

CONSISTENCY DETERMINATION  
For Leasing Wind Energy Areas  
Offshore Humboldt County, California

US. Department of the Interior  
Bureau of Ocean Energy Management  
Pacific Outer Continental Shelf Region



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## I. **Authority**

The Bureau of Ocean Energy Management (BOEM) is submitting this Consistency Determination in compliance with Section 930.34 *et seq.* of the National Oceanic and Atmospheric Administration (NOAA) Federal Consistency Regulations (Title 15 Code of Federal Regulations (CFR) part 930 Subpart C). The Energy Policy Act of 2005 (EPAAct) authorized BOEM to issue leases, easements and rights of way to allow for renewable energy development on the Outer Continental Shelf (OCS). EPAAct provided a general framework for BOEM to follow when authorizing these renewable energy activities. For example, EPAAct requires that BOEM coordinate with relevant Federal agencies and affected state and local governments, obtain fair return for leases and grants issued, and ensure that renewable energy development takes place in a safe and environmentally responsible manner. See 74 Fed. Reg. 19,638 (Apr. 29, 2009); see also 30 CFR part 585 and 43 U.S.C § 1337(p)(1)(C).

## II. **DETERMINATION**

In accordance with the Federal Coastal Zone Management Act of 1972, as amended, BOEM has determined that the leasing activities planned for the Humboldt Wind Energy Area (WEA) of Northern California is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP), pursuant to the requirements of the Coastal Zone Management Act of 1972, as amended, (CZMA) and the California Coastal Act of 1976, as amended (CCA).

## III. **BACKGROUND**

In early 2021, the Biden-Harris Administration catalyzed progress towards the development of a robust offshore wind industry. This will result in the creation of tens of thousands of jobs while combating the negative effects of climate change. This announcement established a goal of 30 gigawatts of offshore wind by 2030 and plans to be achieved by the review of at least 16 construction and operations plans for wind energy projects by 2025. On May 25, 2021, the Department of the Interior, Department of Defense, and the State of California have agreed to advance wind energy offshore the Central and Northern Coasts of California <https://www.doi.gov/pressreleases/biden-harris-administration-advances-offshore-wind-pacific>. These initial areas for offshore wind development could bring up to 4.6 gigawatts of clean energy to the grid, enough to power 1.6 million homes and support thousands of good paying jobs. Offshore wind development in the Pacific will help the administration achieve its goal of 30 gigawatts of offshore wind capacity by 2030 and facilitates California's efforts to reach its goal of carbon-free electricity by 2045. Read the SB 100 Joint Agency Report here - <https://www.energy.ca.gov/sb100>

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's RPS is one of the most ambitious renewable energy standards in the country. California expanded the RPS in 2015 through passage of California Senate Bill (SB)

350, the Clean Energy and Pollution Reduction Act, and in 2018 through passage of California 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. Read the text here -

[https://leginfo.ca.gov/faces/billTextClient.xhtml?bill\\_id=201720180SB100](https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100).

Because of these state policies and goals, California has been investing heavily in renewable energy generation, 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, representing a loss of approximately 10% of in-state energy production.

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.

### BOEM California Stakeholder Outreach and Data Gathering Efforts

BOEM established the Intergovernmental Renewable Energy Task Force (Task Force) with California in 2016 to facilitate coordination among relevant federal agencies and affected state, local and tribal governments on renewable energy in the Outer Continental Shelf (OCS) throughout the leasing process. The planning process focused on floating offshore wind technologies. Relatively deep water and the steep continental shelf offshore California preclude the use of the monopile technologies commonly used in Europe. Ninety-six percent of the technical offshore wind resource potential off the coast of California is in waters deeper than 60 m, indicating that floating wind technology will likely be the most viable option in California (BOEM 2016-074): <https://www.boem.gov/2016-074/>.

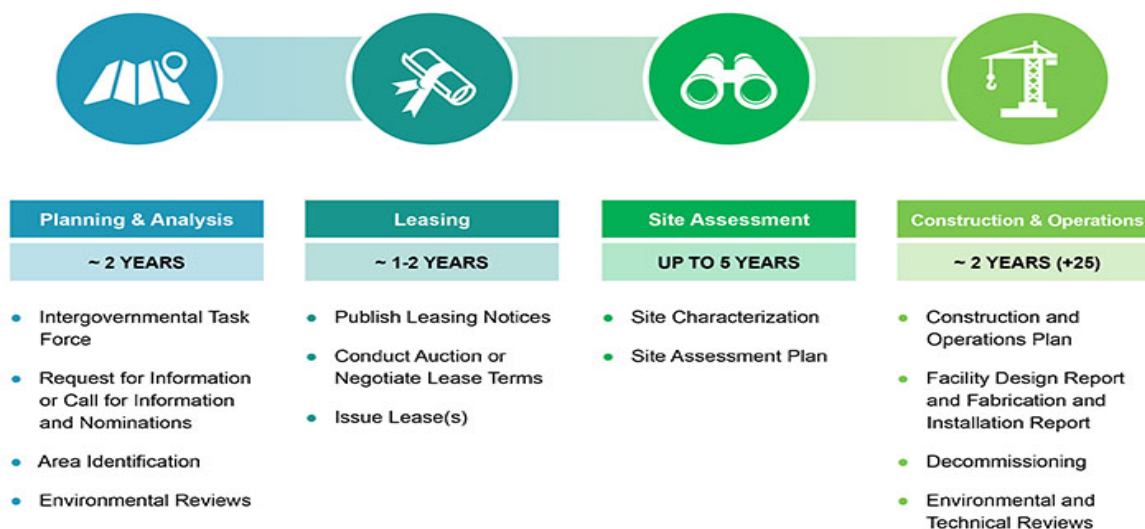


Figure 1 BOEM Renewable Energy Approval Process

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 *California Offshore Wind Energy Planning Outreach Summary Report* published in December 2018 and Addendum that was published in 2021 ([www.boem.gov/california](http://www.boem.gov/california)). 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>. (See list of datasets informing the Humboldt Environmental Assessment in Appendix I.)

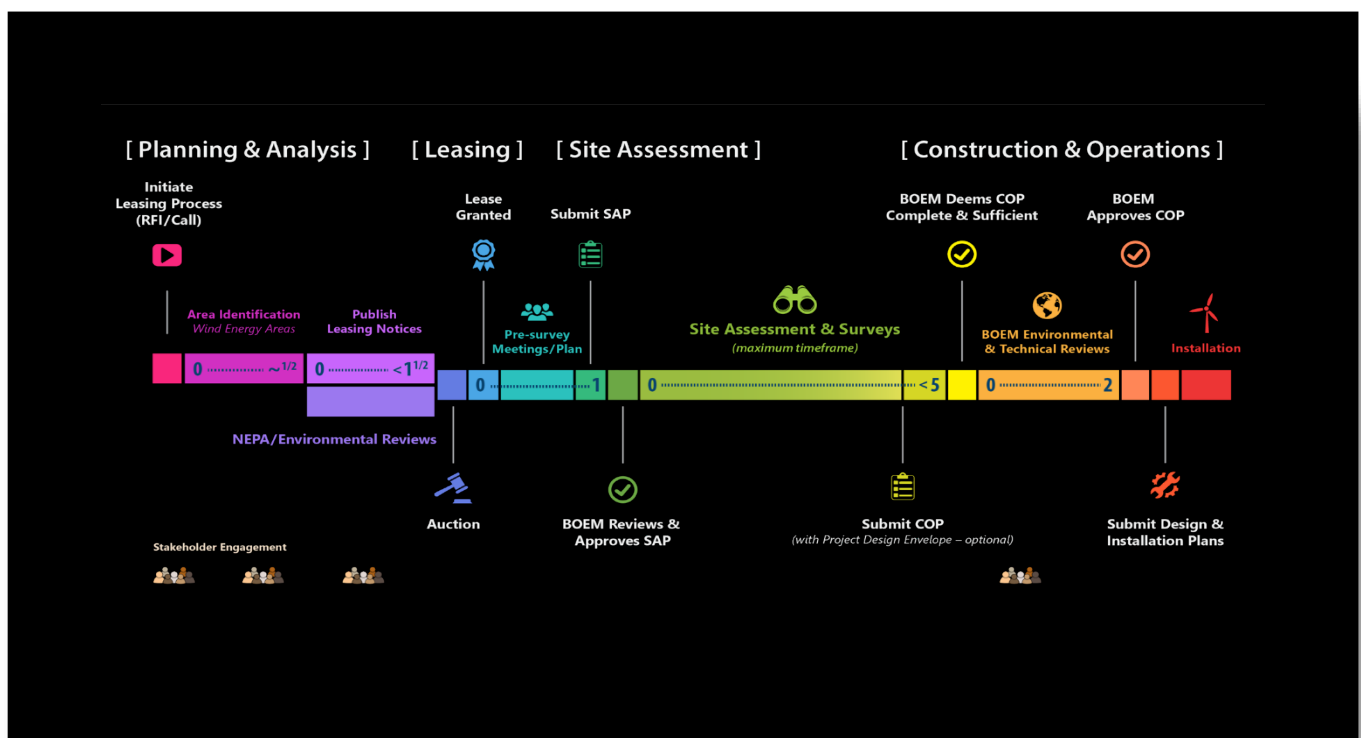


Figure 2 BOEM Renewable Energy Approval Process Timeline

## Call for Information and Nominations

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 (Call; 30 CFR § 585.211(a)) including the considerations used for delineating three Call Areas BOEM, in collaboration with the State, identified offshore California. These Call Areas included: Humboldt Call Area on the north coast, and the Morro Bay Call Area and the Diablo Canyon Call Area on the central coast. In addition to soliciting

public comments in the Federal Register, BOEM hosted a public meeting on December 13, 2018, in San Luis Obispo, California, with participation from members of the Task Force and the public, as well as other representatives from relevant federal, state, and local government entities. In response to the Call, BOEM received nominations of interest from 10 qualified entities proposing to develop offshore wind in the Humboldt Call Area. Information about BOEM's Call and for the nominations of interest for the Humboldt Call Area, go here - <https://www.regulations.gov/docket/BOEM-2018-0045/document>

Additional information about each nomination, including maps, nominations, and OCS block tables are available here: <https://www.boem.gov/renewable-energy/state-activities/nominations-0>. This Consistency Determination only applies to the Humboldt WEA.

## Area Identification

Area Identification (Area ID) is a required regulatory step under the renewable energy competitive leasing process used to identify areas for environmental analysis and consideration for leasing. See 30 C.F.R. § 585.211(b). The goal of BOEM's Area ID process is to identify the offshore locations that are the most suitable for leasing. The Area ID process balances consideration of multiple competing uses and environmental concerns against a proposed area's potential for commercial wind energy development. BOEM analyzes potential impacts of a specific proposed renewable energy facility in the identified areas during the review of a proposed Construction and Operations Plan (COP), when project-specific information is available.

The Area ID Memo document found here -

[https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/renewable-energy/3799\\_CA%20Area%20ID%20Humboldt%20County%20Memo%20Final.pdf](https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/renewable-energy/3799_CA%20Area%20ID%20Humboldt%20County%20Memo%20Final.pdf), provides analysis and rationale in support of the recommended designation of a WEA offshore Humboldt County, California for environmental analysis and consideration for leasing. The Area ID recommended the north coast WEA consist of the entire Humboldt Call Area.

The Humboldt WEA—formerly the Humboldt Call Area—begins at 32 km (20 mi) offshore the City of Eureka in northern California. The area is approximately 28 miles in length from north to south and approximately 14 miles in width from east to west. The entire area is approximately 206 square miles (132,369 acres; see Figure 3 and Table 1).





Figure 3 Humboldt WEA Map

Table 1 Recommended Humboldt Wind Energy Area Descriptive Statistics.

