined in 2012 by the California Independent System Operator.

²⁸ California Independent System Operator, 2016. *Fast Facts: What the Duck curve tells us about managing a green grid*. Folsom, CA. https://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf

²⁹ Ibid, 20.

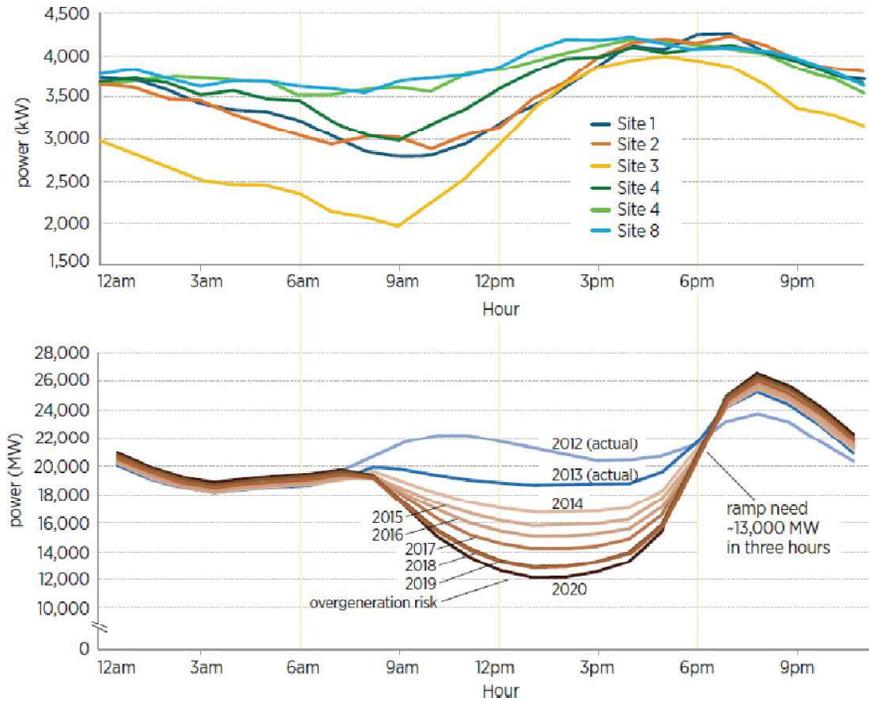


Figure 6: The “Duck Curve” and modeled generation profiles for 6-MW offshore wind turbines at six California sites

B. Technical Criteria: A Buildable Environment

Central California meets key technical criteria used to determine the feasibility of floating offshore wind development. These include sustainable wind speeds, suitable water depths, access to existing transmission interconnections and robust local renewable energy demand. Specifically, annual wind speeds of 8 to 10 meters per second are found in the Morro Bay Call Area, as depicted in Figure 7, which exceeds average speeds of several commercial developments in the North Sea.³⁰

³⁰ Analysis of wind speed observations on the North Sea Coast. (1998, February) Journal of Wind Engineering and Industrial Aerodynamics. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0167610597002857?via%3Dihub>

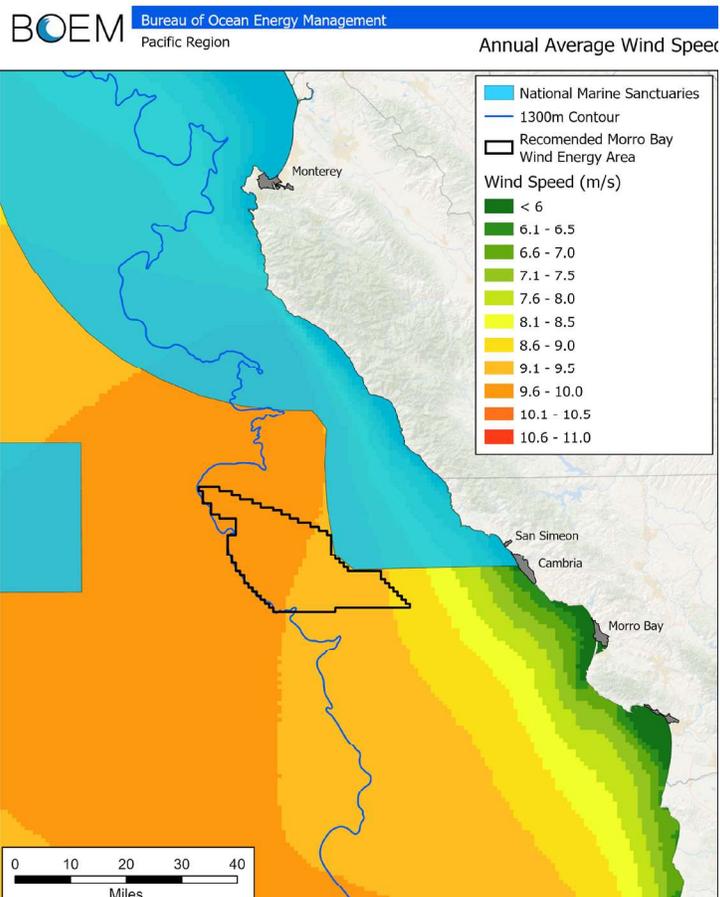


Figure 7: Estimates of the Annual Average Wind Resource (Speed) for the Morro Bay WEA

The water depth, which ranges between 865 and 1,300 meters, is technically feasible for several types of floating foundations.³¹ These water depths make pile-driven foundations (e.g., monopile or jacket) infeasible based on current technology in any of the previously mentioned Call Areas.

C. Nominations

In response to the 2018 Call, BOEM received nominations from 14 qualified entities and received nominations from 6 qualified entities in response to the 2021 Call, proposing to develop offshore wind in the California Call Areas listed below. Several companies noted in their submissions that, while they were nominating a specific area, they would be interested in any area that BOEM offered to lease offshore California. An asterisk (*) following the names below indicate response to the 2021 Call.

1. Algonquin Power Fund (America) Inc.

³¹ Ibid.

2. wpd Offshore Alpha, LLC
3. Avangrid Renewables, LLC
4. Castle Wind, LLC
5. Cierco Corporation
6. EDF Renewables Development, Inc.
7. EDP Renewables North America, LLC
8. E C & R (eON) Development, LLC
9. Equinor Wind US, LLC
10. Mission Floating Wind, LLC
11. Northcoast Floating Wind, LLC
12. Northland Power America, Inc,
13. Redwood Coast Energy Authority (RCEA)
14. U.S. Mainstream Renewable Power, Inc.
15. Orsted North America, Inc. *
16. JERA Renewables NA, LLC *
17. Arevia Power, LLC *
18. Marubeni Power International Inc.*
19. 547 Energy LLC*
20. Central California Offshore Wind LLC*

Additional information about nominations received by BOEM, including maps, nomination rationale and OCS block tables are available here: <https://www.boem.gov/California-Call-for-Nominations/>. s.

VI. Considerations for Area ID

A. Existing Uses and Considerations

BOEM considered multiple existing uses of the California coast in developing the WEA and identified several potential conflicts between offshore wind development and existing uses. The WEA appears to have lesser conflict than other potential areas that could support offshore wind energy development in California. BOEM will continue to assess potential environmental impacts throughout its process to determine if potential impacts could be avoided, reduced or mitigated prior to leasing or project construction. The uses found to interact most with potential offshore wind development in and around the Morro Bay Call Area are: (1) commercial and recreational fishing, (2) maritime navigation, and (3) DoD activities. Additional considerations BOEM examined in developing the WEA include: (a) historic properties, (b) visual impacts, (c) places and resources of importance to Tribes, (d) marine mammals and sea turtles, and (e) other infrastructure. Highlights of our internal analysis are included in the sections below.

1. Commercial and Recreational Fishing

Fishing is not prohibited by BOEM within wind energy areas, however, potential impacts from offshore wind development are considered throughout the process. Comments received by BOEM during the 2021 Call, recommended that BOEM remove the East Extension due to fishing activities closer to shore. Fishing activities are broadly considered during Area ID to ensure that major conflicts are identified and addressed to the extent practicable. Further outreach and consideration of fishing issues will continue throughout the several phases of the BOEM process. Floating wind facilities are likely to be incompatible with certain gear and fishing methods that are used in the deeper waters offshore California (e.g., trawl, pot/trap, longline, nets). Studies are underway for floating wind facilities in Europe, which will contribute to a better understanding of whether fishing methods that employ hook-and-line gear (jigs, bait, or trolling) may be compatible with offshore floating wind turbines. Recreational fishing is not expected to be negatively affected by offshore wind development in the Call Area because recreational fishers rarely fish in areas where water is deeper than 200 meters,³² much shallower than depths within the Call Area.

Given the ubiquity of fishing activity along the Pacific Coast,³³ no single exclusion area or mitigation approach would resolve all potential commercial fishing conflicts. Some areas important to one sector of the industry may not be important to others, and currently no available information indicates unique fishing grounds within the Call Area that are either marginal or notably valuable. Moreover, and as discussed further below, fisheries economic productivity declines with depth and distance from shore.

BOEM will continue to study the exact types of fishing and areas that are of most concern and work with industry, state, and the fishing community to mitigate concerns. Fishing information, including maps and spatially represented data, gathered during the offshore wind energy planning process is available online at:

<https://databasin.org/galleries/ae21ddeb4fd642f1a382f96adc898dbe>.

The waters offshore California support numerous types of fishing, and stakeholders place high cultural and economic significance on these activities. Within the last decade (2010-2019), the ex-vessel value of all marine commercial fisheries within California averaged approximately \$226 million dollars per year (Table 2). Within this same period, the Morro Bay-area port complex (MBPC) contributed about 4% to this total in ex-vessel landings value among the nine port complexes defined by the State. Within the MBPC, commercial fishers primarily landed their catch at two harbors, Morro Bay and Port San Luis, and use several smaller locations with less consistency. Sablefish and Dungeness crab dominate the value of landings at Morro Bay, and Dungeness crab and two species of nearshore rockfishes (Brown and Gopher) are most important at Port San Luis (Table 2). Twenty-one other taxa recorded at least 1% of value landed at one or more of the local harbors.

³² Miller, R.R., Field, J.C., Santora, J.A., Monk, M.H., Kosaka, R., Thomson, C. 2017. Can. J. Fish. Aquat. Sci. 74: 1732-48.

³³ Miller, R.R., Field, J.C., Santora, J.A., Monk, M.H., Kosaka, R., Thomson, C. 2017. Can. J. Fish. Aquat. Sci. 74: 1732-48.

Fisheries economic productivity reflects biological productivity and is highest in shallower waters near the coast, declining as depth increases.³⁴ The approximate water depth range within the Morro Bay Call Area is between 860 meters and 1300 meters. Given the offshore and deep locations of the Call Area, a simple depth analysis reveals that many commercial fisheries are not likely to experience notable preclusion from fishing grounds as a result of wind energy development in the area (Table 2).

BOEM received several comments that specifically addressed fishing concerns in response to the 2018 and 2021 Calls. The National Marine Fisheries Service (NMFS) and fishing organizations, such as Responsible Offshore Development Alliance, submitted comments in 2018 that are also applicable to the western and eastern extensions. These and other comments raised concerns regarding the quality of existing fishing data and called for prioritization of improved fisheries data and increased resources for fisheries research and monitoring. BOEM will incorporate consideration of data needs identified by these commenters as new data acquisition initiatives and environmental studies advance.