<i>Acres</i>	<i>Installation Capacity</i> <i>(based upon 3 MW/sq km)</i>	<i>Homes powered</i> <i>(based upon 350 homes per MW)</i>	<i>Power Production (MWh/year):</i> <i>40% Capacity Factor</i> <i>(Capacity (MW) x 8,760 (hrs/yr) x 0.4 (capacity factor))</i>	<i>Power Production (MWh/year):</i> <i>60% Capacity Factor</i> <i>(Capacity (MW) x 8,760 (hrs/yr) x 0.6 (capacity factor))</i>	<i>Maximum Depth (meters)</i>	<i>Minimum Depth (meters)</i>
132,369	1,605	561,750	5,632,920	8,435,880	1,100	500

During the Area ID process, BOEM considered the following non-exclusive list of information sources:

- Comments and nominations received in response to the Call;
- BOEM California Intergovernmental Renewable Energy Task Force meetings;
- Outreach Summary Report - California Offshore Wind Energy Planning;
- Input from state and federal agencies;
- Tribal outreach meetings with federally and non-federally recognized tribes, led by the 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 Gateway data and information; and
- Databasin datasets (See Appendix I for more information).



The Humboldt WEA meets key technical criteria generally used to determine the appropriateness of floating offshore wind energy development. The average estimated wind speed at 100 meters above sea level within the Humboldt WEA is 9.2 meters per second. This exceeds average wind speeds of several commercial developments in the North Sea in Europe. The water depths in the Humboldt WEA, which range from 500 to 1,100 meters, are technically feasible for several types of floating foundations. These water depths make pile-driven foundations (e.g., monopile or jacket) infeasible in any of the previously mentioned Call Areas. The Humboldt WEA is sufficiently close to existing transmission infrastructure to easily interconnect to the electrical grid. The Humboldt WEA is approximately 21 miles from the Humboldt Generating Station in Eureka, CA. Full buildout of the Humboldt WEA will require interconnection upgrades and interconnecting to the bulk electric power system will require review by the California Independent System Operator (CAISO).

BOEM considered multiple existing uses of the area in and around the Humboldt WEA, and their impact on the designation and commercial viability of a WEA within the area. The uses found to interact most with potential wind development within the Humboldt WEA are: (1) commercial and recreational fishing, (2) avian species, (3) marine mammals, (4) vessel traffic, (5) historic properties, (6) visual impacts, and (7) military activities as more particularly described in the Area ID Memo referenced above. None of the analyzed factors weighed in favor of reducing the size of the WEA, therefore, BOEM delineated the Humboldt WEA consisting of the Humboldt Call Area in its entirety.

In moving forward with the Humboldt WEA, BOEM also noted that the Port of Humboldt Bay is a deep-water port with facilities and infrastructure that could be adapted to support offshore wind energy development. The Port is interested in the development, use, and occupancy of Redwood Marine Terminal I (<http://humboldtbay.org/>) to repurpose the area into a Multipurpose Marine Terminal to support proposed offshore wind energy development in the region. The lease request from the Redwood Coast Energy Authority (RCEA) is also within the Humboldt Call Area and in its lease request, RCEA indicated that it has worked with its project partners and members of the community to explore and develop the offshore wind potential of Humboldt County.

## Environmental Assessment

On January 11, 2022, BOEM released for public review and comment a draft environmental assessment (EA) (see *additional information here* - <https://www.boem.gov/renewable-energy/state-activities/humboldt-wind-energy-area>). The comment period closes on February 10, 2022, and, soon after, the EA is expected to be finalized. The EA will assist in BOEM's determination as to whether the issuance of leases and subsequent site assessment and characterization activities on the lease offshore Humboldt would lead to significant impacts on the environment and, thus, whether an Environmental Impact Statement (EIS) should be prepared before a lease is issued.

A lease gives the lessee the exclusive right to seek BOEM approval for the development of the leasehold. The lease does not grant the lessee the right to construct any facilities; rather, the

lease grants the right to use the lease area to develop plans, which must be approved by BOEM, before the lessee can move on to the next stage of the process. Accordingly, the EA will consider the environmental consequences of activities reasonably expected to take place after the issuance of commercial wind leases, consisting of site characterization and site assessment activities necessary to determine the suitability of the Humboldt WEA for commercial offshore wind production and/or transmission. (See Tables 3 and 4 for examples of reasonably foreseeable site assessment and site characterization activities.) The EA will include potential mitigation measures and other best practices to ensure that these activities are conducted in a safe and environmentally responsible manner.

The EA will also detail the results of BOEM consultations with other federal, state, and local agencies as well as tribal governments, industries reliant on coastal waters, and the energy industry. BOEM has established a number of mechanisms to collaborate with other agencies. For example, BOEM has developed Memoranda of Understanding (MOUs) with other federal agencies describing each agency's roles for reviewing renewable energy projects on the OCS helping to streamline the leasing and permitting processes. As mentioned previously, BOEM has also established Intergovernmental Renewable Energy Task Forces on a state-by-state basis to coordinate among states, tribes, local governments, and relevant federal agencies.

For review of specific projects, BOEM establishes cooperating agency agreements with tribes and federal and state agencies, when there are overlapping areas of expertise or authorities. BOEM also conducts government-to-government consultation with federally recognized tribes, and coordinates other required consultations pursuant to the agencies listed below. Most of the consultations will begin at a later date, if BOEM issues a lease and later receives a project specific Site Assessment Plan (SAP) or COP. More information can be found in BOEM's *A Citizens' Guide to BOEM's Renewable Energy Authorization Process* found here - <https://www.boem.gov/KW-CG-Broch/>

BOEM Consultations for Renewable Energy Projects may include but are not limited to:

**1. National Marine Fisheries Service (NMFS) Essential Fish Habitat Consultations**

Sensitive benthic habitats, such as hard bottom, are designated as Essential Fish Habitat (EFH) for a variety of species for which impacts must be assessed under the Magnuson-Stevens Fishery Conservation and Management Act.

**2. NMFS Endangered Species Act (ESA) Consultations**

BOEM consults with the NMFS under the ESA for species under NMFS jurisdiction.

**3. Fish and Wildlife Service ESA Consultations**

BOEM consults with the U.S. Fish and Wildlife Service under the Endangered Species Act for species under their jurisdiction.

**4. National Historic Preservation Act Consultations (Section 106)**

Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470-470t) requires the head of any Federal agency, having direct or indirect jurisdiction over a

proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register.

### 5. Clean Water Act Consultations

The CWA is the principal law governing pollution control and water quality of the Nation's waterways. The object of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters (33 U.S.C. § 1251).

### 6. Clean Air Act Consultations

Per the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has air quality jurisdiction in California. BOEM consults with the EPA for air quality issues in California.

### 7. Migratory Bird Treaty Act Consultations

BOEM consults with the FWS on activities assessing impacts to and protecting biological resources that may affect threatened and endangered species.

### 8. Tribal Consultations

BOEM implements tribal consultation policies through both formal government-to-government consultation and informal dialogue, collaboration, and engagement.

For additional information about a variety of topics, please see the following sections of the EA found in Table 2 below.

*Table 2 Information found in BOEM's Environmental Assessment (EA) for the Humboldt WEA*

<b>Environmental Assessment Section Number</b>	<b>Information about ...</b>
<b>2.2.1</b>	Foreseeable Activities and Impact-Producing Factors
<b>2.2.1.1</b>	Surveying and Sampling Assumptions
<b>2.2.1.3</b>	Noise Generation Assumptions
<b>2.2.1.4</b>	Port Facilities Assumptions
<b>2.2.1.5</b>	Vessel Traffic
<b>2.2.1.6</b>	Site Characterization Surveys
<b>2.2.1.7</b>	Collection of Geophysical Information
<b>2.2.1.9</b>	Buoy Hull Types and Anchoring Systems
<b>2.2.2.1</b>	Allisions and Collisions
<b>2.2.2.2</b>	Spills
<b>3.1</b>	Geology
<b>3.2</b>	Air Quality

<b>3.2.2.1</b>	Marine Vessels
<b>3.3</b>	Water Quality
<b>3.3.1.1</b>	Coastal Waters
<b>3.4</b>	Marine and Coastal Habitats and Associated Biotic Assemblages
<b>3.4.2.4</b>	Threatened and Endangered Species
<b>3.5</b>	Marine Mammals and Sea Turtles
<b>3.6</b>	Coastal and Marine Birds
<b>3.6.2.1</b>	Active Acoustic Sound Sources Vessel and Equipment Noise and Vessel Traffic Underwater Noise Vessel Attraction Disturbance to Nesting or Roosting Disturbance to Feeding or Modified Prey Abundance Aircraft Traffic and Noise Metocean Buoys Impacts of Accidental Fuel Spills Measures to Minimize Potential Adverse Impacts to Birds
<b>3.6.3</b>	Bats
<b>3.7</b>	Commercial Fishing
<b>3.11</b>	Environmental Justice
<b>3.12</b>	Tribes and Tribal Resources
<b>3.12.2.5</b>	Changes in Coastal Viewshed
<b>4</b>	Consultations and Coordination, and Stakeholder Comments
<b>4.3.5</b>	National Historic Preservation Act
<b>Appendix A</b>	Area Identification Memo
<b>Appendix B</b>	Supplemental Commercial Fisheries Information
<b>Appendix C</b>	Section 106 (Programmatic Agreement)
<b>Appendix D</b>	Typical Mitigation Measures for Protected Marine Mammal Species for Site Characterization and Site Assessment Activities to Support Offshore Wind Projects

#### IV. **PROJECT AREAS AND ACTIVITIES SUBJECT TO CONSISTENCY DETERMINATION**

The implementing regulations of the CZMA and the policies of the California Coastal Commission (CCC) apply to lands and waters within coastal zone boundaries and to activities conducted outside the coastal zone that may affect lands or waters within the coastal zone. This Consistency Determination (CD) includes actions and programs outside the coastal zone within federal waters. The term "coastal zone" is defined in 16 U.S.C. § 1453(1) as "the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches... ". Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents." This activity will take place beyond the three-mile boundary that designates the beginning of federal waters and within the Exclusive Economic Zone of the United States of America which terminates at 200 nautical miles offshore (see United Nations Convention on the Laws of the Seas, Part V Exclusive Economic Zone, Article 57).

This CD evaluates all these in as much detail as is presently available. Some actions, programs, and proposals will need additional federal consistency certifications in the future when leases have been granted.

##### Standard of Review

Under Section 307(c)(1) of the CZMA, 16 USC § 1456(c)(1), federal activities that effect any land or water use or natural resource of the coastal zone are required to be consistent with the affected state's coastal management program to the "maximum extent practicable." Section 930.32 of NOAA's regulations implementing the CZMA (15 CFR part 930) defines "consistent to the maximum extent practicable" as follows:

*(a)(1) The term "consistent to the maximum extent practicable" means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the federal agency.*

The standard of review for federal consistency determinations consists primarily of the principal component of the California Coastal Management Plan (CCMP), namely the policies of Chapter 3 of the Coastal Act. Section A(6) of the Introduction to the CCMP states, that, once incorporated into the CCMP, certified Local Coastal Programs (LCPs) "will be used in making federal consistency determinations". If an LCP that the Commission has certified and incorporated into the CCMP provides development standards that are applicable to the post-lease site assessment and site characterization activities sites, the LCP can provide guidance in applying Chapter 3 policies in light of local circumstances. If the Commission has not incorporated the LCP into the CCMP, it cannot guide the Commission's decision, but it can provide background information.

The CCC has certified LCPs for areas in Humboldt County that are relevant to management

of this area. For the purposes of this CD, the Humboldt County General Plan, the Trinidad LCP, and the McKinleyville LCP will apply to this review.