The Pacific Fishery Management Council (PFMC) stated that the West extension overlaps with the PFMC-designated rocky reef Habitat Area of Particular Concern, as well as being completely within the Big Sur Coast/Port San Luis Essential Fish Habitat Conservation Area. These designations indicate areas that contain ecologically important habitat and may benefit from protection from human activities, including offshore wind energy installations.

The East Extension is closer to shore and, as noted elsewhere in this memorandum and in comments received, shallower water has relatively more fishing activity. The Alliance of Communities for Sustainable Fisheries requested removal of the eastern extension because of the relative increase in fishing activity in this area. The PFMC notes that this area was historically important for trawl harvest of dover sole and sablefish and is currently an important area for fixed gear sablefish harvest. Currently there is no large-scale market for groundfish trawl vessels; however, historic production from trawl vessels should be considered as a placeholder for future fisheries impacts. According to one commercial fisherman, during 1990-2006, 75 percent of the Morro Bay fleet's landings were from groundfish, one of the top three fisheries for that area. Comments received during BOEM's outreach indicate that the East Extension is of particular concern to the fishing industry. However, further outreach, data gathering, and analysis could provide BOEM with a more comprehensive understanding of the uses in the East Extension as final areas for leasing are developed.

Many commenters stated that BOEM should consider the cumulative impacts of pre-construction activities, construction, operations, and decommissioning of all foreseeable offshore wind projects. Some agencies and fishing and environmental organizations have suggested BOEM accomplish this through a Programmatic EIS that evaluates the entirety of BOEM's offshore wind leasing program on the west coast. PFMC specifically suggests a coastwide cumulative effects analysis of the totality of wind energy areas on fisheries, fishing communities, and impacts to domestic seafood production (including portside fishery-related

³⁵ A "traffic lane" is a more encompassing term, including TSSs, fairways, and other formally designated routing measures.

facilities and services). As part of BOEM's analysis of potential offshore wind energy facilities proposed on a lease, BOEM will evaluate impacts resulting from a proposed project to existing and reasonably foreseeable future uses of the coastal and ocean environment. This includes fishing; oil and gas exploration and development; military activities; marine mineral extraction; and commercial, recreational, and military vessel traffic. Coastwide cumulative impacts analysis, when it is possible, is most appropriate during the evaluation of construction and operation for a specific project. BOEM acknowledges these comments suggesting earlier and broader analyses, and will consider the feasibility of such an approach.

Finally, many comments, submitted primarily by commercial fishermen, requested BOEM conduct more inclusive and meaningful fishing industry collaboration. The PFMC also recommended further outreach to the fishing industry and provided BOEM with specific guidance on direct engagement with fishing stakeholders. The engagement would enable BOEM to incorporate their knowledge of fishing locations, effort and value on their fishing grounds, location of past and future fishing, and to better understand the socioeconomic effects of displacing them from their traditional fishing grounds. BOEM continues to apply specific tactics that reinforce and build strength and traction toward a comprehensive strategy of engagement with the fishing community, and appreciates the specific guidance provided during the public comment process. This comprehensive strategy and further outreach during the NEPA process for potential leasing will assist BOEM during the forthcoming stages of analysis.

Table 2. Ex-vessel value (2021\$) of landings for some California commercial fisheries.

	Average Annual Ex-vessel Landings Value (2021\$) 2010-2019*	Statewide Value %	Regional MBPC Value %	Local Harbor Value %	Depth (m) or Offshore Range (km) of Potential Fishing Grounds†	Call Area Overlaps with Potential Fishing Grounds?
California Statewide	\$ 225,829,270	100%				
Morro Bay Port Complex	\$ 9,285,995	4%	100%			
Morro Bay	\$ 6,984,695	3%	75%	100%		
Sablefish	\$ 2,122,075	1%	23%	30%	57 to 1524 m	Yes
Dungeness Crab	\$ 1,461,022	< 1%	16%	21%	less than 230 m	No
Market Squid	\$ 643,946	< 1%	7%	9%	less than 100 m	No
Thornyheads	\$ 442,973	< 1%	5%	6%	26 to 1524+ m	Yes
Chinook Salmon	\$ 345,726	< 1%	4%	5%	0 to 46 km offshore	Yes
Hagfishes	\$ 322,751	< 1%	3%	5%	9 to 732 m, generally less	No
Spot Prawn	\$ 289,953	< 1%	3%	4%	122 to 329 m	No
Swordfish	\$ 153,889	< 1%	2%	2%	EEZ and int'l waters	Yes
Gopher Rockfish	\$ 126,582	< 1%	1%	2%	less than 81 m	No
Ocean (Pink) Shrimp	\$ 116,961	< 1%	1%	2%	73 to 229 m	No
Cabezon	\$ 99,865	< 1%	1%	1%	less than 91 m	No
Petrale Sole	\$ 84,523	< 1%	< 1%	1%	18 to 458 m	No
Blackgill Rockfish	\$ 70,514	< 1%	< 1%	1%	88 to 768 m	No
Grass Rockfish	\$ 68,407	< 1%	< 1%	1%	less than	No
Black-and-Yellow Rockfish	\$ 66,809	< 1%	< 1%	1%	less than 37 m	No
All other species	\$ 516,627	< 1%	< 1%	7%		
Port San Luis	\$ 2,126,675	1%	23%	100%		
Dungeness Crab	\$ 574,225	< 1%	6%	27%	less than 230 m	No
Brown Rockfish	\$ 274,751	< 1%	3%	13%	less than 122 m	No
Gopher Rockfish	\$ 225,725	< 1%	2%	11%	less than 81 m	No
Chinook Salmon	\$ 181,411	< 1%	2%	9%	0 to 46 km offshore	Yes
Hagfishes	\$ 147,316	< 1%	2%	7%	9 to 732 m, generally less	No
Sablefish	\$ 97,275	< 1%	1%	5%	57 to 1524 m	Yes
Cabezon	\$ 94,876	< 1%	1%	4%	less than 91 m	No
Rock Crabs	\$ 92,525	< 1%	1%	4%	less than 100 m	No
Black-and-Yellow Rockfish	\$ 77,220	< 1%	< 1%	4%	less than 37 m	No
California Halibut	\$ 57,714	< 1%	< 1%	3%	less than 91 m	No
Lingcod	\$ 51,865	< 1%	< 1%	2%	less than 397 m	No
Grass Rockfish	\$ 44,686	< 1%	< 1%	2%	less than 46 m	No
Vermilion Rockfish	\$ 38,119	< 1%	< 1%	2%	less than 427 m	No
Treefish	\$ 35,300	< 1%	< 1%	2%	less than 46 m	No
Barred Surfperch	\$ 23,956	< 1%	< 1%	1%	less than 73 m	No
All other species	\$ 109,713	< 1%	< 1%	5%		
All other locations	\$ 89,809	< 1%	1%	100%		
Ridgeback Prawn	\$ 50,203	< 1%	< 1%	56%	46 to 300 m	No
Spot Prawn	\$ 19,428	< 1%	< 1%	22%	122 to 329 m	No
Market Squid	\$ 7,588	< 1%	< 1%	8%	less than 100 m	No
Rock Crab	\$ 2,297	< 1%	< 1%	3%	less than 100 m	No
Warty Sea Cucumber	\$ 1,761	< 1%	< 1%	2%	less than 100 m	No
Sablefish	\$ 1,093	< 1%	< 1%	1%	57 to 1524 m	Yes
California Halibut	\$ 1,073	< 1%	< 1%	1%	less than 91 m	No
Thornyheads	\$ 1,059	< 1%	< 1%	1%	26 to 1524+ m	Yes
California Spiny Lobster	\$ 927	< 1%	< 1%	1%	less than 91 m	No
All other species	\$ 4,380	< 1%	< 1%	5%		

* Landing data downloaded from <https://www.wildlife.ca.gov/Fishing/Commercial/Landings> and adjusted to June, 2021 values using the Consumer Price Index Inflation Calculator <https://data.bls.gov/cgi-bin/cpicalc.pl>.

† Depth data obtained from (1) status of the fisheries reports at <https://www.wildlife.ca.gov/Conservation/Marine/Status> for Blackgill Rockfish, Brown Rockfish, Cabezon, California Halibut, California Spiny Lobster, Dungeness Crab, Gopher Rockfish, Lingcod, Ocean (Pink) Shrimp, Pacific Hagfish, Petrale Sole, Ridgeback Shrimp, Spot Prawn, and Vermilion Rockfish; (2) Miller and Lea 1976, *Guide to the Coastal Marine Fishes of California*, Calif. Dept. Fish and Game, Fish Bull. No. 157, for Barred Surfperch, Black Hagfish, Black-and-Yellow Rockfish, Longspine Thornyhead, Sablefish, Shortspine Thornyhead, and Treefish; and (3) Miller et al. 2017, *CJFAS*, for Market Squid, Rock Crab, and Warty Sea Cucumber. Chinook Salmon offshore range obtained from Industrial Economics, Inc. 2012. BOEM OCS Study 2012-083. Original data converted to metric units when necessary.

Table 2: Ex-vessel Value of Landings for Some California Commercial Fisheries

2. *Maritime Navigation*

The majority of commercial vessels that traverse the Call Area carry automated identification system (AIS) transmitters. BOEM conducted a review of 2011 and 2017 AIS vessel information provided to BOEM from the USCG. AIS vessel traffic information is available online at: <https://databasin.org/maps/new#datasets=422db447c151412d918a3085b31429f8>.

BOEM analyzed AIS trackline and density data within the Call Areas to determine vessel traffic patterns and identify how they may conflict with potential offshore wind energy development. BOEM shared the findings with area operators and harbor safety committees and sought their comments. Three main areas of concern emerged: Vessels crossing the Morro Bay and Diablo Canyon Call Areas to enter the USCG Recommended Tracks within the Monterey Bay National Marine Sanctuary, deep draft vessels entering or exiting traffic lanes, and tug and towing vessels crossing the Call Areas.³⁵ Vessel traffic patterns moved closer to shore between 2011 and 2017 with changes to air quality regulations for vessels within 24 nautical miles from shore. More vessels traversed the Morro Bay Call Area in 2017 than in 2011 (Figure 8). The majority of AIS vessels traveling through the Morro Bay Call Area were cargo ships (Figure 9).

Maritime navigation-related comments received in response to the 2018 and 2021 Calls focus on navigational safety concerns and mariner access to established routes offshore California. Navigational safety comments included potential collision hazards with moveable floating wind turbines, decreased sea space to maneuver during adverse weather and shifts to existing vessel traffic patterns that could increase congestion in some areas. Several comments recommended BOEM avoid siting wind energy facilities near high-use commercial shipping routes. One commenter suggested the establishment of safety corridors to ensure safe distance between any future facilities and vessels.

Comments concerning mariner access include potential issues for vessels attempting to access two USCG Recommended Tracks located approximately 37 miles north of the Morro Ball Call Area. AIS trackline data of vessel traffic patterns confirm vessels transit areas adjacent to, and within, the Morro Bay Call Area, prior to entering these Recommended Tracks.

³⁵ A “traffic lane” is a more encompassing term, including TSSs, fairways, and other formally designated routing measures.

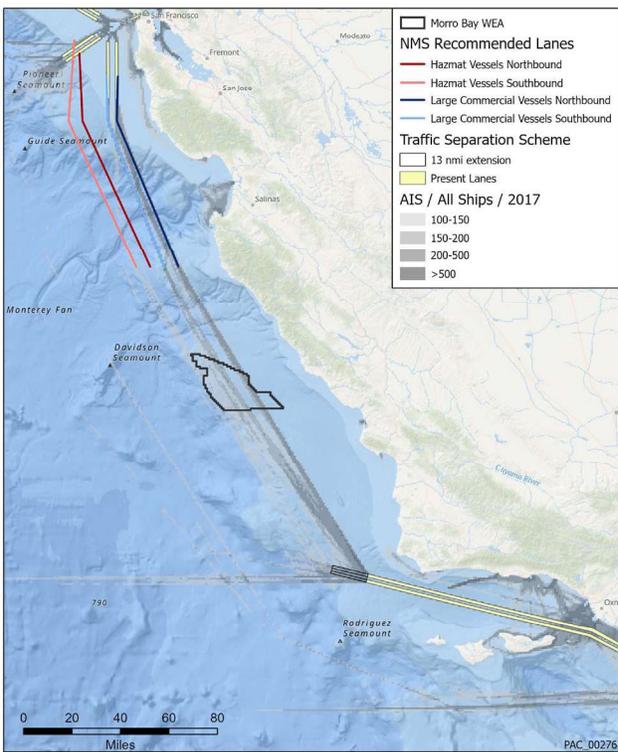
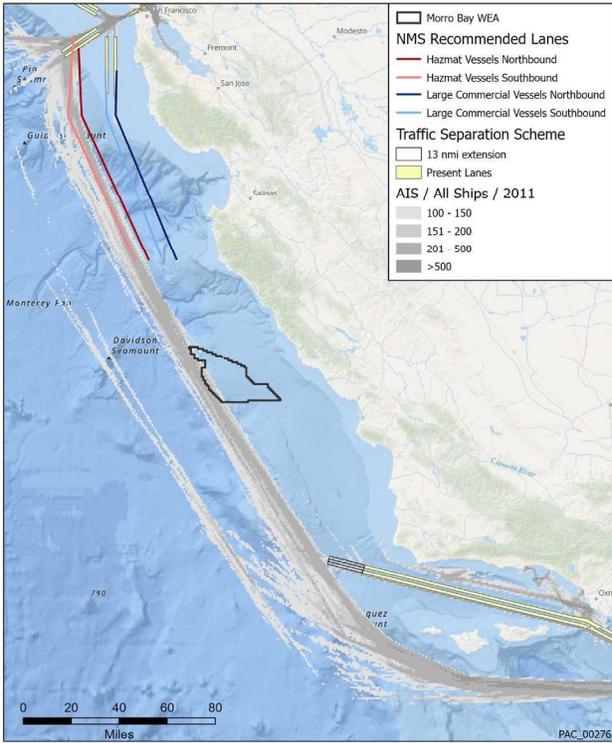


Figure 8: Number of AIS vessels traveling through an aliquot (1.2 x 1.2 kms) in 2011 and 2017. Only aliquots with greater than 100 vessels are shown to highlight high traffic areas

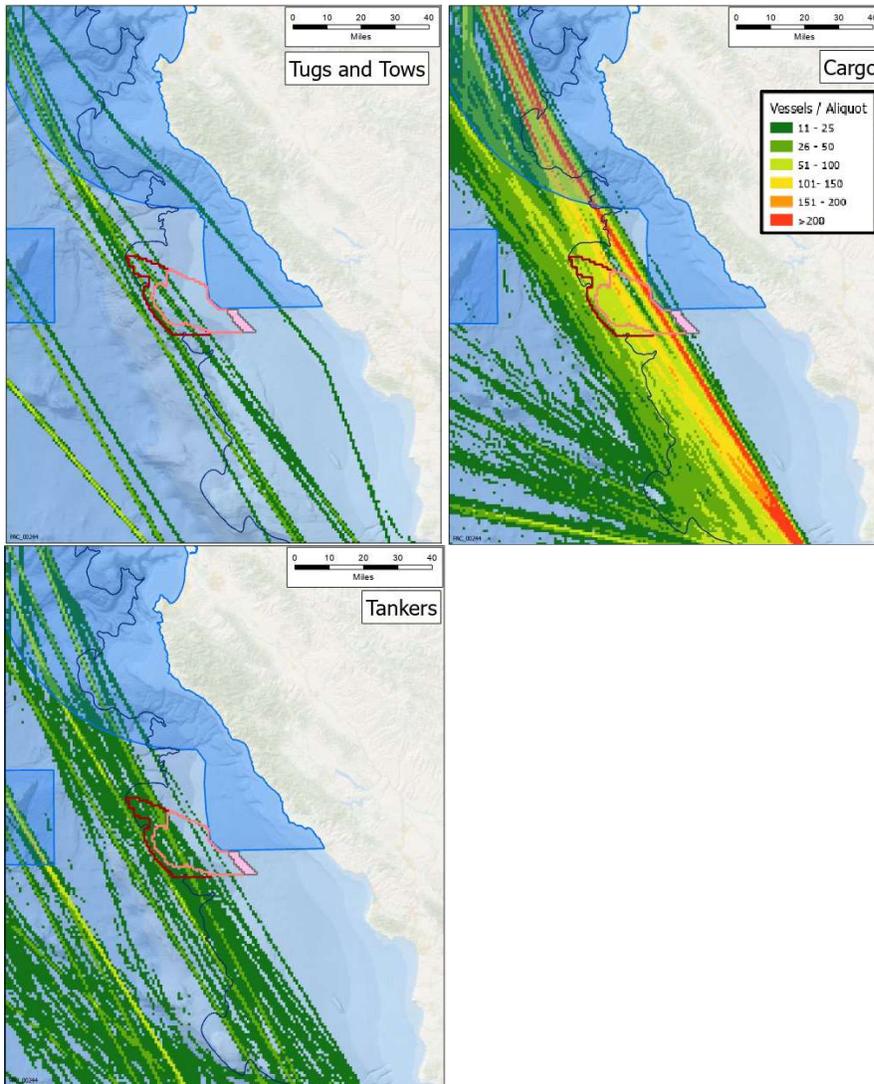


Figure 9: Number of AIS tankers, cargo ships, and tugs and tows traveling through an aliquot (1.2 x 1.2 kms) in 2017

On July 28, 2021, the USCG announced it will conduct a “Pacific Port Access Route Study”³⁶ (PACPARS) to evaluate safe access routes for the movement of vessel traffic proceeding to or from ports along the western seaboard to determine whether a Shipping Safety Fairway and/or routing measures should be established, adjusted or modified. The PACPARS will help the USCG determine what impacts, if any, the siting of offshore wind facilities may have on existing maritime users and any potential impacts to vessel traffic and maritime navigation. BOEM has coordinated closely with the USCG throughout its planning and siting process and will continue this coordination to address potential maritime impacts from any future offshore wind development.

³⁶ <https://www.regulations.gov/document/USCG-2021-0345-0001>

3. Department of Defense Activities

The DoD conducts offshore testing, training, and operations within and adjacent to the Morro Bay Call Area. Several concerns related to national security, military testing and training activities were identified by the DoD offshore California. As described in this memorandum, a working group which included DoD, BOEM, and NOAA Sanctuaries participated in a series of meetings to identify solutions off the Central Coast. Several areas adjacent to the Morro Bay Call Area were identified as potentially compatible with military activities. BOEM and the State of California collaborated to collect public comment and information on these areas. On May 25, 2021, the Departments of the Interior and Defense and the State of California announced identification of an area, known as the ‘Morro Bay 399 Area’ that will support 3 gigawatts of offshore wind on roughly 399 square miles off California’s central coast within and adjacent to the Morro Bay Call Area.

4. Additional Considerations

BOEM considered several other potential factors that influenced the spatial orientation of the WEA Options. These factors were addressed through the designation of the Morro Bay Call Area and Extensions, and will be further analyzed under NEPA and BOEM’s renewable energy authorization processes. These factors include historic properties; visual impacts; places and resources of importance to Tribes; the presence of marine mammals, avian and other protected species; and cables and other existing infrastructure. BOEM’s analysis of these factors is briefly described below.

a) Historic Properties

Based on the current understanding of sea level rise and the earliest date of human occupation in the western hemisphere, any submerged pre-contact period site in this area of the Pacific OCS would be located in water depths less than 130 m (427 ft) below sea level,³⁷ therefore, the potential for submerged pre-contact period sites is non-existent within the Morro Bay WEA.³⁸ A number of state parks historic properties and other protected areas are located along the coast near the Morro Bay WEA, including Hearst Castle State Park (also designated a National Historic Landmark), Piedras Blancas Light Station (also designated as an Outstanding Natural Area) and the nearby Elephant Seal Rookery, and Morro Rock, a popular coastal geologic feature that has significance to nearby tribes and is also adjacent to Morro Bay State Marine Recreational Management Area and Morro Bay State Marine Reserve. Also located near the Call Area are several state historic landmarks and sites listed on the California Register of Historical Resources. A more complete source of National Register-listed properties, along with properties that have been determined eligible for the National Register but not listed, may be found through the California Historical Resources Information System (CHRIS).

³⁷ J., J.X. Mitrovica, and J. Alder. (2014). Coastal paleogeography of the California–Oregon–Washington and Bering Sea continental shelves during the latest Pleistocene and Holocene: implications for the archaeological record. *Journal of Archaeological Science*, 52, 12-23. doi:10.1016/j.jas.2014.07.030

³⁸ ICF International, Davis Geoarchaeological Research, and Southeastern Archaeological Research. 2013. Inventory and Analysis of Coastal and Submerged Archaeological Site Occurrence on the Pacific Outer Continental Shelf. U.S. Department of the Interior, Bureau of Ocean Energy Management, Pacific OCS Region, Camarillo, CA. OCS Study BOEM 2013-0115. 280 pages, plus appendices.