The Energy Policy Act of 2005 (EPA<sup>1</sup>) authorized BOEM to issue leases, easements and rights of way to allow for renewable energy development on the Outer Continental Shelf (OCS). EPA<sup>1</sup> provided a general framework for BOEM to follow when authorizing these renewable energy activities. For example, EPA<sup>1</sup> requires that BOEM coordinate with relevant Federal agencies and affected state and local governments, obtain fair return for leases and grants issued, and ensure that renewable energy development takes place in a safe and environmentally responsible manner. See 74 Fed. Reg. 19,638 (Apr. 29, 2009); see also 30 CFR part 585 and 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.

## V. **Project Description**

The Proposed Action for this CD is the issuance of commercial wind energy leases within the WEA that BOEM has designated on the OCS as the Humboldt WEA. The EA associated with this CD considers BOEM's issuance of leases that may cover the entirety of the Humboldt WEA. The Proposed Action could result in site assessment activities on leases and site characterization activities on the leases, grants, and potential easements. Site assessment activities would most likely include the temporary placement of meteorological buoys and oceanographic devices. Site characterization activities would most likely include geophysical, geotechnical, and biological surveys (See Tables 3 and 4 for more information). While site characterization activities that extend into state waters and onshore to ports or existing substations are a reasonably foreseeable result of a wind energy lease issued in the Humboldt WEA, BOEM is not authorizing construction in state waters and onshore areas. You can view BOEM Survey Guidance here - <https://www.boem.gov/renewable-energy/survey-guidelines-renewable-energy-development>. The analysis found here and found in the EA does not consider construction and operation of any commercial wind power facilities; these activities would be evaluated in subsequent National Environmental Policy Act (NEPA) analyses if the lessee submits a COP. BOEM takes this approach based on several factors.

First, the issuance of a lease only grants the lessee the exclusive right to submit to BOEM a SAP and COP proposing development of the leasehold; the lease does not, by itself, authorize any activity within the lease area. After lease issuance, a lessee would conduct surveys and, if authorized to do so pursuant to an approved SAP, install meteorological measurement devices to characterize the site's environmental resources and socioeconomic conditions and to assess the wind resources in the proposed lease area. A lessee would collect this information to determine whether the site is suitable for commercial development and, if so, submit a COP with its project-specific design parameters for BOEM's review. The analysis contained within this CD will consider the effects of a lease sale and activities that are foreseeable and can be meaningfully evaluated at this time, such as site characterization and site assessment activities.

Second, BOEM does not consider the impacts resulting from the development of a commercial wind power facility within the WEA to be currently reasonably foreseeable. Based on the experiences of the floating offshore wind industry in northern Europe, project design and the resulting environmental impacts are often geography- and design-specific, and it would therefore be premature to analyze within the current EA the environmental impacts related to potential approval of any future COP. A number of design parameters would be identified in the COP including turbine size, foundation type, project layout, installation methods, mooring lines, and associated onshore facilities. Each design parameter, or combination of parameters submitted by individual leaseholders, would have varying environmental effects, and should be reviewed individually. Therefore, additional analyses under the NEPA would be required before any future decision is made regarding construction of wind energy facilities on the OCS.

The timing of lease issuance, as well as weather and sea conditions, would be the primary factors influencing timing of site characterization and site assessment survey activities. Under the reasonably foreseeable site characterization scenario, BOEM could issue leases in 2022. BOEM assumes lessees would begin survey activities as soon as possible after receiving a lease, when sea states and weather conditions allow for site characterization and site assessment survey activities. Lessees have up to five years to perform site characterization activities before they must submit a COP (30 CFR § 585.235(a)(2)). For leases issued in late 2022, those lessees' surveys could continue through late 2027 prior to submitting their COPs.

In the meantime, BOEM continues to gather information that will inform COP decision making and currently has 16 studies ongoing with the purpose of finding out more information about how renewable energy will affect the state of California. BOEM also has nine studies that will inform BOEM's review of COPs in the future, which are not specific to the state of California. Please visit BOEM's Environmental Studies webpage for the Pacific for more information here - <https://www.boem.gov/Selected-BOEM-Research-Renewable-CA/>

*Potential Site Characterization Activities:* BOEM assumes that lease holders, during the SAP phase of activity, will potentially undertake the types of surveys as is found in Table 3 below. BOEM further assumes that lease holders will potentially use the High Resolution and Geophysical Survey Equipment and Methods as found in Table 4 below. Lease holders must submit an SAP, which may include a request to install metocean buoys as discussed below. The SAP will be reviewed according to the regulations found at 30 CFR § 585.613.



Table 3 Potential Site Characterization Survey Details for the Humboldt Wind Energy Area

Survey Type	Survey Equipment and/or Method	Resource Surveyed or Information Used to Inform
High-resolution geophysical surveys	Side-scan sonar, sub-bottom profiler, magnetometer, multi-beam echosounder	Shallow hazards, archaeological, bathymetric charting, benthic habitat
Geotechnical/sub-bottom sampling	Vibra, piston, gravity cores, cone penetration tests	Geological
Biological	Grab sampling, benthic sled, underwater imagery/sediment profile imaging, Remotely Operated Vehicle (ROV), Autonomous Underwater Vehicle (AUV)	Benthic habitats
	Aerial digital imaging, visual observation from boat or airplane, radar, thermal and acoustic monitoring	Avian
	Ultrasonic detectors installed on buoy and survey vessels used for other surveys, radar, thermal monitoring	Bats
	Aerial and/or vessel-based surveys and acoustic monitoring	Marine mammals and sea turtles
	Direct sampling using vessel-based surveys; underwater imagery; acoustic monitoring; environmental DNA	Fishes and some invertebrates

Table 4 Potential High-Resolution Geophysical Survey Equipment and Methods

Equipment Type	Data Collection and/or Survey Types	Description of the Equipment
Bathymetry/depth sounder (multi-beam echosounder)	Collection of geophysical data for shallow hazards, archaeological resources, benthic habitats, and Bathymetric charting	A depth sounder is a microprocessor-controlled, high-resolution survey-grade system that measures precise water depths in both digital and graphic formats. The system would be used in such a manner as to record with a sweep appropriate to the range of water depths expected in the survey area. This EA assumes the use of multi-beam bathymetry systems, which may be more appropriate than other tools for characterizing those lease areas containing complex bathymetric features or sensitive benthic habitats, such as hardbottom areas.
Magnetometer	Collection of geophysical data for shallow hazards and archaeological resources assessments	Magnetometer surveys would be used to detect and aid in the identification of ferrous or other objects having a distinct magnetic signature. The magnetometer sensor is typically towed as near as possible to the seafloor and anticipated to be no more than approximately 6 m (20 ft) above the seafloor. This methodology will not be used in the WEA since depths are 500 m or greater, but will be used to survey potential cable routes that will occur in depths shallower than 500 m.
Side-scan sonar	Collection of geophysical data for shallow hazards and archaeological resources assessments	This survey technique is used to evaluate surface sediments, seafloor morphology, and potential surface obstructions (MMS, 2007). A typical side-scan sonar system consists of a top-side processor, tow cable, and towfish with transducers (or “pingers”) located on the sides, which generate and record the returning sound that travels through the water column at a known speed. BOEM assumes that the lessee would use a digital dual-frequency side-scan sonar system

		with 300–500 kHz frequency ranges or greater to record continuous planimetric images of the seafloor.
Shallow and medium (seismic) penetration sub-bottom profilers:	Collection of geophysical data for shallow hazards and archaeological resources assessments and to characterize subsurface sediments	Typically, a high-resolution CHIRP System sub-bottom profiler is used to generate a profile view below the bottom of the seabed, which is interpreted to develop a geologic cross-section of subsurface sediment conditions under the track line surveyed. Another type of sub-bottom profiler that may be employed is a medium penetration system such as a boomer, bubble pulser or impulse-type system. Sub-bottom profilers are capable of penetrating sediment depth ranges of 3 m (10 ft) to greater than 100 m (328 ft), depending on frequency and bottom composition.

Notes:

CHIRP = Compressed High Intensity Radar Pulse

kHz = kilohertz

**Metoccean Buoys:** Metoccean buoys would be anchored at fixed locations in potential commercial lease areas in order to conduct site assessment activities to monitor and evaluate the viability of wind as an energy source. The activities may include data gathering on wind velocity, barometric pressure, atmospheric and water temperatures, and current and wave measurements. To obtain these data, scientific measurement devices consisting of anemometers, vanes, barometers, and temperature transmitters would be mounted either directly on a buoy or on a buoy’s instrument support arms. In addition to conventional anemometers, floating light detection and ranging (FLiDAR) and sonic detection and ranging (SODAR) equipment may be used to obtain meteorological data. To measure the speed and direction of ocean currents, Acoustic Doppler Current Profilers (ADCPs) would most likely be installed. Buoys could also accommodate environmental monitoring equipment, such as bird and bat monitoring equipment (e.g., radar units, thermal imaging cameras), visual or acoustic monitoring equipment for marine mammals and fishes, data logging computers, power supplies, visibility sensors, water measurement equipment (e.g., temperature, salinity), communications equipment, material hoist, and storage containers. Projected vessel traffic in support of metoccean buoy placement is shown in Table 5. To see more information about current buoy use in the Pacific, please go here - <https://www.pnnl.gov/news-media/offshore-wind-research-buoys-float-californias-waters>

Table 5 Example of Projected Maximum Vessel Trips for Metoccean Buoy(s)

Buoy	Site Assessment Activity	Round Trips	Formula
Metoccean buoys	Metoccean buoy installation	3	1 round trip x 3 buoys (up to 3 lease areas with 1 buoy in each lease)
	Metoccean buoy yearly maintenance trips	15	3 buoys x 5 years
	Metoccean buoy decommissioning	3	1 round trip x 3 buoys
	Total buoy trips over 5-year period	21–30	Adds on additional maintenance/weather challenges

VI. **RELATION OF BOEM LEASING ACTIVITIES TO CERTIFIED LOCAL COASTAL PROGRAMS FOR HUMBOLDT COUNTY**

This section summarizes the policies in the Humboldt County General Plan (GP) and related Local Coastal Plans (LCPs)-the Trinidad area and McKinleyville LCPs-that are relevant to BOEM leasing activities and reasonably foreseeable effects from SAPs and site characterization activities.

**Humboldt County General Plan**

The Humboldt County GP discusses policies applicable to the entire county and within offshore state waters, with occasional references to park lands, followed by more specific recommendations and policies. Specific county policies relevant to this CD are found in Chapter 12 Energy Element of the GP. This CD evaluates BOEM's proposed lease area which will provide leaseholders an exclusive right of use for the area purchased. While no further action can be taken on the lease without the submittal of additional plans such as a Site Assessment Plan (SAP), BOEM has determined to review through the reasonably foreseeable activities of the SAP stage in order to consider the foreseeable effects of the lease sale.

The relevant sections found within Chapter 12 of the Humboldt County GP are:

1. *E-G3 Supply of Energy from Local Renewable Sources. Increased local energy supply from a distributed and diverse array of renewable energy sources and providers available for local purchase and export.*
2. *EP-3 Local Renewable Energy Supply. The County shall support renewable energy development projects including biomass, wind, solar, "run of the river" hydro-electric, and ocean energy, consistent with this Plan that increases local energy supply.*
3. *E-P14 Renewable Energy Overlay Zones. Develop renewable energy overlay zones based on community input to protect the unique value of sites that area identified as having substantial renewable energy potential and/or will be critical for renewable energy infrastructure while still allowing uses permitted in the underlying zone.*
4. *E-P15 Coordinate with local agencies, communities, and landowners to assess potential wind and offshore renewable energy development. Such an assessment shall consider site suitability, energy potential, and potential impacts to biological and cultural resources. Critical habitats for rare and endangered species (proposed critical habitat for coho and chinook salmon in Redwood Creek).*

*Chapter Nine of the Humboldt GP deals with Economic Development. Page 9-6 states "Energy strategies that move the county from an energy importer to an energy exporter could build significant economic wealth. Policies supporting this transition are included in the Energy Element." The lease sale supports the goal of Humboldt County to become an energy exporter. A further implementation measure for the*

*Humboldt County GP that support renewable energy development is:*

1. *ED-IM5 Regulatory Incentives for Emerging Industries. Provide regulatory incentives for base and emerging industries proposing to expand their business operations and workforce.*

*Analysis and Comment:*

Chapter Four of the Humboldt GP deals with Land Use Designations. The GP on page 4-1 defines land use as “the location, mix, timing, and character of land uses and supporting infrastructure”. This helps users determine the type of land use that their project will fall under in order to properly determine the rules and regulations that would apply to those designations. The Humboldt WEA lease sale and associated SAP review place this project as “Utilities and Energy Facilities” which are further defined on page 4-54 as “[t]he erection, construction, alteration, or maintenance of ... wind or hydroelectric solar or biomass generation, and other fuel or energy production facilities.” However, neither the lease sale nor the site characterization or site assessment activities will lead to the “[t]he erection, construction, alteration, or maintenance ...” of any structures. The erection of structures would not be considered by BOEM until the COP phase of planning.

Chapter Five of the Humboldt County GP addresses issues relating to Community Infrastructure and Services Elements. Page 5-1 states this “[e]lement provides direct focus on existing infrastructure and service capacity, future demand, levels of service, timing, and funding issues.” This element goes on to further identify other public utilities and services to which the element applies. Page 5-4 states “Communities are also served by public schools, libraries, social services, as well as public and quasi-public utilities providing energy ....”

BOEM is not considering or authorizing activities that will have an immediate influence on existing infrastructure, service capacity, future demand, levels of service, timing, and funding issues within Humboldt County. The Humboldt WEA EA analyzes the impacts only of site assessment and site characterization activities. (See Tables 3 and 4 for examples of site characterization activities.) Furthermore, BOEM does not consider the issuance of a lease to constitute an irreversible and irretrievable commitment of agency resources. BOEM will conduct a separate analysis and permitting process to authorize the construction and operation of any commercial wind power facilities—projects which would, if completed, have impacts to the infrastructure and services in Humboldt County.

The issuance of a lease only grants the lessee the exclusive right to submit to BOEM a SAP and COP proposing development of the leasehold; the lease does not, by itself, authorize any activity within the lease area. After lease issuance, a lessee would conduct surveys and, if authorized to do so pursuant to an approved SAP, install meteorological measurement devices to characterize the site’s weather conditions and to assess the wind resources in the proposed lease area. A lessee would collect this information to determine whether the site is suitable for commercial development and, if so, submit a COP with its project-specific design parameters for BOEM’s review.

Chapter Seven of the Humboldt County GP addresses issues relating to the Circulation Element. The Circulation Element considers issues of traffic. The majority of Chapter Seven deals with concerns regarding onshore traffic issues rather than offshore. However, BOEM anticipates that the placement of buoys to collect data for study in the SAP stage of development could result in an increase in vessel traffic (see Table 5), as described below. Page 7-1 of the GP states “[t]ransportation policies in this Element are also closely related to policies in the Energy Element and the Air Quality Element to minimize energy costs and air quality impacts.” The Energy Element is discussed above in the information regarding Chapter 12. The GP goes on to state on page 7-3 that “[s]ignificant new opportunities were identified for Humboldt Bay, including marine-dependent industrial projects, ... and marine science development.” Both of these opportunities are present in the lease sale and SAP stages of development.

Regarding vessel traffic, BOEM assumes lessees would likely survey the entire proposed lease area during a 5-year site assessment term. BOEM also assumes that during the site characterization and site assessment stages, lessees will likely stage from the Port of Humboldt Bay, approximately 32.2 km (20 mi) east of the Humboldt WEA. Vessel trips are anticipated for both site characterization and site assessment activities. The EA (Section 2.2.1.5) assumes the number of vessel trips would amount to no more than 500 total 10-hour survey days or 180 total 24-hour survey days throughout the five-year assessment period.

The EA (Section 2.2.1.5) uses the 2017 Pacific Northwest National Laboratory (PNNL) LiDAR (light detection and ranging) buoy deployments to the Humboldt and Morro Bay WEAs as a proxy for the type of vessel activity anticipated: PNNL used a 65-ft tugboat to tow the LiDAR buoy, at 5 knots, from Humboldt Bay to the Humboldt WEA where they lowered the anchor, mooring line, and attached the buoy and then traveled back to Humboldt Bay in one day. PNNL planned for 3 vessel trips for a 12-month deployment (deployment, mid-year maintenance, recovery).

Based on 2017 Automatic Identification System (AIS) data, vessel traffic patterns are more concentrated farther out to sea and closer to shore than in the Humboldt WEA. Tug and tow vessels do traverse the Humboldt WEA, but they are concentrated in the near shore tow lane and further offshore. Cargo ships also traverse the Humboldt WEA, but use is concentrated further offshore. Tankers did not traverse the Humboldt WEA in 2017.

Chapter 10 of the Humboldt County GP addresses issues relating to Conservation and Open Space Elements. Page 10-1 states “[t]he Conservation Element guides the conservation, development, and utilization of natural resources (water, forests, soils, rivers, mineral deposits, and others), while the Open Space Element guides the comprehensive and long-range preservation and conservation of open-space lands. Together, these elements present a framework of goals and policies for use and protection of all the natural resource and open space assets of the county.” The SAP related issues that might arise relate to Cultural Resources. The relevant sections are:

*Cultural Resources.*

- a. *CU-G1. Protection and Enhancement of Significant Cultural Resources. Protected and enhanced significant cultural resources, providing heritage, historic, scientific, educational, social and economic values to benefit present and future generations.*
- b. *CU-P1. Identification and Protection. The potential for impacts to significant cultural resources shall be identified during ministerial permit and discretionary project review, impacts assessed as to significance, and if found to be significant, protected from substantial adverse change per California Public Resources Code (PRC) §5020.1.*
- c. *CU-P2. Native American Tribal Consultation. Native American Tribes (as defined below in CU-S3) shall be consulted during discretionary project review for the identification, protection and mitigation of adverse impacts to significant cultural resources. Consultation on ministerial permits shall be initiated if it has been determined the project may create a substantial adverse change to a significant cultural resource. At their request, Tribes shall be afforded the opportunity to review and provide comments to the County early in project review and planning (screening) about known or potential Tribal cultural resources located in project areas within their respective tribal geographical area of concern.*
- d. *CU-P3. Consultation with Other Historic Preservation Agencies and Organizations. Historic preservation agencies and organizations shall be consulted during discretionary project review for the identification, protection and mitigation of adverse impacts to significant cultural resources. These include, but may not be limited to, the County's Cultural Resources Advisory Committee, Humboldt County Public Works Department and the Planning and Building Divisions, the Northwest Information Center of the California Historical Resources Information System (NWIC), the California Office of Historic Preservation, the Native American Heritage Commission, local historical societies, museums, colleges and universities, and incorporated cities historic preservation commissions or committees for their respective LAFCO sphere of influence, and local historians, cultural resources consultants and historic preservation staff affiliated with various state and federal agencies.*
- e. *CU-P4. Avoid Loss or Degradation. Projects located in areas known, or suspected, to be archeological sites or Native American burial sites shall be conditioned and designed to avoid significant impacts to significant sites, or disturbance or destruction to Indian burial grounds. Preserving Native American remains undisturbed and in place shall be selected as the preferred alternative unless substantial factual evidence is presented demonstrating that no alternative(s) are feasible. Conditions of approval shall include standard provisions for post-review inadvertent archaeological discoveries and respectful treatment and disposition of Native American remains with or without funerary objects in accordance with state law (Health and Safety Code (HSC) §7050.5 and PRC §5097.98).*
- f. *CU-P6. Mitigation. Mitigation measures shall be required for any permitted project or County action that would adversely impact significant cultural resources.*

*Analysis and Comment:*

You can find a discussion of the handling of cultural resources below in section VII of this document below under Section 30244 Archaeological or paleontological resources.

The Humboldt County GP encourages renewable energy development and proliferation within Humboldt County. This CD proposes the sale of leases for the development of renewable

energy post-lease site assessment and site characterization activities offshore Humboldt County within federal waters and a forward-thinking look at SAP and site characterization reasonably foreseeable effects. The LCPs for the Trinidad and McKinleyville areas will further explain the impacts that the lease sale might have upon specific coastal areas within Humboldt County.

### Trinidad Area LCP

The Trinidad Area Local Coastal Plan (LCP) is a subset of the Humboldt County General Plan (GP). There are six LCPs in Humboldt County. These are areas directly connected to the coastline which set forth their own rules for bringing new development to these coastal areas. The majority of the LCPs address onshore issues. However, there are sections that would apply to the offshore environment. The Trinidad Area LCP has four areas that may apply to the lease sale and reasonably foreseeable effects of SAPs and site characterization activities. All site characterization and site assessment activities would be taking place in federal waters, offshore. These areas of the Trinidad LCP are:

1. 3.16 / 3.28 Hazards,
2. 3.17 / 3.29 Archaeological and Paleontological Resources,
3. 3.30 Natural Resource Protection Policies and Standards, and
4. 3.40 Visual Resource Protection.

In section 3.16 / 3.28 Hazards, the Trinidad Area LCP on page 3-9 states: "New development shall:

1. *Minimize risks to life and property in areas of high geologic, flood and fire hazard.*
2. *Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding areas or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs."*

#### *Analysis and Comment:*

BOEM does not anticipate any potential hazards that would impact the concerns listed in items 1. and 2. above. Reasonably foreseeable non-routine and low-probability events and hazards that could occur during site characterization and site assessment related activities include the following: (1) allisions and collisions between the site assessment structures or associated vessels and other marine vessels or marine life; (2) spills from collisions or fuel spills resulting from generator refueling; and (3) recovery of lost survey equipment.

In section 3.17 / 3.29 Archaeological and Paleontological Resources, the Trinidad Area LCP on page 3-11 states, "Where new development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required." There are potentials for archaeological or paleontological resources to be present in the offshore waters during the future SAP phase



that have been identified in the Area ID Memo issued by BOEM on July 29, 2021. Per the Trinidad Area LCP on page 3-11, there are “[n]o known archaeological or paleontological sites, as identified by the State Historic Preservation Officer, occurring outside of the state parks within the Trinidad Planning Area. Should this list be supplemented with sites occurring outside of public lands, the policies will apply.”

BOEM or the leaseholder would alert the appropriate parties if any additional archaeological or paleontological resources were found to be present in the offshore waters during the future SAP phase. 30 CFR § 585.802 guides leaseholders as to “[w]hat must I do if I discover potential archaeological resources while conducting my approved activities?” BOEM’s guidance instructs leaseholders that “[i]f you, your subcontractors, or any agent acting on your behalf discovers a potential archaeological resource while conducting construction activities, or any other activity related to your project, you must: (1) Immediately halt all seafloor-disturbing activities within the area of the discovery; (2) Notify BOEM of the discovery within 72 hours; and (3) Keep the location of the discovery confidential and not take any action that may adversely affect the archaeological resource until we have made an evaluation and instructed you on how to proceed.” This should ameliorate any potential impacts SAP and site characterization activities might have on archaeological and paleontological resources.

A thorough review of BOEM’s expectations regarding culturally significant material in the lease sale area can be found in the Humboldt EA in section 4.3.5 and appendix C.

In section 3.30 Natural Resource Protection Policies and Standards, the Trinidad Area LCP states that “(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas and shall be compatible with the continuance of such habitat areas.”