Through BOEM's outreach efforts and comments received, concerns were raised of the potential alteration of the viewshed for Morro Rock and Hearst Castle. The number of affected historic properties and the extent of impacts depends on project siting and the lighting and marking of any structures. BOEM lists these measures in its draft guidelines, available on the BOEM website. Determining how impacts to historic properties and National Historic Landmarks can be reduced is very dependent on the proposal received. Under BOEM's phased process for renewable energy development, Section 106 of the National Historic Preservation Act and NEPA review of potential visual impacts from specific project proposal takes place after COP submittal. Generally, there is less impact to onshore historic properties (and the impacts more readily mitigated) the farther from shore the construction occurs due to environmental factors such as fog, haze, sea spray, and wave height. Section 110(f) of the National Historic Preservation Act (NHPA) requires that agency officials, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking. Additionally, as stated in the June 2021 Outreach Summary Report Addendum, more research on Morro Rock (including, but not limited to, archival research, ethnographic research, oral histories, and traditional knowledge) should be undertaken to better understand the potential impact of offshore wind development on this area.

b) Visual Impacts

During outreach meetings and in comments received in response to the 2018 and 2021 Calls, stakeholders raised concerns that visual impacts from turbines sited within view of onshore properties are of concern to the public. California protects public views by law 'as a resource of public importance', and coastal development is required to be sited and designed to protect views to and along the ocean. California state agencies stated in their comments the East Extension is potentially inconsistent with local scenic resource policies and recommended the area be removed from consideration until additional analysis of potential impacts from visibility of wind turbines from shore is completed. Visual impacts depend on project specifics, such as wind turbine number, size, spacing, and configuration, and, as such, it is more appropriate to conduct visual simulations when those details are known. However, in an effort to provide information to address these concerns, BOEM funded visual simulations (see <https://www.boem.gov/California-Visual-Simulation/>) that use a theoretical project configuration in the Morro Bay Call Area viewed from Piedras Blancas, a nearby lighthouse. Potential visual impacts and potential mitigation measures, such as paint colors and aircraft detection lighting systems, would be fully analyzed in coordination with the California agency partners if a lease(s) is issued and a COP(s) is submitted. Although BOEM could potentially reduce visual impacts by removing the Eastern Extension at this time because it is closer to shore, it may be premature to exclude areas at the Area ID stage based on potential visual impacts alone.

c) Places and Resources of Importance to Tribes

During consultation meetings, joint tribal outreach meetings,³⁹ and in written comments, federally and non-federally recognized tribes raised concerns about potential impacts to sites and places considered sacred, protection of artifacts and cultural resources, and potential impacts from onshore activities (i.e., cable trenching, new electrical substations and other infrastructure) to Chumash homelands and cultural resources. BOEM is aware that Morro Rock has special significance to Native Americans with ancestral ties to the area and will continue to engage with the appropriate sovereign entities to better understand any concerns regarding Morro Rock and potential visual disturbances in its vicinity. In addition to the information described in *Historic Properties* above, a three-year BOEM-funded study awarded in August 2021 will support the development of Tribal Cultural Landscapes Assessments that may help inform the NHPA and NEPA reviews after COP submittal.

d) Marine Mammals and Sea Turtles

The information provided below is intended to describe the state of the best available scientific knowledge regarding Endangered Species Act (ESA) listed marine mammal distribution and critical habitat. This information also includes consideration of biologically important areas (BIAs) for all marine mammal species in relation to the Morro Bay Call Area, as well as discussion related to comments received from stakeholders.

Comments received from federal and state agencies, researchers, members of the public and NGOs⁴⁰ that relate to BOEM's selection of the Morro Bay Call Area focused on concerns related to impacts to marine mammal migratory routes and access to BIAs (Figure 10). Comments received from California state agencies also recommend BOEM move forward with including the East Extension in future planning until more information is gathered to understand whether the area will increase the likelihood and magnitude of adverse environmental impacts to sensitive marine species, particularly marine mammals and seabirds which are generally found in higher densities closer to the coast. Specifically, commenters noted that seabirds and elephant seals are more abundant in the East Extension area. BOEM will continue to analyze these issues and work with the state partners and stakeholders before a decision is made to authorize the development of a wind power facility offshore Morro Bay.

Several comments suggested numerous potential mitigation measures to address impacts to marine mammals if offshore wind energy development does occur, such as pre-installation baseline surveys using best available technology and monitoring measures to assess individual species' presence and related biophysical processes that have sufficient temporal and spatial scale and resolution. One commenter suggested the use of real-time dynamic management tools to determine when whales and turtles are or are likely to be present to determine potential curtailment timing.

³⁹ California Offshore Wind Energy Planning Outreach Summary Report, Updated June 2021; <https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Offshore-Wind-Outreach-Addendum.pdf>

⁴⁰ California Offshore Wind Energy Planning Outreach Summary Report, Updated June 2021; <https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Offshore-Wind-Outreach-Addendum.pdf>

BOEM and the state of California worked extensively to gain access to all relevant existing data sources on environmental circumstances and other uses of the OCS in the Call Areas and made that data available through the Data Basin. A broadscale review of these data was conducted to reveal any areas of biological importance, critical habitat and migratory corridors.

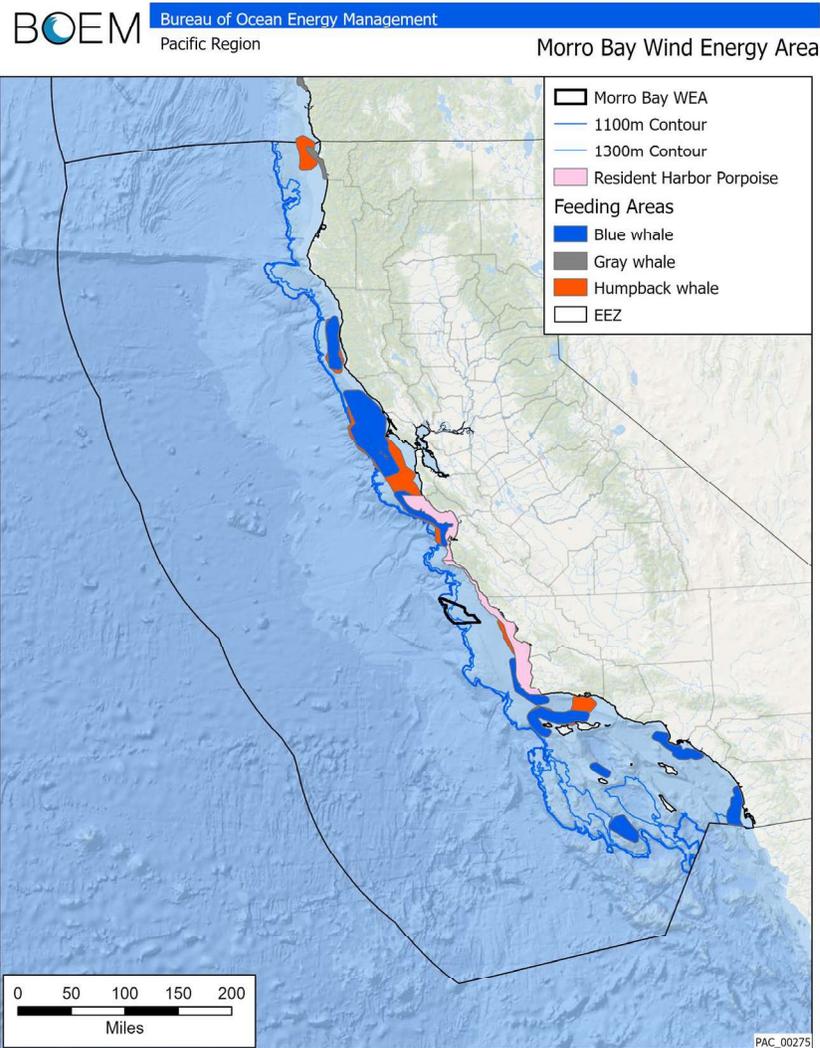


Figure 10: Morro Bay Call Area is outside of Biologically Important Areas (feeding) for blue, humpback, and gray whales, as well as resident areas for harbor porpoise (pink) (Calambokidis et al., 2015)

The following marine species have been documented using migratory corridors or biologically important areas or have critical habitat in proximity to the Morro Bay Call Area. None of these species are expected to occur within the Morro Bay Call Area in sufficient densities to warrant elimination of some or all of the area from further analysis for potential leasing.

- a. North Pacific Right Whales (listed as Endangered under the ESA): Outside of the Bering Sea and Gulf of Alaska, from 1950- 2001, there have been at least four sightings of North Pacific right whales from the eastern population from Washington, twelve from California, three from Hawaii, one from British Columbia, and two from Baja California, Mexico⁴¹. More recently, one North Pacific right whale was seen off La Jolla, CA in April 2017, and a different animal was sighted off the Channel Islands in May 2017. Farther north, there were two sightings off British Columbia in 2013⁴² and one in June 2018.⁴³ Sightings have occurred in Mexican waters and thus there is some evidence that North Pacific right whales travel through California waters to reach Southern California or Mexico in the summer months, though by what route and in what number species utilize this unconfirmed migratory route is unknown.⁴⁴ Critical habitat in the Bering Sea and Gulf of Alaska was designated in 2008 (73 FR 19000). Low numbers of sightings of individuals from a very small population makes any kind of demographic analysis challenging. Current knowledge of the low number of sightings offshore California in the last 68 years (14 sightings from 1950-2018, even with increased survey efforts), and the small population size (approximately 31 individuals), indicates that North Pacific right whales are unlikely to have any significant presence in the Morro Bay Call Area.
- b. Blue Whales (listed as Endangered under the ESA): Although feeding also occurs further to the north and south of the U.S. west coast, it remains an important feeding area for blue whales in the summer and fall⁴⁵. As such, nine biologically important areas have been identified, including three areas in central California⁴⁶. Most of this Eastern North Pacific Stock is thought to migrate south to take advantage of high productivity in the waters of Baja California, the Gulf of California, and the Costa Rica Dome during the winter and spring. The amount of blue whale habitat that overlaps with the Morro Bay Call Area varies according to the data source; however, no blue whale BIAs or core use areas overlap with the Morro Bay Call Area. (Figure 11).
- c. Fin Whales (listed as Endangered under the ESA): Fin whales occur in both pelagic and coastal waters, where they feed primarily on krill and fish. Current research suggests that only some fin whales undergo long distance migrations, with some individuals remaining

⁴¹ Brownell, R.L. Jr, Clapham, P.J., Miyashita, T. & Kasuya, T. 2001. Conservation status of North Pacific right whales. *Journal of Cetacean Research and Management*. 2:269–286.

⁴² Ford, J. K. B., Pilkington, J.F., Gisborne, B., Frasier, T.R., Abernethy, R.M., Ellis, G.M. 2016. Recent observations of critically endangered North Pacific right whales (*Eubalaena japonica*) off the west coast of Canada. *Marine Biodiversity Records* 9:50. DOI: [dx.doi.org/10.1186/s41200-016-0036-3](https://doi.org/10.1186/s41200-016-0036-3)

⁴³ Carretta, J.V., Oleson, E.M., Forney, K.A., Muto, M.M., Weller, D.W., Lang, A.R., Baker, J., Hanson, B., Orr, A.J., Barlow, J., Moore, J.E., Brownell Jr, R.L. 2021. U.S. Pacific Marine Mammal Stock Assessments: 2020, U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-646

⁴⁴ Ibid.

⁴⁵ Carretta, J.V., Forney, K.A., Oleson, E.M., Weller, D.W., Lang, A.R., Baker, J., Muto, M.M., Hanson, B., Orr, A.J., Huber, H., Lowry, M.S., Barlow, J., Moore, J.E., Lynch, D., Carswell, L., Brownell Jr, R.L. 2020. U.S. Pacific Marine Mammal Stock Assessments: 2019, U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-629

⁴⁶ Calambokidis, J., Steiger, G.H., Curtice, C., Harrison, J., Ferguson, M.C., Becker, E., De Angelis, M, and Van Parijs, S.M. 2015. Biologically Important Areas for Selected Cetaceans Within U.S. Waters – West Coast Region. *Aquatic Mammals (Special Issue)*. 41(1):390653. DOI 10.1578/AM.41.1.2015.39

resident in warmer waters of the Southern California Bight.⁴⁷ ⁴⁸ The variability in movements make BIAs difficult to define and thus none are yet defined.⁴⁹ Satellite-tracked fin whales seemed to favor nearshore habitats along the mainland coast, and in the northern Catalina basin in autumn and winter, and then disperse to the outer waters of the Southern California Bight, offshore and further north in spring and summer.⁵⁰ Habitat suitability models suggest the Morro Bay Call Area falls within suitable fin whale summer and fall habitat (average density of 0.0071-0.700 whales per 10 km²), with lower habitat suitability/occurrence in the spring and winter⁵¹ ⁵².