While the Humboldt WEA where any SAP activities may take place are approximately 32 km (20 mi) offshore, post-lease site assessment and site characterization activities could still be considered in areas adjacent to environmentally sensitive habitat areas. On page 3-28, the LCP states that “[n]o wetlands, at this time, have been identified pursuant to the Coastal Act’s definition [in the Trinidad LCP area] ... The policies have been retained should any wetland areas be identified by the County in the future.”

In section 3.40 Visual Resource Protection the Trinidad Area LCP states that “[t]he scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.” The proposed lease sales and subsequent

reasonably foreseeable SAP analysis would occur approximately 21 miles offshore.

The post-lease site assessment and site characterization activities have little potential to effect visual resources. The Humboldt EA uses buoy placement from the PacWave South wave energy project as an example of the type of activity anticipated in the lease area. (EA Section 2.2.1) For PacWave, a spar-type buoy equipped with light detection and ranging (LiDAR) was towed approximately 37 km (2 nm mi) offshore Oregon to the installation location by a transport vessel after assembly at a land-based facility. Oregon State University's (OSU) 84-foot research vessel, along with a Zodiac Rigid-hulled inflatable boat (RHIB), were used to install the buoy (Reeb, 2020). Approximately 12 m (40 ft) of the buoy was visible above the water line. Buoy lighting is temporary in nature and indistinguishable from vessel traffic.

On page 3-41, the Trinidad LCP states that “[u]ses other than those defined in "a." through "c." of this Section including those proposed by public agencies, shall be subject to the requirements of Section "c." in so far as these are relevant.” The relevant subjects from Section “c” are (1) That the development does not block any part of the view to the coast or coastal waterways as viewed from public roads in a vehicle. (2) That the exterior design, lighting and landscaping combine to render the overall appearance compatible with the natural setting as seen from the road... and (5) Exterior lighting shall be shielded so that it is not directed beyond the boundaries of the parcel.

### McKinleyville Area LCP

The McKinleyville Area Local Coastal Plan (LCP) is a subset of the Humboldt County General Plan (GP). The majority of the LCPs address onshore issues. However, there are sections that would apply to the offshore environment. The McKinleyville Area LCP has four areas in which the lease sale and reasonably foreseeable effects of SAPs and site characterization activities. These areas are:

1. 3.28 / 3.39 Hazards
2. 3.29 / 3.39.1 Archaeological and Paleontological Resources
3. 3.40 Resource Protection Policies and Standards
4. 3.42 Visual Resource Protection

### *Analysis and Comment:*

However, before we can address the issues above, we must first determine if Urban Limit Line rules apply to this CD and the reasonably foreseeable effects of SAPs and site assessment activities. Section 3.21 Urban Limits in Chapter 3 Page 2 in Section 30253 in number A(3) states “[a]ny lands lying outside the Urban Limit shall be deemed rural for development purposes, and subject to the Rural Development Policies and Standards in Section 3.30 of this chapter.” The Federal OCS is outside the Urban Limit Line for the McKinleyville area. Therefore, we will continue our review under the Rural Development Policies and Standards in Section 3.30.

In section 3.28 / 3.39 Hazards, in section 30253(2) states that “New Development shall ... [a]ssure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding areas or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.” BOEM does not anticipate any potential hazards that would impact the concerns listed. Reasonably foreseeable non-routine and low-probability events and hazards that could occur during site characterization and site assessment related activities include the following: (1) allisions and collisions between the site assessment structures or associated vessels and other marine vessels or marine life; (2) spills from collisions or fuel spills resulting from generator refueling; and (3) recovery of lost survey equipment.

Section C(1)(i) states that “[t]he report should consider, describe and analyze the following ... [p]otential effects of seismic forces resulting from a maximum credible earthquakes.” Earthquakes are a potential that would not affect the lease sale. During the SAP phase, it is possible that the testing mechanisms such as buoys or ships performing testing in the Humboldt area might be affected. Further discussion of the plan for such an event would be provided by the leaseholder.

Section D presents another Hazard to consider. It states “Tsunamis - New development below the level of the 100-year tsunami run-up elevation described in Tsunami Predictions for the West Coast of the Continental United States (Technical Report H-78-26 by the Corps of Engineers) shall be limited to public access, boating, and public recreation facilities.” While the areas available for lease sale and likely to undertake such foreseeable activities as a SAP or site characterization activities are offshore, they are expected to be approximately 32 km (20 mi) offshore and unlikely to be within the area impacted by a 100-year tsunami.

*Section 3.29 Archaeological and Paleontological Resources states “[w]here new development would adversely impact archaeological or paleontological resources as identified by State Historic Preservation Officer, reasonable mitigation measures shall be required.” The mitigation measures outlined in the McKinleyville LCP are: “Reasonable mitigation measures may include but are not limited to:*

- 1. Changing building and construction sites and/or road locations to avoid sensitive areas.*
- 2. Providing protective cover for sites that cannot be avoided.*
- 3. Where appropriate and with the approval of all parties concerned, provide for the removal or transfer of culturally significant material by a professional archaeologist or geologist.”*

*Analysis and Comment:*

BOEM approaches archaeological and paleontological with sensitivity and care. 30 CFR § 585.802 states BOEM’s guidance on “[w]hat must I do if I discover a potential archaeological resource while conducting my approved activities?” BOEM or the leaseholder would alert the appropriate parties if any additional archaeological or paleontological resources were found to be present in the offshore waters during the future SAP phase. 30 CFR § 585.802 guides leaseholders as to “[w]hat must I do if I discover potential archaeological resources while conducting my approved activities?”

There are potentials for archaeological or paleontological resources to be present in the offshore waters during the future SAP phase that have been identified in the Area ID Memo issued by BOEM on July 29, 2021. BOEM's regulations at 30 CFR § 585.802 instructs leaseholders that "[i]f you, your subcontractors, or any agent acting on your behalf discovers a potential archaeological resource while conducting construction activities, or any other activity related to your project, you must: (1) Immediately halt all seafloor-disturbing activities within the area of the discovery; (2) Notify BOEM of the discovery within 72 hours; and (3) Keep the location of the discovery confidential and not take any action that may adversely affect the archaeological resource until we have made an evaluation and instructed you on how to proceed." This should ameliorate any potential impacts reasonably foreseeable SAP and site characterization activities might have on archaeological and paleontological resources. A thorough review of BOEM's expectations regarding culturally significant material in the lease sale area can be found in the Humboldt EA in Sections 3.10 and 3.12.

Section 3.40 Resource Protection Policies and Standards is designed to protect natural and cultural resources, and to assure public safety. In section 30240(a), it states that "[e]nvironmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas and shall be compatible with the continuance of such habitat areas." Environmentally sensitive areas are defined in Chapter 4 Page 3 as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments (Coastal Act Section 30107.5) ...." Testing programs under a SAP or site characterization activity might come into contact with environmentally sensitive habitats. 30 CFR § 585.801 guides "[h]ow must I conduct my approved activities to protect marine mammals, threatened and endangered species, and designated critical habitat?" during reasonably foreseeable approved SAP activities. These detailed instructions guide leaseholders on appropriate consultations under the Endangered Species Act (ESA), including consideration of critical habitats.

Section 3.42 Visual Resource Protection addresses issues relating to the scenic and visual qualities of the McKinleyville LCP area. Section 30251 states that "[t]he scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting."

The proposed lease sale and subsequent forward-thinking SAP analysis would occur approximately 32 km (20 mi) offshore and the post-lease site assessment and site

characterization activities have little potential to effect visual resources and any impacts that do occur will be short in duration and temporary in nature. The EA (Section 2.2.1.5) uses the 2017 Pacific Northwest National Laboratory (PNNL) LiDAR (light detection and ranging) buoy deployments to the Humboldt and Morro Bay WEAs as a proxy for the type of vessel activity anticipated: PNNL used a 65-ft tugboat to tow the LiDAR buoy, at 5 knots, from Humboldt Bay to the Humboldt WEA where they lowered the anchor, mooring line, and attached the buoy and then traveled back to Humboldt Bay in one day. PNNL planned for 3 vessel trips for a 12-month deployment (deployment, mid-year maintenance, recovery). Buoy lighting is temporary in nature and indistinguishable from vessel traffic.

Section 4.53 Resource Protection addresses issues relating to Wetlands, Riparian Systems and Coastal Streams, Dunes and Beaches, and Coastal Scenic Views. Section D states that “[o]nly one area in McKinleyville has identified for specific scenic protection. This is not to say that other areas in the planning area do not demonstrate outstanding scenic features, but as indicated in Section 3.42 E, Natural Features, these areas receive adequate protection through the land use designations, public ownership, etc. The area of special concern, designated a Coastal Scenic Area, includes the vistas from Highway 101 along Clam Beach and the adjacent bluffs.” The proposed lease sales and subsequent reasonably foreseeable SAP analysis would occur approximately 20 miles offshore and the post-lease site assessment and site characterization activities have little potential to effect visual resources and will be short in duration and temporary in nature.

## VII. CONSISTENCY OF PROPOSED CD WITH PROVISIONS OF THE CALIFORNIA COASTAL ACT

This portion of the federal consistency determination analyzes consistency between policy sections of the California Coastal Act (Division 20, California Public Resources Code) and this CD which covers the proposed lease sale and reasonably foreseeable effects such as SAPs and site characterization activities offshore on federal waters in the area offshore Humboldt County, California. The relevant policies are listed first, followed by comment and analysis.

Policies under the California Coastal Act that are not applicable to CD for the proposed lease sale and reasonably foreseeable effects such as a SAP or site characterization and site assessment activities are:

- All sections of Article 7 (Industrial Development)

### ARTICLE 2, PUBLIC ACCESS

#### **Section 30211 Development not to interfere with access**

*Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

### *Analysis and Comment:*

The lease sale shall not hinder public access to the sea or the coastline. According to 30 CFR § 585.605(a) “[a] SAP describes the activities (e.g., meteorological buoys) you plan to perform for the characterization of your commercial lease, including your project easement, or to test technology devices.” It is unlikely that foreseeable activities such as site assessment and site characterization could reduce public access to the sea as boats used to tow buoys and other survey equipment would not have any priority over other boats using the Port of Humboldt Bay.

Access to the sea issues created by activities such as the construction of onshore facilities or the laying of transmission lines will also be reviewed once a COP has been submitted by a lessee.

In order to be able to make informed decisions regarding a submitted COP, BOEM is working to complete studies relating to this issue. See the following for more information:

- ***Ongoing (2016-2022) — Scenarios for Offshore Renewable Energy along the Central California Coast***

This study by California Polytechnic State University, San Luis Obispo is delineating feasible offshore renewable energy scenarios along the central coast of California. Researchers will determine information needs and evaluate scenarios, tradeoffs, and generating capacity of various facilities as well as information needed to conduct environmental reviews.

*Study Profile:* <https://www.boem.gov/pc-16-01/>

*Journal Article:* <https://www.sciencedirect.com/science/article/pii/S096456912100096X>

- ***Completed (2016) — Determining the Infrastructure Needs to Support Offshore Floating Wind and Marine Hydrokinetic Facilities on the Pacific West Coast and Hawaii***

This study by ICF International evaluated the current infrastructure and vessel requirements and capabilities existing on the Pacific West Coast of the U.S. and the Hawaiian islands of Oahu, Maui, and Kauai to support the burgeoning offshore renewable energy industry. Understanding the infrastructure needs of the offshore renewable industry will help to identify the port-related requirements for offshore floating wind development and marine hydrokinetic industries and assess the utilization of the available marine equipment and facilities along the U.S. West Coast.

*Report (BOEM 2016-011):* <https://epis.boem.gov/final%20reports/5503.pdf>

### ARTICLE 3 RECREATION

#### **Section 30224 Recreational boating use; encouragement; facilities**

*Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, by developing dry storage areas, increasing public launching facilities, providing additional berthing space in existing harbors, limiting non-water-dependent land uses that congest access corridors and preclude boating support facilities, providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and*

*in areas dredged from dry land.*

*Analysis and Comment:*

The lease sale is unlikely to affect recreational boating use. Although site assessment activities would result in a slight increase in vessel traffic to the Humboldt WEA and surrounding areas, the total vessel traffic associated with site characterization surveys and site assessment activities would be at most a couple of vessel trips per day on the heaviest days of operations. The generation of trash and debris is also a concern with site assessment and characterization activities, but the small numbers of vessel trips along with compliance with federal regulations would minimize potential impacts. (See Table 5 for examples of vessel trips during buoy placement.)

Work to deploy and retrieve meteorological buoys offshore the west coast used approximately 70-100-foot-long vessels, along with secondary smaller 6-15-foot zodiac boats. Site characterization survey vessels used offshore the west coast range from vessels 36' feet long that make day trips (e.g., the research vessel *Parke Snavely*) to vessels that are 211 feet and collect data for weeks at a time (e.g., *EV Nautilus*). Larger vessels are less likely to be used. If used, most likely only to be needed for the geophysical collection of 10 ft or greater sediment cores. Larger vessels are more likely to depart from the San Francisco Port Complex. BOEM estimated a maximal range of 200 vessel trips over the five-year period, assuming vessels under 100 feet and surveys utilized day trips and staying in the port during the duration of the particular deployment or survey.

Regarding vessel traffic, BOEM assumes lessees would likely survey the entire proposed lease area during a 5-year site assessment term. BOEM also assumes that during the site characterization and site assessment stages, lessees will likely stage from the Port of Humboldt Bay, approximately 32.2 km (20 mi) east of the Humboldt WEA. Vessel trips are anticipated for both site characterization and site assessment activities. The EA assumes the number of vessel trips would amount to no more than 500 total 10 hour survey days or 180 total 24 hour survey days throughout the 5 year assessment period (Section 2.2.1.5).

The number of round trips for project-related vessels over a 3-year period will range from 188–274 for 24-hour operations or 566–598 for 10-hour daily operations. An additional 21–30 round trips will be conducted over a 5-year period for the deployment, maintenance, and decommissioning of three metocean buoys. Vessel speeds during site characterization surveys within the Humboldt WEA will be limited to less than five knots (2.57 m/s), but transit speeds will vary. Considering the current annual level of vessel traffic around the Humboldt WEA including tug and tows, cargo ships and tankers, the project-related vessel traffic could increase the overall vessel traffic and risk of collision with marine mammals in the Humboldt WEA; however the required vessel strike avoidance measures, as well as reporting requirements, will minimize vessel interactions with protected species to negligible levels.

For additional information about BOEM's review of this issue in the EA, please see sections 2.2.1.5, 2.2.2.1, 3.2.2.1, and 3.6.2.1 as described in Table 2.



Potential impacts of Offshore renewable energy development on recreational boating will be analyzed once a COP has been submitted by a lessee. For example, BOEM will have to analyze access for recreational boating purposes based on proposed layouts of turbines and mooring line configurations submitted in the COP. Any additional mitigation measures informing safety around floating wind turbines will be discussed in detail in the COP, if one is received.

In order to be able to make informed decisions regarding a submitted COP, BOEM is working to complete studies relating to this issue. See the following for more information:

- **Completed (2012) — Identification of Outer Continental Shelf Renewable Energy Space-Use Conflicts and Analysis of Potential Mitigation Measures**

This study by Industrial Economics, Incorporated captured baseline space-use information on the Atlantic and Pacific Coasts; the Pacific study area included federal waters offshore Washington, Oregon, and northern California. It collected data on more than a dozen space uses (including commercial fishing and shipping), identified potential and known conflicts that may arise with renewable energy development, and provided insights on potential mitigation and avoidance measures.

Report (BOEM 2012-083): <https://espis.boem.gov/final%20reports/5203.pdf>

## ARTICLE 4 MARINE RESOURCES

### **Section 30230 Marine resources; maintenance**

*Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

#### *Analysis and Comment:*

The lease sale is not likely to result in the degradation of marine resources. Permanent or large-scale impacts to marine resources are not expected for site characterization and assessment activities, which may occur only after a lease sale. Noise from high-resolution geophysical (HRG) surveys, project vessels, and buoy moorings may alter bird, mammal, and fish behavior within the WEA, but the effect will be temporary, and is not expected to affect viability of regional populations. Moorings will be designed to minimize or remove entanglement risk for protected species. (See Tables 3 and 4 for more information.)

A spill of petroleum product could occur as a result of hull damage from allisions with a met buoy, collisions between vessels, accidents during the maintenance or transfer of offshore equipment and/or crew, or due to natural events (i.e., strong waves or storms). From 2000 to 2009, the average spill size for vessels other than tank ships and tank barges was 88 gallons (USCG 2011); should a spill from a vessel associated with the Proposed Action occur, BOEM anticipates that the volume would be similar. Diesel fuel is lighter than water and may float on

the water's surface or be dispersed into the water column by waves. Diesel would be expected to dissipate very rapidly, evaporate, and biodegrade within a few days (MMS 2007a). The NOAA's Automated Data Inquiry for Oil Spills (an oil weathering model) was used to predict dissipation of a maximum spill of 2,500 barrels, a spill far greater than what is assumed as a non-routine event during reasonably foreseeable site assessment and site characterization activities. Results of the modelling analysis showed that dissipation of spilled diesel fuel is rapid. The amount of time it took to reach diesel fuel concentrations of less than 0.05 percent varied between 0.5 and 2.5 days, depending on ambient wind (Tetra Tech Inc. 2015), suggesting that 88 gallons would reach similar concentrations much faster and limit the environmental impact of such a spill.

Vessels are expected to comply with USCG requirements relating to prevention and control of oil spills, and most equipment on the metocean buoys would mostly likely be powered by batteries charged by small wind turbines and solar panels. BOEM expects that each of the vessels involved with site assessment and site characterization activities would minimize the potential for a release of oils and/or chemicals in accordance with 33 CFR Parts 151, 154, and 155, which contain guidelines for implementation and enforcement of vessel response plans, facility response plans, and shipboard oil pollution emergency plans. Based on the size of the spill, it would be expected to dissipate very rapidly and would then evaporate and biodegrade within a day or two (at most), limiting the potential impacts to a localized area for a short duration.

The project-related vessel traffic could increase the overall vessel traffic and risk of collision with marine mammals in the Humboldt WEA. Off-lease site characterization and assessment activities are typically not regulated in Federal waters. However, subsequent to a BOEM lease, all survey and site assessment plans will be reviewed by BOEM and consultation with the NMFS. Before a SAP is approved, the lease holder must minimize or eliminate potential effects to protected marine mammal and sea turtle species. BOEM assumes that measures developed and enforced through years of conventional energy operations and refined through BOEM's renewable energy program and consultations with NMFS, will ensure inclusion of appropriate avoidance measures. Commonly used measures may include actions such as vessel speed limits, visual monitoring, and shutdown and reporting, are listed in the EA (Section 3.5.3, Appendix D).

For additional information about BOEM's review of this issue in the EA, please see sections 2.2.1.7, 2.2.2.2, 3.1, 3.4, 3.4.1.5, 3.5, 3.6, 3.6.2.1, 3.6.3, and Appendix D as described in Table 2.

Potential impacts of offshore renewable energy development on marine resources will be reviewed once a COP has been submitted by a lessee. To inform future reviews, BOEM plans to complete the studies mentioned below to better understand how the COP phase of development could affect marine resources. For example, potential impacts of anchoring floating wind turbines and laying transmission cables on marine resources will be analyzed when a COP is submitted with project design details.

In order to be able to make informed decisions regarding a submitted COP, BOEM is working

to complete studies relating to this issue. See the following for more information:

- **Ongoing (2020–2023) — ADRIFT: Spatial and Temporal Distribution of Cetaceans in the California Current Ecosystem Using Drifting Archival Passive Acoustic Monitoring**

This study by the National Oceanic and Atmospheric Administration will collect and analyze passive acoustic data in the California Current Ecosystem to improve understanding of the distribution of protected cetacean (whale, dolphin, and porpoise) species, including in the vicinity of wind energy Call Areas offshore northern and central California. It will employ a novel method of using drifting acoustic recorders, allowing for data to be collected over larger spatial and temporal scales compared to traditional methods. The findings will assist BOEM in assessing potential impacts and overall acoustic contribution of BOEM-regulated activities.

*Study Profile:* <https://www.boem.gov/PC-20-04>

- **Ongoing (2021–2023) — A Vulnerability Index to Scale Effects of Offshore Renewable Energy on Marine Mammals and Sea Turtles of the U.S. West Coast (VIMMS)**

This study by Southall Environmental Associates (SEA), Inc. will develop a vulnerability index based on the best available data and expert elicitation for marine mammals and sea turtles that occur offshore central and northern California, Oregon, and Washington. This index will assist in scaling the effects and prioritizing which of these species need to be considered in assessments of risk from offshore renewable energy infrastructure. It will develop a visual representation of the levels of concern for relevant species or species groups, which will also inform the selection of renewable energy sites.

*Study Profile:* <https://www.boem.gov/pc-21-04>

- **Ongoing (2019–2022) — Development of Computer Simulations to Assess Entanglement Risk to Whales and Leatherback Sea Turtles in Offshore Floating Wind Turbine Moorings, Cables, and Associated Derelict Fishing Gear Offshore California**

This study, in partnership with the National Oceanic and Atmospheric Administration's National Centers for Coastal Ocean Science, has developed morphologically and behaviorally accurate 3-D computer models of protected whale species (fin and humpback) and leatherback sea turtles. Two offshore floating wind mooring systems are currently under digital development. The whale and mooring system models will be integrated into simulations to visualize various potential interaction scenarios, including with associated derelict fishing gear. These simulations will assist BOEM in assessing the risk and potential severity of entanglement, and potentially identify mitigation measures to reduce any risk.

*Study Profile:* <https://www.boem.gov/pr-19-ent-profile/>

*Infographic:* <https://www.boem.gov/PR-19-ENT-Infographic>

- **Completed (2021) — Pacific Marine Assessment Partnership for Protected Species (PacMAPPS) — California Current**

This study was a partnership between BOEM, the National Marine Fisheries Service, and the U.S. Navy to conduct shipboard surveys of marine mammals, seabirds, and, to the extent possible, sea turtles in the Pacific. The data collected during a 2018 survey of the California

Current Ecosystem (Baja California, California, Oregon, and Washington) will help BOEM evaluate potential effects of proposed energy activities on protected species, that includes an ecosystem-level context, including in areas of interest for renewable energy development (California, Oregon) and for conventional energy decommissioning (California).

Report (BOEM 2021-013): [https://espis.boem.gov/final%20reports/BOEM\\_2021-013.pdf](https://espis.boem.gov/final%20reports/BOEM_2021-013.pdf)

- **Completed (2021) — Data Synthesis and High-resolution Predictive Modeling of Marine Bird Spatial Distributions on the Pacific OCS**

This study by the National Oceanic and Atmospheric Administration and U.S. Geological Survey synthesized 50 years of seabird survey data off California, Oregon, and Washington, and combined it with information about environmental and oceanographic conditions to predict the occurrence and abundance of seabirds at sea. The resulting predictive maps of seabird distributions will provide critical information for renewable energy siting and evaluation of potential environmental effects of management actions and project approvals.

Report (BOEM 2021-014): [https://www.boem.gov/BOEM\\_2021-014](https://www.boem.gov/BOEM_2021-014)

- **Completed (2020) — Cross-Shelf Habitat Suitability Modeling**

This study by the National Oceanic and Atmospheric Administration and Oregon State University created two new habitat suitability models for deep water corals, sponges, and soft-sediment macrofaunal species offshore the U.S. West Coast. These habitat suitability models extend across the continental shelf and out to 1200 meter depth. This study included field validations and comparisons with previous models, and improves the predictive capabilities of important seafloor habitats and benthic communities.