⁴⁷ Ibid.

⁴⁸ Scales, K.L., Schorr, G.S., Hazen, E.L., Bograd, S.J., Miller, P.I., Andrews, R.D., Zerbini, A.N., Falcone, E.A. 2017. Should I stay or should I go? Modelling year-round habitat suitability and drivers of residency for fin whales in the California Current. *Diversity and Distributions*. 23(10):1204-1215

⁴⁹ Calambokidis, J., Steiger, G.H., Curtice, C., Harrison, J., Ferguson, M.C., Becker, E., De Angelis, M., and Van Parijs, S.M. 2015. Biologically Important Areas for Selected Cetaceans Within U.S. Waters – West Coast Region. *Aquatic Mammals (Special Issue)*. 41(1):390653. DOI 10.1578/AM.41.1.2015.39

⁵⁰ Ibid.

⁵¹ Becker, E., Forney, K.A., Fiedler, P.C., Barlow, J., Chivers, S.J., Edwards, C.A., Moore, A.M., Redfern, J.V. 2016. Remote Sensing of Biodiversity (Special Issue). 8(2): 149; <https://doi.org/10.3390/rs8020149>

⁵² Scales, K.L., Schorr, G.S., Hazen, E.L., Bograd, S.J., Miller, P.I., Andrews, R.D., Zerbini, A.N., Falcone, E.A. 2017. Should I stay or should I go? Modelling year-round habitat suitability and drivers of residency for fin whales in the California Current. *Diversity and Distributions*. 23(10):1204-1215

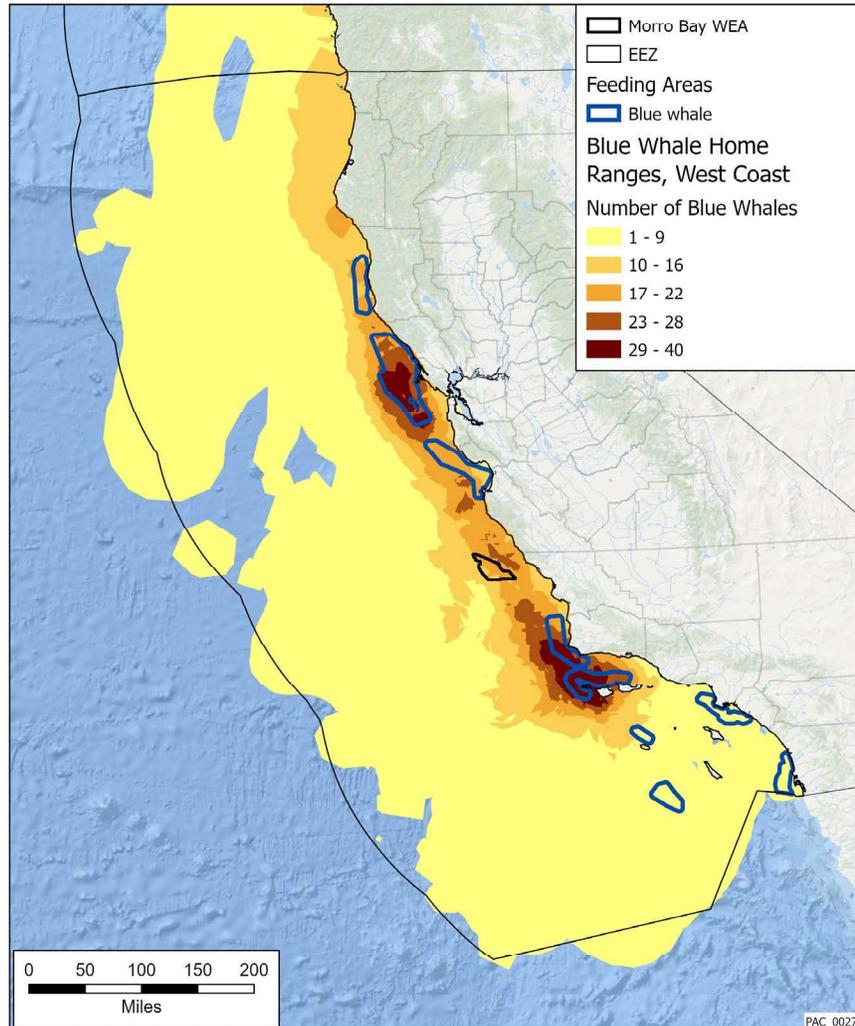


Figure 11: Blue whales may occur in and around the Morro Bay Call Area, however it does not overlap with areas for feeding (blue outline) or core use (dark red; Irvine et al., 2014)

- d. Humpback Whales (listed as Endangered under the ESA): Humpback whales undertake two migrations per year between mostly polar, cold water, feeding grounds in the summer months, and sub-tropical mating and calving grounds in the winter months. During these migrations in the Pacific, concentrations of humpback whales increase with proximity to shore.⁵³ Although the Morro Bay Call Area does not overlap with humpback whale feeding BIAs (Figure 10), critical habitat was designated for the Central America and Mexico Distinct Population Segments (DPS) in April 2021 (86 FR 21082), encompassing much of the West Coast of the U.S. The Morro Bay Call Area comprises

⁵³ Keiper, C.A., Calambokidis, J., Ford, G., Casey, J., Miller, C, Kieckhefer, T.R. 2011. Spatial Distribution Patterns of Humpback and Blue Whales Relative to San Francisco, California Shipping Lanes and Vessel Traffic. Poster. International Marine Conservation Congress.

approximately 0.3% of this critical habitat (Figure 12). NOAA Southwest Fisheries Science Center (SWFSC) density models, which are based on ship-based surveys, predict that humpback whales are likely to occur in the Morro Bay Call Area (0.0006-1 whale per 10 km² or 5-8% of the Central American DPS, or 1% of the entire population)^{54 55} (Figure 12).

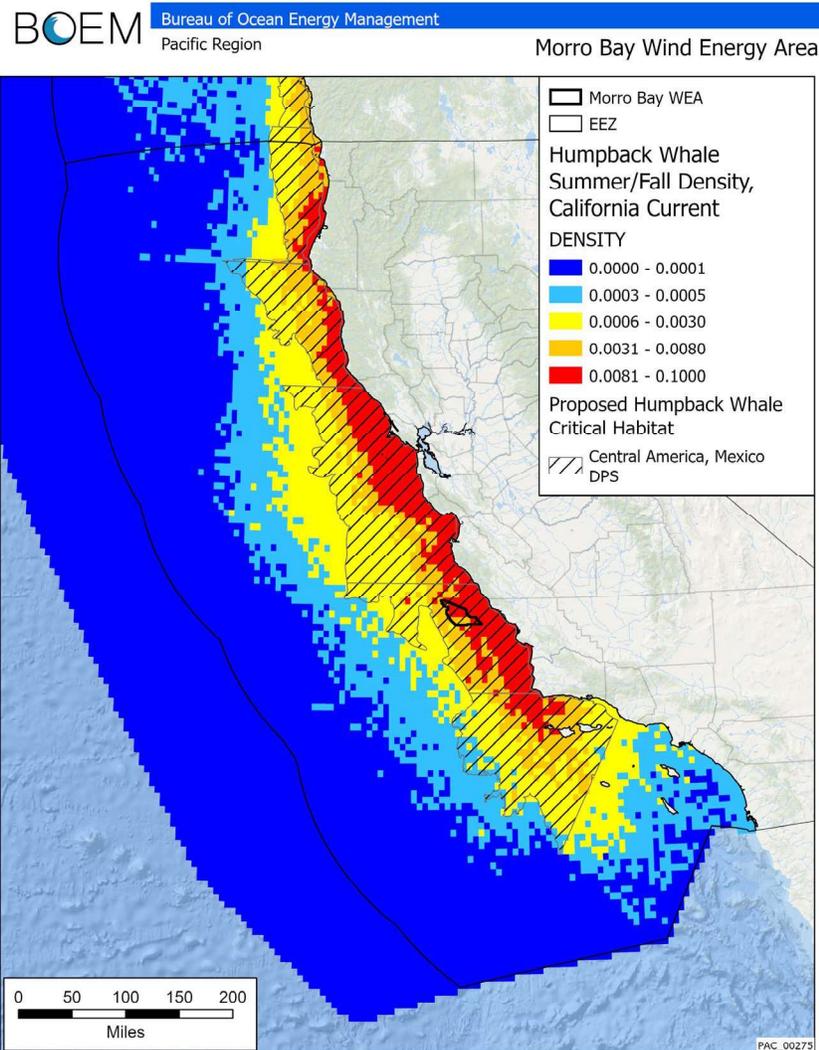


Figure 12: Morro Bay Call Area overlaps with the predicted occurrence of 5-8% of the Central American DPS, or 1% of the entire population of North Pacific humpback whales in summer/fall (Becker et al., 2016), and with 0.3% of feeding critical habitat (86 FR 21082) (hatched area)

⁵⁴ Becker EA, Foley DG, Forney KA, Barlow J, Redfern JV, Gentemann CL. 2012. Forecasting cetacean abundance patterns to enhance management decisions. *Endangered Species Research*. 16, 97–112

⁵⁵ Becker, E., Forney, K.A., Fiedler, P.C., Barlow, J., Chivers, S.J., Edwards, C.A., Moore, A.M., Redfern, J.V. 2016. *Remote Sensing of Biodiversity (Special Issue)*. 8(2): 149; <https://doi.org/10.3390/rs8020149>

- e. Gray Whales (listed as Endangered under the ESA): Gray whale feeding BIAs occur on the OCS and in coastal nearshore waters further north of the Morro Bay Call Area, primarily in Washington and Oregon⁵⁶ (Figure 10). As such, the Call Area does not overlap with gray whale feeding BIAs. Similarly, migratory corridors occur close to shore (within 5.4 nmi) (Figure 13). It is important to note that in defining migratory BIAs, Calambokidis et al. (2015) included a 25.4 nmi buffer for gray whales (see Figure 13). The buffer represents the potential path of some individuals that move farther offshore during annual gray whale migrations.
- f. Harbor Porpoise: Biologically important areas for two harbor porpoise stocks are located in Central and Northern California⁵⁷. The most southern of these is the Morro Bay resident biologically important area (for the Morro Bay Stock) which extends from Point Sur to Point Conception and from land to the 200-m isobath, although the vast majority of harbor porpoise seen in California were recorded within the 0-50 fathom (91 m) depth range.⁵⁸ Genetic analyses have shown that the various stocks are genetically dissimilar and do not interbreed or migrate⁵⁹. The Morro Bay Stock is estimated between 2,737-4,255 animals^{60 61}. The Morro Bay Call Area does not overlap with harbor porpoise habitat (Figure 14).

⁵⁶ Calambokidis, J., Steiger, G.H., Curtice, C., Harrison, J., Ferguson, M.C., Becker, E., De Angelis, M., and Van Parijs, S.M. 2015. Biologically Important Areas for Selected Cetaceans Within U.S. Waters – West Coast Region. *Aquatic Mammals (Special Issue)*. 41(1):390653. DOI 10.1578/AM.41.1.2015.39

⁵⁷ Calambokidis, J., Steiger, G.H., Curtice, C., Harrison, J., Ferguson, M.C., Becker, E., De Angelis, M., and Van Parijs, S.M. 2015. Biologically Important Areas for Selected Cetaceans Within U.S. Waters – West Coast Region. *Aquatic Mammals (Special Issue)*. 41(1):390653. DOI 10.1578/AM.41.1.2015.39

⁵⁸ Barlow, J., Lovier, C.W., Jackson, T.D., Taylor, B.L. 1988. Harbor porpoise, *Phocoena phocoena*, abundance estimation for California, Oregon, and Washington: II. Aerial surveys. *Fishery Bulletin- National Oceanic and Atmospheric Administration*. 86(3):433-444

⁵⁹ Morin, P.A., Forester, B.R., Forney, K.A., Crossman, C.A., Hancock-Hanser, B.L., Robertson, K.M., Barrett-Lennard, L.G., Baird, R.W., Calambokidis, J., Gearin, P., Hanson, M.B., Schumacher, C., Harkins, T., Fontaine, M.C., Taylor, B.L., Parsons, K.M. 2021. Population structure in a continuously distributed coastal marine species, the harbor porpoise, based on microhaplotypes derived from poor-quality samples. *Molecular Ecology*. 00:1-20

⁶⁰ Forney, K.A., J.E. Moore, J. Barlow, J.V. Carretta and S.R. Benson. 2021. A multi-decadal Bayesian trend analysis of harbor porpoise (*Phocoena phocoena*) populations off California relative to past fishery bycatch. *Marine Mammal Science*. 37(2):546-560

⁶¹ Carretta, J.V., Forney, K.A., Oleson, E.M., Weller, D.W., Lang, A.R., Baker, J., Muto, M.M., Hanson, B., Orr, A.J., Huber, H., Lowry, M.S., Barlow, J., Moore, J.E., Lynch, D., Carswell, L., Brownell Jr, R.L. 2020. U.S. Pacific Marine Mammal Stock Assessments: 2019, U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-629

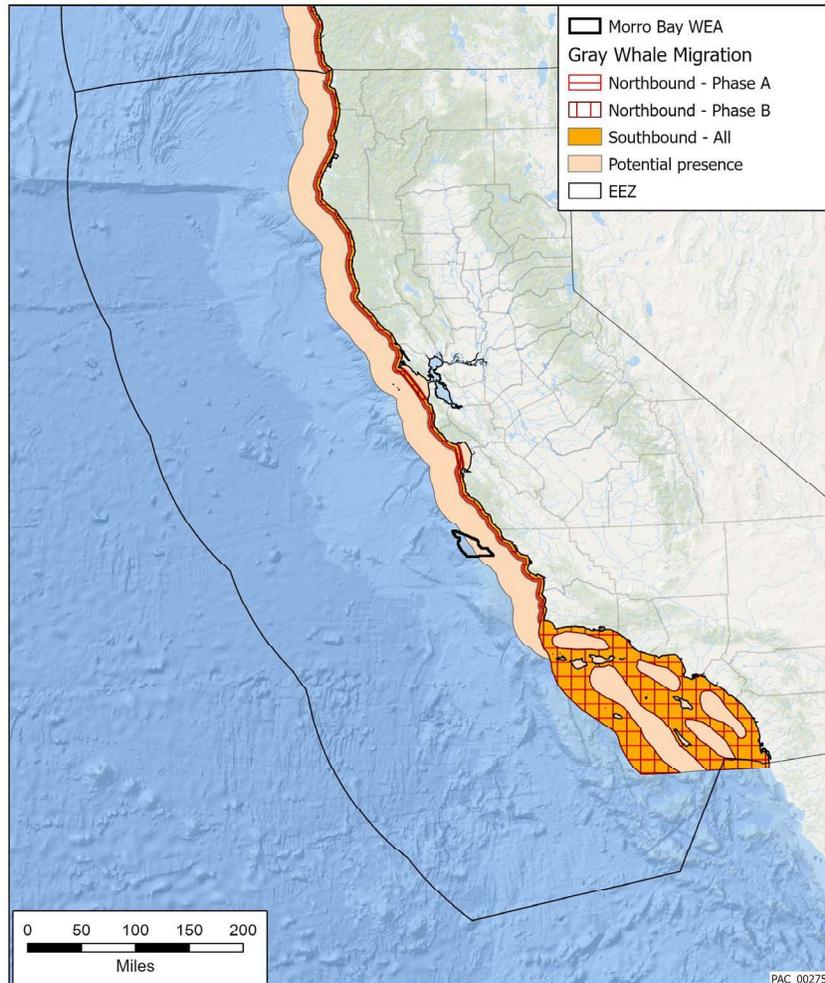


Figure 13: Gray whale migratory corridor with a 25.4 nmi buffer (pink) indicates possible whale presence in the Morro Bay Call Area ((Calambokidis et al., 2015)

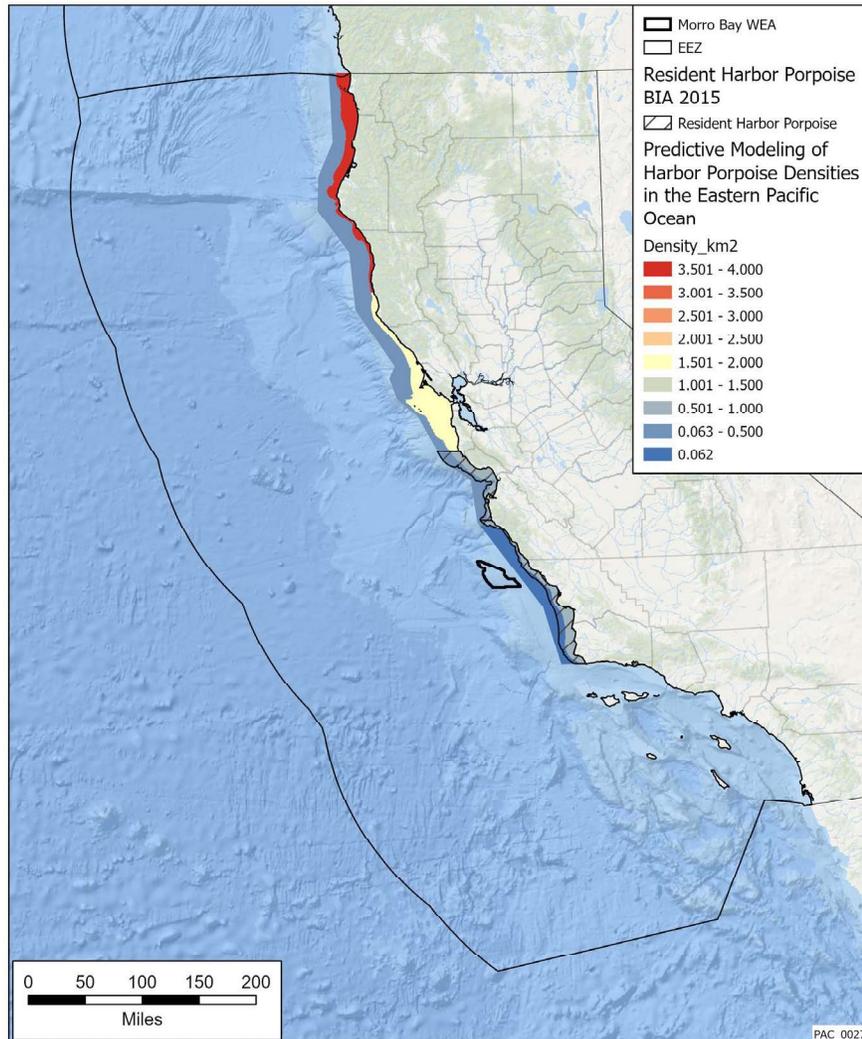


Figure 14: Morro Bay Call Area is offshore of Biological Important Area of harbor porpoise (*Phocoena phocoena*) (hatched area; Calambokidis et al., 2015)

- g. Northern Elephant Seals: These seals breed and give birth, primarily on offshore islands, in California and Baja California (Mexico). Males migrate to the Gulf of Alaska and western Aleutian Islands along the continental shelf to feed on benthic prey species, whereas females migrate to more pelagic areas in the Gulf of Alaska and the central North Pacific to feed on pelagic prey.⁶² Adults remain on land between March and August to molt.⁶³ The Piedras Blancas Rookery is located further north on the San

⁶² Le Boeuf, B. J., Crocker, D. E., Costa, D. P., Blackwell, S. B., Webb, P. M., Houser, D. S. 2000. Foraging ecology of northern elephant seals. *Ecological monographs*, 70(3), 353-382.

⁶³ Carretta, J.V., Oleson, E.M, Weller, D.W., Lang, .R., Forney, K.A., Baker, J., Muto, M.M., Hanson, B., Orr, A.J., Huber, H., Lowry, M.S., Barlow, J., Moore, J.E., Lynch, D., Carswell L., Brownell Jr, R.L. 2015. U.S. Pacific Marine

Simeon shores, where large numbers of seals are seen in January, April and October, and a haul out site is at Santa Rosa Island further to the south. Results of a tagging study suggest that there is potential for Northern elephant seals to occur in small numbers around the Morro Bay Call Area.⁶⁴

- h. Leatherback Sea Turtles (listed as Endangered under the ESA): Leatherback sea turtles have the most extensive range of any living reptile and have been reported circumglobally throughout the oceans of the world.⁶⁵ Migratory routes of leatherbacks are not entirely known. However, turtles tagged after nesting in July at Jamursba-Medi, Indonesia, arrived in waters off California and Oregon during July-August^{66 67} coincident with the development of seasonal aggregations of jellyfish.^{68 69} Other studies similarly have documented leatherback sightings along the Pacific coast of North America during the summer and fall months, when large aggregations of jellyfish form.⁷⁰
^{71 72} NMFS published a final rule designating critical habitat for leatherback sea turtles in 2012 (77 FR 4169). This critical habitat contains the main feeding habitat for leatherback sea turtles and stretches along the California coast from Point Arena to Point Arguello east of the 3,000-meter depth contour; and 25,004 square miles (64,760 km²) stretching from Cape Flattery, Washington to Cape Blanco, Oregon east of the 2,000-meter depth contour. The Morro Bay Call Area does occur within a small portion of feeding critical habitat for leatherback sea turtles, however this area is not anticipated to have high numbers of leatherback sea turtle occurrence (Figure 15).

Mammal Stock Assessments: 2014. U.S. Department of Commerce, NOAA Technical Memorandum, NOAA-TM-NMFS-SWFSC-549. 414 p <http://dx.doi.org/10.7289/V5/TM-SWFSC-549>

⁶⁴ Maxwell, S., Hazen, E., Bograd, S. et al. 2013. Cumulative human impacts on marine predators. *Nature Communications*. 4:2688. <https://doi.org/10.1038/ncomms3688>

⁶⁵ National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 2020. Endangered Species Act status review of the leatherback turtle (*Dermochelys coriacea*). Report to the National Marine Fisheries Service Office of Protected Resources and U.S. Fish and Wildlife Service

⁶⁶ Benson, S. R., P. H. Dutton, C. Hitipeuw, B. Samber, J. Bakarbesi, and D. Parker. 2007a. Post-nesting migrations of leatherback turtles (*Dermochelys coriacea*) from Jamursba-Medi, Birds Head Peninsula, Indonesia. *Chelonian Conservation and Biology* 6:150–154.