First Report (BOEM 2020-008): [https://espis.boem.gov/final%20reports/BOEM\\_2020-008.pdf](https://espis.boem.gov/final%20reports/BOEM_2020-008.pdf)

Second Report (BOEM 2020-021): [https://espis.boem.gov/final%20reports/BOEM\\_2020-021.pdf](https://espis.boem.gov/final%20reports/BOEM_2020-021.pdf)

- **Completed (2020) — Seabird and Marine Mammal Surveys off the Northern California, Oregon and Washington Coasts**

This study by the U.S. Geological Survey and U.S. Fish and Wildlife Service provided up-to-date information on the types, distribution, abundance, seasonal variation, and habitat use of marine mammals and seabirds along the northern California, Oregon, and Washington coasts. Aerial surveys using state-of-the-art technology focused on the most likely areas of OCS renewable energy development. Additional work determined ecosystem connections and species-habitat associations.

First Report (BOEM 2014-003): <https://espis.boem.gov/final%20reports/5427.pdf>

Second Report (BOEM 2020-012): [https://espis.boem.gov/final%20reports/BOEM\\_2020-012.pdf](https://espis.boem.gov/final%20reports/BOEM_2020-012.pdf)

Webinar: <https://www.boem.gov/Science-Exchange-1/>

- **Completed (2018) — Humpback Whale Encounter with Offshore Wind Mooring Lines and Inter-Array Cables**

This study by the U.S. Department of Energy/Pacific Northwest National Laboratory compiled information about whale movements (e.g., dive depths and swimming speed) and created a three-dimensional video animation of how whales may move through a hypothetical offshore

floating wind farm. This visual simulation will help characterize the risk of whale encounters with mooring lines and electrical cables used in offshore floating wind projects.

Report (BOEM 2018-065): <https://www.boem.gov/BOEM-2018-065/>

Video Animation: <https://www.boem.gov/Humpback-Whales-Floating-Wind/>

- **Completed (2016) — Using Ongoing Activities as Surrogates to Predict Potential Ecological Impacts from Marine Renewable Energy**

BOEM and the U.S. Department of Energy partnered on this study to identify and analyze data from ongoing projects and activities (surrogates) with stressors and receptors similar to those expected from marine renewable energy projects. Two reports examined potential impacts of electromagnetic fields from operating power cables, and one examined mooring configurations of offshore surrogates such as aquaculture facilities and oceanographic buoys as fish attracting devices.

First Report (BOEM 2015-021): <https://www.boem.gov/2015-021/>

Second Report (BOEM 2015-042): <https://www.boem.gov/2015-042/>

Third Report (BOEM 2016-041): <https://www.boem.gov/2016-041/>

- **Completed (2014) — Survey of Benthic Communities Near Potential Renewable Energy Sites Offshore the Pacific Northwest**

This study by Oregon State University provided baseline information about the seafloor environment and the types and distribution of benthic invertebrates in areas of potential renewable energy development on the Washington, Oregon, and northern California OCS. Knowledge of species-habitat relationships will allow for prediction of seafloor communities beyond those sampled in this study.

Report (BOEM 2014-662):

Volume 1: <https://espis.boem.gov/final%20reports/5453.pdf>

Volume 2: <https://espis.boem.gov/final%20reports/5454.pdf>

Webinar: <https://www.boem.gov/Science-Exchange-4/>

### **Section 30233 Diking, filling or dredging; continued movement of sediment and nutrients**

*(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*

*(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*

*(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*

*(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.*

*(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.*

*(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.*

*(6) Restoration purposes.*

*(7) Nature study, aquaculture, or similar resource dependent activities.*

*(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for these purposes to appropriate beaches or into suitable longshore current systems.*

*(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.*

*For the purposes of this section, "commercial fishing facilities in Bodega Bay" means that not less than 80 percent of all boating facilities proposed to be developed or improved, where such improvement would create additional berths in Bodega Bay, shall be designed and used for commercial fishing activities.*

*(d) Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients that would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for these purposes are the method of placement, time of year of placement, and sensitivity of the placement area.*

#### *Analysis and Comment:*

Vessel anchoring, coring, and collection of bottom samples associated with geotechnical surveys and benthic sampling could cause localized seafloor disturbance temporarily increasing turbidity and reducing water clarity by resuspension of sediments into the water column. Collection of bottom samples is estimated to impact up to 10m<sup>2</sup> (108 ft<sup>2</sup>) per sample, although the core or grab sample extraction area may be much smaller. Short-term and localized resuspension of seafloor sediment into the water column is not expected to result in any lasting impact to water or sediment quality in either the WEA or along any projected transmission cable route. Upon cessation of the sampling, suspended sediment would



immediately begin to settle to the seafloor with water quality promptly returning to ambient conditions.

Anchoring, installation, and decommissioning of meteorological buoys results in a greater disturbance to the seafloor than benthic sampling, consequently impacting water quality over a larger area. Anchors for boat-shaped and discus-shaped buoys have a footprint of about 0.55 m<sup>2</sup> (6 ft<sup>2</sup>) and an anchor sweep impact area of approximately 3.4 hectares (ha) (8.5 acres (ac)). A temporary resuspension of sediments into the water column would be expected during the one-day met buoy anchoring, installation, and decommissioning activities. This projected short-term duration would result in no lasting impact to water or sediment quality with ambient conditions likely throughout the operation and following decommissioning of the buoys. In the unlikely event of recovering lost equipment, seafloor disturbance and the resultant resuspension of sediments into the water column would be expected during the recovery operation. Transient and localized resuspension of sediment would temporarily impact water quality, but a return to ambient conditions would be expected immediately following the termination of the recovery operation.

For additional information about BOEM's review of this issue in the EA, please see section 2.2.1.9 as described in Table 2.

Once a COP has been submitted by a lessee, the anchoring methods proposed which may include diking, filling, or dredging of open coastal waters will be reviewed by BOEM. BOEM will review the proposed plan submitted by the lease holder for anchoring wind turbines and laying transmission cables and will apply mitigation appropriate measures to minimize adverse environmental effects.

In order to be able to make informed decisions regarding a submitted COP, BOEM is working to complete studies relating to this issue. See the following for more information:

- **Completed (2020) - Comparison of Environmental Effects from Different Offshore Wind Turbine Foundations**

The development of the offshore wind industry along the Atlantic coast of the United States has raised concern from the public and throughout New England and the mid-Atlantic, about the potential effects of offshore wind foundations on the marine environment. This white paper provides a summary of currently available science that addresses potential effects of offshore wind foundations on the marine environment and provides a comparison of different foundation types. This summary has been developed to provide information to stakeholders who are concerned about the effect of foundations on marine resources and to explain which foundations are suitable to use under certain conditions.

(Report BOEM 2020-041)

Report: <https://www.boem.gov/sites/default/files/documents/environment/Wind-Turbine-Foundations-White%20Paper-Final-White-Paper.pdf>

- **Completed (2019) - DOI Partnership - Distinguishing between Human and Natural Causes of Changes in Nearshore Ecosystems Using Long-term Data from DOI Monitoring Programs**

Monitoring and predicting the potential impacts of outer continental shelf (OCS) energy production on nearshore ecosystems requires an ability to distinguish between changes caused by natural processes and those caused by human activities. The ability to distinguish such changes in turn requires long-term, spatially extensive data to describe natural patterns of temporal and spatial variation in species abundances and the environmental factors that influence them. This is particularly true for giant kelp forests, which are highly productive and diverse ecosystems in temperate regions that fluctuate greatly in space and time. These systems are highly valued for the milieu of goods and services they provide to society and there is general interest in minimizing anthropogenic activities that adversely affect them. The purpose of this project was to partner with agencies in the Department of the Interior (DOI) to document, integrate and analyze data produced from long-term kelp forest monitoring programs to improve our understanding of the causes and consequences of change in these iconic ecosystems.

(BOEM Report 2019-063)

Report: <https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/environmental-science/BOEM-2019-063.pdf>

### **Section 30231 Biological productivity; water quality**

*The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

#### *Analysis and Comment:*

The Clean Water Act (CWA) is the principal law governing pollution control and water quality of the United States' waterways and is primarily overseen by the U.S. Coast Guard (USCG) and the Environmental Protection Agency (EPA). The CWA establishes conditions and permitting for discharges of pollutants into the waters of the United States under the National Pollution Discharge Elimination System (NPDES) found here - <https://www.epa.gov/npdes> and gave the Environmental Protection Agency (EPA) the authority to implement pollution control programs such as setting wastewater standards for industry and setting water quality standards for all contaminants in surface waters. Regulations governing the NPDES program are contained in 40 CFR Part 122.

Routine activities associated with post-lease site characterization and assessment activities for the Humboldt WEA impacting coastal and marine waters within the Exclusive Economic Zone of the United States of America (see United Nations Convention on the Laws of the Seas, Part V Exclusive Economic Zone, Article 57) and sediment quality include vessel discharges (including bilge and ballast water, and sanitary waste under an EPA issued NPDES permit) geotechnical and benthic sampling, and installation and decommissioning of meteorological buoys. Oil and petroleum hydrocarbon spills are non-routine events that could impact water



quality.

The ecosystem here is defined as the soft and hard substrates at depths between 400 m and 1,500 m (1,312 ft and 4,921 ft) and includes a few meters of the water column immediately above the seabed. The WEA benthos is entirely comprised of outer shelf and upper slope habitats. Within the larger study region, soft sediments cover most of the area with rock outcrops forming a minority of substrates (Goldfinger et al. 2014). Key structuring processes for invertebrate communities show cross-shelf patterns (BOEM report; Henkel and Gilbane 2020). For example, sediments on the continental shelf consist of sandy habitats nearshore and are dominated by filter-feeding organisms. Progressively deeper environments of silt and clay sediments follow, along with an increase in deposit feeders. At the shelf break, where the continental slope begins, the sediment becomes completely silt and clay (e.g. mud) and the community is dominated by deposit feeders (BLM 1980). Invertebrate prey serve as a forage base for larger piscine predators, some of which are commercially harvested, and include a variety of flatfishes (e.g., Dover and petrale soles), rays (e.g. longnose and California rays), thornyheads, sablefish, and hagfishes.

The WEA seafloor features include a rock ridge toward the middle, and a seafloor slump and Eel Canyon margins in the southern portion of the WEA. Structure-forming invertebrates such as corals and sponges provide both habitat and food for other species. At all depths, fish assemblages at rock outcrops consist primarily of rockfishes (*Sebastes* spp.). Special habitats in the region include seeps and their associated chemosynthetic communities (Kennicutt, et al. 1989, USGS 2020) and submarine canyons (BLM 1980; MBARI 2020).

Vessel anchoring, coring, and collection of bottom samples associated with geotechnical surveys and benthic sampling could cause localized seafloor disturbance temporarily increasing turbidity and reducing water clarity by resuspension of sediments into the water column. Collection of bottom samples is estimated to impact up to 10m<sup>2</sup> (108 ft<sup>2</sup>) per sample, although the core or grab sample extraction area may be much smaller. Short-term and localized resuspension of seafloor sediment into the water column is not expected to result in any lasting impact to water or sediment quality in either the WEA or along any projected transmission cable route. Upon cessation of the sampling, suspended sediment would immediately begin to settle to the seafloor with water quality promptly returning to ambient conditions.