⁶⁷ Benson, S. R., T. Eguchi, D. G. Foley, K. A. Forney, H. Bailey, C. Hitipeuw, B. P. Samber, R. F. Tapilatu, V. Rei, P. Ramohia, J. Pita, and P. H. Dutton. 2011. Large-scale movements and high-use areas of western Pacific leatherback turtles, *Dermochelys coriacea*. *Ecosphere* 2(7):art84. doi:10.1890/ES11-00053.1

⁶⁸ Shenker, J. M. 1984. Scyphomedusae in surface waters near the Oregon coast, May–August, 1981. *Estuarine, Coastal and Shelf Science*. 19:619–632.

⁶⁹ Suchman, C.L. and Brodeur, R.D. 2005. Abundance and distribution of large medusae in surface waters of the Northern California Current. *Deep Sea Research Part II Topical Studies in Oceanography*. 52(1-2):51-72
DOI:10.1016/j.dsr2.2004.09.017

⁷⁰ Bowlby, C.E. 1994. Observations of leatherback turtles offshore of Washington and Oregon. *Northwestern Naturalist*. 75:33-35.

⁷¹ Starbird, C. H., A. Baldrige, and J. T. Harvey. 1993. Seasonal occurrence of leatherback sea turtles (*Dermochelys coriacea*) in the Monterey Bay region, with notes on other sea turtles, 1986-1991. *California Fish and Game* 79(2):54–6

⁷² Benson, S. R., K. A. Forney, J. T. Harvey, J. V. Carretta, and P. H. Dutton. 2007b. Abundance, distribution, and habitat of leatherback turtles (*Dermochelys coriacea*) off California, 1990–2003. *Fishery Bulletin* 105:337–347.

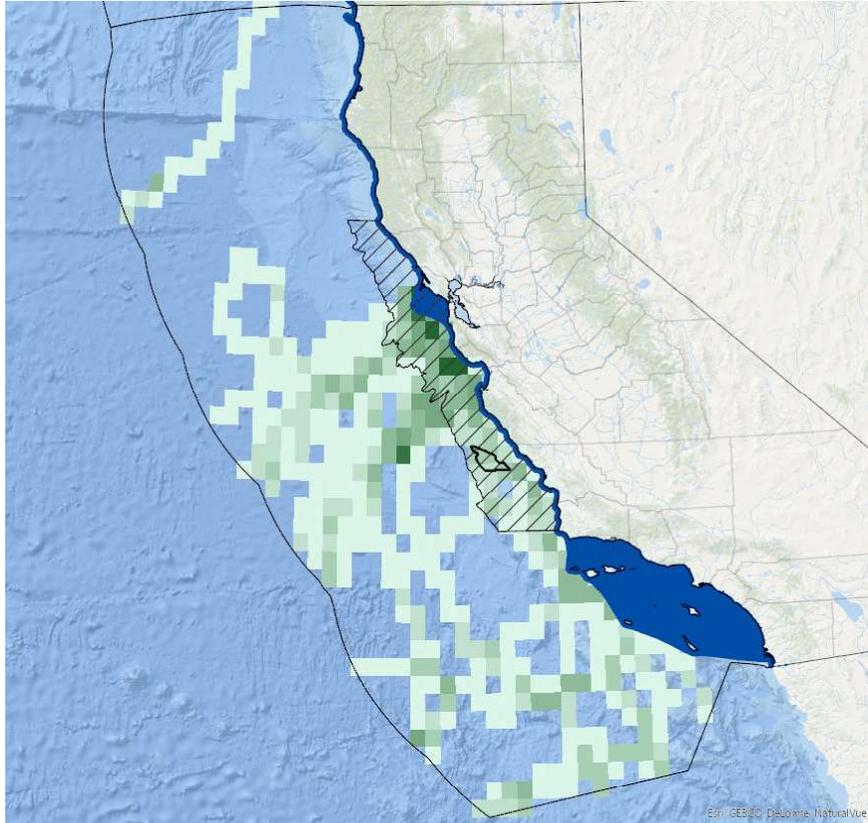


Figure 15: The Morro Bay Call Area overlaps with a small portion of feeding critical habitat (hatched) for leatherback sea turtles. Low numbers of leatherback sea turtles occur in this area (light green; Maxwell et al., 2013). Blue indicates probable occurrence year-round.

The abovementioned information is intended to describe the state of the best available scientific knowledge regarding marine mammal distribution, critical habitat, and BIAs in relation to the Morro Bay Call Area. This information indicates that the Morro Bay Call Area overlaps with relatively small parts of geographically extensive designated feeding critical habitat for humpback whales and leatherback sea turtles, and with an offshore portion of the migratory buffer for the gray whale migratory BIA. Considering the analyses contained herein, these elements by themselves do not warrant reduction of the area to be analyzed for potential leasing.

Potential impacts from offshore wind development can be most completely assessed once BOEM receives a detailed proposal. BOEM also determined that site-specific mitigations to further minimize or avoid potential impacts to marine protected species would be identified at later stages in the development process, including through lease stipulations and terms and conditions of COP approval, as appropriate.⁷³ In a proactive effort to minimize and mitigate any potential impacts from offshore floating wind on marine mammals BOEM is currently supporting studies to: obtain updated marine mammal distribution data using visual and acoustic platforms that incorporate cutting edge technologies; establish a vulnerability index

⁷³ BOEM will further consider vessel speed restrictions in the development of lease stipulations for any future leases awarded in the Call Areas.

for marine mammals and sea turtles in the Pacific; develop a scientifically based and biologically accurate simulator to assess potential entanglement risk from offshore floating wind development. BOEM continues to identify opportunities to support data collection to enhance our abilities to more accurately assess the potential impacts from offshore floating wind development on marine mammal and sea turtle species.

e) *Avian Species*

BOEM's analysis based on our data synthesis and modeling efforts to date, and other sources of information on seabird distribution in the area, found that at least 30 seabird species are present during at least one season in the Morro Bay Call Area at relatively moderate to high densities compared to their entire distributions along the Pacific coast (primarily phalaropes, jaegers, gulls, albatrosses, storm-petrels, and shearwaters). Another approximately 15 species occur in moderate to high relative densities inshore of the Morro Bay Call Area (primarily scoters, grebes, alcids, gulls, terns, loons, cormorants, pelicans) and approximately 9 species occur in moderate to high relative densities farther offshore of the call area (primarily skuas, terns, albatrosses, storm-petrels, petrels). These inshore and offshore species are likely to occur in lower relative densities within the Morro Bay Call Area. Several species that are rare in the vicinity of the call area are listed as endangered or threatened under the Endangered Species Act (ESA) including the Short-tailed Albatross (*Phoebastria albatrus*), Hawaiian Petrel (*Pterodroma sandwichensis*), California Least Tern (*Sterna antillarum browni*), and Marbled Murrelet (*Brachyramphus marmoratus*). In addition, the federally threatened Western Snowy Plover (*Charadrius nivosus nivosus*) occurs on beaches along the San Luis Obispo County coast but is not likely to occur in the Morro Bay Call Area itself.

Avian species-related comments received from the Call focused primarily on concerns related to potential impacts to avian species from the construction and operation of a wind energy project within the call area. However, BOEM did receive several comments that were specific to the Morro Bay Call Area. Several commenters raised concerns about the Morro Bay Call Area East Extension, which overlaps the National Audubon Society-designated Piedras Blancas, CA Important Bird Area, and recommended its removal from further consideration due to the large numbers of Sooty Shearwaters and other species that use this area. There were also comments recommending that BOEM give full consideration to ESA-listed and other species of concern that may be at risk to collisions with turbines. It was also recommended that BOEM evaluate the potential impacts on trans-Pacific migratory birds as part of offshore wind energy planning in Morro Bay. Several commenters were concerned that baseline data on seabird populations in the Call Area was not at a sufficient enough resolution to design efficient and effective development and mitigation plans to minimize negative impacts on seabirds. One commenter identified impacts to bats as a concern and recommended that BOEM and its partner agencies support research to fill knowledge gaps and better understand bat use of the Pacific OCS and within the Morro Bay 399 Area.

BOEM is conducting and planning several studies that will be valuable in understanding avian resources within the Morro Bay Call Area. For example, BOEM just completed its collaboration with the National Oceanic and Atmospheric Administration (NOAA) and U.S. Geological Survey (USGS) on a data synthesis and predictive modeling study of seabird distribution off the entire west coast out to the exclusive economic zone (EEZ) boundary.

BOEM is also collaborating with USGS on several seabird and bat studies including: 1) synthesizing telemetry data on a number of seabird species in the California Current System, including shearwaters; 2) conducting high resolution digital aerial surveys from the Monterey Bay Marine Sanctuary to the Mexican Border, which includes directed efforts to detect migratory movements off the central coast; 3) conducting a systematic study of offshore acoustic bat activity along and offshore the California coast to determine the temporal and spatial distribution of bats, which will help BOEM evaluate the effects of proposed offshore wind energy development on them; 4) tracking southbound Black Brant migration from their breeding grounds in Alaska and northbound migration from wintering areas in California to determine if their migratory movements overlap with Call Areas off the Pacific coast; and 5) planning is underway for establishing a Motus network in the southern California Bight to develop offshore tracking methodologies for bats and small vulnerable seabirds. If the latter effort is successful, networked Very High Frequency tracking could be scaled up to include other areas along the Pacific Coast including the Morro Bay Call Area. In addition, the lessee would conduct site-specific avian surveys to describe the key species and habitat that may be affected by the proposed construction and operations prior to approval of any construction. BOEM will consult with the U.S. Fish and Wildlife Service on potential effects to ESA-listed species through section 7 of the ESA and will also coordinate with them and other agencies and avian stakeholders on potential effects to other species of concern. Further, it is worth noting that many avian and bat mitigation measures and best management practices have been successfully employed across the offshore wind industry and incorporated into plan approvals.

BOEM acknowledges the potential for avian impacts during project construction and operation but believes that the Morro Bay Call Area warrants further consideration while BOEM is conducting studies and processing data that would be valuable to a deeper understanding of birds and bats within the vicinity. Based on this information, and the information we have evaluated from public comments, BOEM has determined that impacts to seabirds could be addressed on a site-specific basis at the COP review stage but impacts may potentially be reduced if the Eastern Extension was removed from the WEA designation.

f) Cables and other Infrastructure

The presence of in-service submarine cables within the Call Areas may increase future technical challenges to offshore wind energy development. Therefore, BOEM designed the Call Areas and Extensions to limit the presence of subsea cables to reduce the risks to both potential wind energy facilities and existing infrastructure. In addition, early communication and outreach to the owners of existing infrastructure to address any technical challenges may reduce future risk factors.⁷⁴

B. Public Comment Discussion

Among the public comments received on the 2021 Call were recommendations for the acquisition of new data and other research to assist BOEM in its renewable energy leasing

⁷⁴ As referenced in BOEM's Construction Operation Plan Guidance-*Attachment H: Coordination Efforts Relating to Existing Telecommunications Cables* <https://www.boem.gov/COP-Guidelines/>

process. In addition to providing information on the status of fisheries in the vicinity of the Call Area and extensions, the PFMC recommended that BOEM do further research or modeling on oceanographic and physiographic changes that may be attributed to large scale offshore wind development. The PFMC also recommended that BOEM acquire updated high-resolution seafloor mapping data for the entire area. Similarly, in a comment received from California, agencies recommended further seafloor and benthic habitat characterization through the Call Area and extensions. These comments will be considered for potential use in the upcoming environmental analysis for potential lease issuance, for future analyses related to any project implementation, or for consideration in BOEM's environmental studies program, as appropriate.

In a very detailed comment letter co-signed by ten NGOs that focus on environmental protection, a large number of specific recommendations were included for further BOEM consideration. Although many are considered by BOEM to be most appropriately addressed during analysis of potential project construction and operation, such as consideration of different turbine technologies and their interface with the environment, the environmental organizations also provided concrete examples of potential impacts to resources that should be considered in BOEM's analyses. Some of these resource issues are discussed below, particularly as they relate to fish, birds, or marine mammals, and how these considerations influence the recommendation for the determination of the WEA in this memorandum. Other recommendations in the letter, such as requests for further data acquisition relating to the seafloor, the benthic environment, corals, and other resources, are noted and will be incorporated into future analysis where appropriate.

VII. WEA Recommendation

A. Introduction

In recommending the Morro Bay WEA, BOEM is advancing the Biden Harris Administration's goal to achieve 30 GW of offshore wind by 2030 and net zero emissions by 2050, and is responsive to California's renewable energy goals, increase the potential for competition in future offshore wind energy solicitations, and develop a predictable leasing process. BOEM's WEA recommendation is a result of balancing key existing interests, primarily those of military mission compatibility, coastal resources in California, state renewable energy goals, and anticipated future uses based on the best available information. Areas offered for lease will be identified in a PSN, as discussed in Section IV. BOEM will consider, in its final leasing decision, the results of the NEPA analysis and associated consultations, as well as relevant new information that it receives between its WEA designation and issuance of the FSN. Additionally, BOEM maintains its flexibility to offer only a portion of the WEAs for lease, leaving unselected areas for future consideration. This section discusses the rationale for the recommendation of the WEA and, where appropriate, the exclusion of portions of the Call Area that BOEM is not designating for leasing consideration at this time.

B. Morro Bay WEA Options

In determining the initial Call Areas offshore California, BOEM used data and information on Data Basin which indicate that conflicts with existing ocean uses and avian and marine mammal species increase with proximity to shore. There is a correlation between potential impacts and proximity to shore for commercial and recreational fishing activities (especially high-value fishing activities, such as crabbing); gray and humpback whale migration corridors, which are closer to shore during parts of the year; shorebirds, which exist in higher numbers nearshore; and viewshed impacts, which are more pronounced the closer to shore. This is especially relevant because California's coastal geography typically has large variabilities in elevation along the coastline (i.e., oceanside cliffs). BOEM notes these concerns and will continue to consider them in upcoming stages of the process.

BOEM acknowledges that offshore wind activities in portions of the Morro Bay WEA Options could result in conflicts with other uses of the area. While conflicts may exist, the WEA appears to have lesser conflict than other potential areas that could support offshore wind energy development in California. The Morro Bay WEA Options were delineated by balancing several factors as described below.

1. National Security and Department of Defense Activities

Significant efforts were spent by the DoD, BOEM, the State of California and others to address concerns related to national security, military testing and training activities in the vicinity of Morro Bay, California. On May 25, 2021, the Departments of the Interior and Defense and the State of California announced identification of an area, known as the 'Morro Bay 399 Area' that will support 3 gigawatts of offshore wind on roughly 399 square miles off California's central coast within and adjacent to the Morro Bay Call Area. The Morro Bay WEA Options are located within the Morro Bay 399 Area.

2. Fishing

Fishing activities are broadly considered during the Area ID process to ensure that major conflicts are identified and addressed to the extent practicable. In establishing the Call Areas, BOEM used data described in Section VI.A.1 of this document, which indicates that fishing in California is relatively higher in close proximity to shore, with fisheries usage decreasing towards the west. The options for the WEA include keeping the entire Eastern Extension or removing the Eastern Extension to include areas no closer than 20 miles from shore, avoiding the heaviest fishing areas off the coast.

Further outreach and consideration of fishing issues will continue throughout the several phases of the BOEM process to address comments received during the Calls. For example, PFMC commented that the East Extension overlaps with deep water groundfish fishing grounds and the East Extension area has been historically important for trawl harvest of dover sole and sablefish and is currently an important area for fixed gear sablefish harvest. However, PFMC also indicated that while it could change in the future, currently there is no large-scale market for groundfish trawl vessels. BOEM received input on potential data sources and will pursue those and continue outreach to the fishing industry to obtain the best available data on fishing to inform the next phases of the environmental review and leasing

process. BOEM understands that the placement and development of wind turbines could impact certain types of commercial fishing. BOEM will continue to outreach with the fishing community and study the exact types of fishing and areas that are of most concern and work with industry, state, and the fishing community to mitigate these concerns to the extent practicable. Based in part on current existing fishing data, when developing the Morro Bay Call Area, BOEM did not pursue areas closer than 17 miles from shore where higher fisheries usage and higher economic value is present.

3. Vessel Navigation

BOEM recognizes that the proximity of the WEA Options to the Recommended Tracks within Monterey Bay National Marine Sanctuary presents a concern to mariners in this region, particularly to vessels that may be experiencing mechanical or technical difficulties and require additional room to maneuver. As described in the navigation section above, BOEM considered the existing traffic patterns in the region through analysis of AIS trackline data. In addition, the USCG is conducting the PACPARS process to investigate potential navigational measures, such as extension of the existing traffic separation scheme (TSS) in the Santa Barbara Channel, and other potential future routing measures. BOEM recognizes that the PACPARS is in the early stages of a lengthy process and the outcome of that process may influence future decisions in this area (e.g., leasing, COP approval). For the purposes of this effort, BOEM is working closely with the USCG and stakeholders and believes that there is space offshore California to safely accommodate both offshore renewable energy and maritime traffic aspirations. Given this uncertainty, BOEM has decided to include areas with potential overlap with vessel traffic, for further consideration and will continue to work with the USCG in the planning process to identify an outcome that provides for both navigation safety and opportunities for offshore wind development

4. Viewshed

It is clear that potential visual impacts are more pronounced closer to shore, and as described elsewhere in this memorandum, this was a contributing factor to development of the Call Area. Visual impacts depend on project specifics, such as wind turbine number, size, spacing, and configuration. As such, visual simulations are most helpful when those details are known. Potential visual impacts would be fully analyzed in coordination with the California agency partners if a lease(s) is issued and a COP(s) is submitted.

5. Marine Mammals and Sea Turtles

For the purposes of area identification, BOEM paid particular attention to areas of biological importance, critical habitat, and migratory corridors. Our analysis showed that the Morro Bay Call Area overlaps with relatively small parts of these areas for a few species. In addition, marine mammals and sea turtles are not expected to be within the Morro Bay Call Area in significant numbers. These results, together with BOEM's current and planned studies, suggest that the exclusion of some or all of the area from further analysis for potential leasing is not warranted based on this factor alone. Once a detailed proposal is submitted, BOEM will undertake finer scale analyses and identify applicable mitigation measures, as necessary, to further reduce any potential risks to marine mammal and sea turtle species.

6. *Birds and Bats*

Based on the status of current and planned studies, there is no indication that birds or bats are found in the vicinity of the Morro Bay Call Area in a manner that warrant the exclusion of some or all of the area from further analysis for potential leasing, at this stage. Nevertheless, in light of the comments received, BOEM acknowledges that removing the East extension could potentially provide some benefit to species such as Sooty Shearwater. BOEM is conducting studies and processing data that would be valuable to enhanced understanding of how birds and bats might be impacted by future offshore construction and operations, and which will be used to inform decisions in later steps of BOEM's process.

Wind Energy Area Development

7. *Changes from 2018 Morro Bay Call Area*

BOEM and California state agencies gathered data and information along the entire California coast beginning in 2017 with a special emphasis on areas off Central California because of commercial interest, existing transmission infrastructure, and wind energy resources. Informed by those efforts, BOEM identified the Morro Bay Call Area in 2018. The 2018 Morro Bay Call Area was substantially winnowed down based on the above factors, primarily national security interests. The 2018 Morro Bay Call Area consisted of an area 20 mi offshore the California coast, about 27 miles in length from north to south and about 27 mi in width from east to west, totaling 199,266 acres (311 square mi). BOEM decided to remove from the WEA recommendation a north portion of the 2018 Morro Bay Call Area consisting of 33,804 acres (53 square mi) that conflicts with national security and military training and testing activities. The remaining portion of the 2018 Morro Bay Call Area consisting of 165,462 acres (259 square mi) is retained with the 2021 Call East and West Extensions under the following 2 WEA options.

Option 1 - Inclusion of the 2021 Call, East and West Extensions with the remainder of the 2018 Call Area in the WEA

The Option 1 WEA as described in Table 1 and depicted in Figure 1a, includes the West and East Extension and consists of approximately 255,487 total acres (399 square miles) and provide up to 3.1 GW of electricity. BOEM acknowledges concerns received including potential impacts to commercial fishing activities and viewshed of areas closer to shore. These and other relevant factors will be analyzed in the next steps of the process prior to determining lease areas and approving a wind energy project on a lease.

Option 2 - Inclusion of the 2021 Call West Extension with the remainder of the 2018 Call Area in the WEA

The Option 2 WEA as described in Table 1 and depicted in Table 1 and Figure 1b, includes only the West Extension and consists of approximately 240,898 total acres (376 square miles) and could provide about 2.9 GW electricity. The choice to exclude the East Extension is based on the stakeholder identification of various resource conditions or use conflicts, primarily including

Tribal concerns and potential commercial fishing, avian and visual impacts.

While further outreach, data gathering, and analysis could provide BOEM with a more comprehensive understanding of the uses in the East Extension that could support leasing this area in the future, there are several factors that support the removal of the East Extension at this time. This option takes into consideration, comments received during BOEM’s outreach and in response to the 2021 Call indicate that the East Extension is of particular concern to the fishing industry because of increase in fishing activity as you move closer to shore. The PFMC also recommended that historic production from trawl vessels should be considered as a placeholder for future fisheries impacts as this area was historically important for trawl harvest of dover sole and sablefish. PFMC also indicated that the area is important for fixed gear sablefish harvest.

Visual impacts depend on project specifics, such as wind turbine number, size, spacing, and configuration, and, as such, it is more appropriate to conduct visual simulations when those details are known and potential mitigation measures, such as paint colors and aircraft detection lighting systems, would be fully analyzed in coordination with the California agency partners if a lease(s) is issued and a COP(s) is submitted. However, California state agencies stated in their comments the East Extension is potentially inconsistent with local scenic resource policies. In addition, alteration of the viewshed for Morro Rock and Hearst Castle would also increase closer to shore.

VIII. Director Concurrence

- Option 1 – Inclusion of 2021 Call Area, East and West Extension
- Option 2 – Inclusion of 2021 Call Area and West Extension



Amanda Lefton
Director, Bureau of Ocean Energy Management

11/12/21

Date