Anchoring, installation, and decommission of meteorological buoys results in a greater disturbance to the seafloor than benthic sampling, consequently impacting water quality over a larger area. Anchors for boat-shaped and discus-shaped buoys have a footprint of about 0.55 m<sup>2</sup> (6 ft<sup>2</sup>) and an anchor sweep impact area of approximately 3.4 hectares (ha) (8.5 acres (ac)). A temporary resuspension of sediments into the water column would be expected during the one-day met buoy anchoring, installation, and decommissioning activities. This projected short-term duration would result in no lasting impact to water or sediment quality with ambient conditions likely throughout the operation and following decommissioning of the buoys. In the unlikely event of recovering lost equipment, seafloor disturbance and the resultant resuspension of sediments into the water column would be expected during the recovery operation. Transient and localized resuspension of sediment would temporarily impact water

quality, but a return to ambient conditions would be expected immediately following the termination of the recovery operation.

Impacts to water quality from vessel discharges, sediment disturbance from geotechnical surveys, benthic sampling, met buoy installation/decommissioning, recovery of lost equipment, and oil spills in coastal and marine water quality would be minor, with any impacts being small in magnitude, highly localized, and short-term.

For additional information about BOEM's review of this issue in the EA, please see sections 2.2.1.9, 2.2.2.2, 3.3, and 3.6.2.1 as described in Table 2.

Potential impacts to water quality caused by offshore wind energy development will be reviewed once a COP has been submitted by a lessee. Activities that would be analyzed include anchoring of floating wind turbines and laying transmission cables and their potential to cause turbidity that may disrupt sediment and cause it to enter the water column. The analysis will consider the nature and duration of potential impacts.

In order to be able to make informed decisions regarding a submitted COP, BOEM is working to complete studies relating to this issue. See the following for more information:

- **Ongoing (2020–2023) — Over Water Migration Movements of Black Brant**

This study by the U.S. Geological Survey will increase BOEM's understanding of the temporal and spatial distribution of Black Brant offshore of the Pacific coast to evaluate potential effects of offshore wind energy development on them. BOEM's objective is to collect data on trans-oceanic and coastal migration routes for Black Brant along the Pacific coast of North America to identify their spatial location, timing, and flight altitudes. The results will help determine if the routes overlap with proposed Call Areas for wind energy development off the Pacific coast.

*Study Profile:* <https://www.boem.gov/pc-20-01-profile/>

- **Completed (2016) - Determining the Infrastructure Needs to Support Offshore Floating Wind and Marine Hydrokinetic Facilities on the Pacific West Coast and Hawaii**

As the offshore renewable industry continues to develop and grow, the capabilities of established port facilities on the Pacific west coast of the United States (U.S.) and the Hawaiian islands of Oahu, Maui, and Kauai need to be assessed as to their ability to support the expanding offshore floating wind (OFW) and marine hydrokinetic industries (MHK). The Pacific Coast is characterized by rapidly increasing water depths that exceed the feasible limits of fixed platforms on the outer continental shelf (OCS) making the west coast more suitable to floating wind technology. This study shall assess current infrastructure requirements and projected changes to port facilities that may be required to support the OFW and MHK industry for Pacific west coast harbors and ports. The assessment of the infrastructure and available support facilities, vessels, and equipment necessary to support offshore renewable energy activities will aid in the environmental reviews and evaluations that will be required of future projects. Information obtained from this study and identified in this report will aid in the development of mitigation measures designed and initiated to minimize effects from offshore

renewable energy activities to ensure environmentally safe and sound operations. Understanding the infrastructure needs of the offshore renewable industry will help to identify the port-related requirements for OFW and MHK development and assess the utilization of the available marine equipment and facilities along the U.S. West Coast.

(Report BOEM 2016-011)

Report: <https://www.boem.gov/BOEM-2016-011/>

### **Section 30234.5 Economic, commercial, and recreational importance of fishing**

*The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.*

#### *Analysis and Comment:*

Impacts associated with the lease sale and subsequent site assessment and characterization phase are expected to be short in duration and temporary in nature and are not expected to have any lasting effects. Offshore wind energy development in the coming decade, however, is likely to involve the siting, construction, and operation of wind turbines in the leased areas. BOEM will review how these activities that would be described in a submitted COP by a lessee may affect fishing through increased collisions, entanglement or loss/damage of fishing gear, navigation hazards including transmission cable infrastructure, hydrodynamic disturbance, local migration disturbance, and space-use conflicts. The analysis will look at how the presence of offshore structures may alter some habitats by potentially attracting some fish species. For example, habitats dominated by soft or sandy bottoms, structures may create new hard surfaces that may become a habitat for benthic resources that generate some beneficial impacts on local ecosystems. Stakeholder concerns, potential environmental consequences, and appropriate mitigation measures will be evaluated throughout all phases of offshore wind development.

The impact analysis for ascertaining space-use conflicts with commercial fishing considered the vessels used for site assessment and characterization activities, as well as with marine shipping, and marine protected areas. Potential effects to commercial fishing from SAP activities are expected to be temporary in duration (five years or less), and primarily associated with the data collection buoy(s). The Dungeness Crab is the largest fishery by revenue into the Port of Humboldt Bay and nearby ports of Trinity Head and Crescent City Harbors. Ocean (pink) shrimp were also an important landing in 2019. Both fisheries are nearshore of the Humboldt WEA and vessel routes would cross these fishing areas transiting to and doing surveys. Other species are fished at depths within the WEA and cable corridors. Lessees will develop a SAP including measures to minimize adverse effects from their site characterization and assessment activities.

Mitigation measures considered in the EA (Appendix D) reduce space-use conflicts and center on avoidance and procedures to increase navigation safety. Many of the region's important fishing grounds are in depths less than 500 m (1,640 ft), so a buoy within the WEA (500 m to 1,100 m (1,640 ft to 3,609 ft) depth) decreases conflict with the fishing industry due to its offshore location. At the end of the 5-year term data collection instrumentation will be decommissioned and large marine debris objects removed. Similar buoys deployed on

offshore the west coast are deployed for one year. BOEM is analyzing a 5-year deployment in order to conservatively estimate potential impacts.

Vessel operators are required to comply with pollution regulations outlined in 33 CFR § 151.51-77 so only accidental loss of trash and debris is anticipated. Other fisheries operating within the WEA may also be affected by buoy emplacement, but the impact is expected to be minimal because the relative effort for these non-trawl fisheries has historically been low, and the deployment and retrieval of other gears may have more maneuverability compared to trawls. To enhance navigational safety, lessees will develop a SAP that will include site-specific measures to mitigate navigational concerns, which could become terms and conditions of SAP approval. Such measures may include a Local Notice to Mariners, vessel traffic corridors, lighting specifications, incident contingency plans, or other appropriate measures.

BOEM and the State have engaged in robust stakeholder engagement activities in support of a potential renewable energy lease sale. As mentioned in the Background section above, the renewable energy Task Force includes members from federal, state, and local agencies, as well as federally recognized tribes and provides critical information to the assessment of potential renewable energy development offshore California and to BOEM's decision-making process for leasing areas of the outer continental shelf and permitting offshore renewable energy projects. Between February 2017 and September 2018, BOEM and the State held 12 meetings with California tribes and 67 meetings with elected officials, commercial fishing community, mariners, academics and environmental groups, and the public, summarized in this Outreach Summary Report found here - <https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/CA/Outreach-Summary-Report-September-2018.pdf>. Between October 2018 and December 2020, BOEM and the State continued to engage with and receive input from tribal governments, local, state, and federal agencies, stakeholders, and the public, holding 14 meetings (Outreach Summary Report Addendum found here - <https://www.boem.gov/renewable-energy/state-activities/offshore-wind-outreach-addendum>).

BOEM continues to engage with tribes and Non-Governmental Organizations (NGOs) about economic and fishing concerns, participating in multiple meetings with stakeholders. In the fourth quarter of 2021, the State of California led three commercial fishing focused meetings in person with small groups on the North Coast. BOEM nationally is developing best management practices and mitigation measures for analysis and decision making under the NEPA, associated with wind energy development and activities on the Outer Continental Shelf (OCS), as they relate to interaction with commercial and recreational fishing practices. To address future conflicts between fishing and wind energy projects within the OCS, BOEM held a virtual meeting in December 2021 to hear from the commercial and recreational fishing industries on the US West Coast. With both efforts, BOEM and the State of California are working on responses to the comments received and planning for future engagement in the Spring of 2022.

For additional information about BOEM's review of this issue in the EA, please see section 3.7 as described in Table 2.

If a COP is submitted by a lessee, the siting, construction, and operation of wind turbines in the leased areas will be evaluated by BOEM. BOEM will review how these activities may affect recreation and tourism and analyze potential concerns including increased collisions, light pollution, entanglement or loss/damage of fishing gear, navigation hazards including transmission cable infrastructure, hydrodynamic disturbance, local migration disturbance, and space-use conflicts. If a COP is submitted, consideration of the effects on recreation and tourism through fish aggregation, habitat conversion, or other factors of proposed offshore wind development would be reviewed.

In order to be able to make informed decisions regarding a submitted COP, BOEM will use completed studies and is working to complete additional studies relating to this issue. See the following for more information:

- **Ongoing (2016-2022) — Scenarios for Offshore Renewable Energy along the Central California Coast**

This study by California Polytechnic State University, San Luis Obispo is delineating feasible offshore renewable energy scenarios along the central coast of California. Part of this work related to fishing involves data sharing with State and Federal fishing databases to display Vessel Monitoring System and landings data in a visual and public format. These data were reviewed by multiple fishing groups and will be finalized in 2022.

Study Profile: <https://www.boem.gov/pc-16-01/>

Journal Article: <https://www.sciencedirect.com/science/article/pii/S096456912100096X>

- **Ongoing (2019–2022) — Development of Computer Simulations to Assess Entanglement Risk to Whales and Leatherback Sea Turtles in Offshore Floating Wind Turbine Moorings, Cables, and Associated Derelict Fishing Gear Offshore California**

This study, in partnership with the National Oceanic and Atmospheric Administration's National Centers for Coastal Ocean Science, has developed morphologically and behaviorally accurate 3-D computer models of protected whale species (fin and humpback) and leatherback sea turtles. Two offshore floating wind mooring systems are currently under digital development. The whale and mooring system models will be integrated into simulations to visualize various potential interaction scenarios, including with associated derelict fishing gear. These simulations will assist BOEM in assessing the risk and potential severity of entanglement, and potentially identify mitigation measures to reduce any risk.

Study Profile: <https://www.boem.gov/pr-19-ent-profile/>

Infographic: <https://www.boem.gov/PR-19-ENT-Infographic>

- **Completed (2010) — Pacific Coast Fisheries GIS Resource Database**

This study by the U.S. Geological Survey compiled marine fisheries and coastal spatial data from various wildlife agencies in California, Oregon, and Washington and integrated it into a single, comprehensive GIS-based system. The database includes information about Pacific Coast fish, fisheries, and active fishing, as well as southern California seabirds and marine mammals.

Database: <https://www.usgs.gov/centers/werc/science/pacific-coast-fisheries-gis-resource-database>

- **Completed (2011) — Effects of EMF from Undersea Power Cables on Elasmobranchs and Other Marine Species**

This study by Normandeau Associates synthesized data and information about subsea power-transmission cables and the sensitivity of marine organisms to electromagnetic fields (EMF) produced by the cables. It produced a database of information about potentially affected species of elasmobranchs (sharks and rays), other fishes, marine mammals, sea turtles, and invertebrates. It also recommended future research priorities and potential mitigation measures.

Report (BOEMRE 2011-09): <https://espis.boem.gov/final%20reports/5115.pdf>

- **Completed (2016) — Renewable Energy in situ Power Cable Observation**

This study by the University of California, Santa Barbara measured the strength and variability of electromagnetic fields (EMF) along subsea power transmission cables in the Santa Barbara Channel, which are similar to cables used for offshore renewable energy inter-device electrical connections. It also compared fish communities in cable versus natural habitats and determined the potential effectiveness of cable burial as a mitigation measure to decrease EMF.

Report (BOEM 2016-008): <https://espis.boem.gov/final%20reports/5520.pdf>

Webinar: <https://www.boem.gov/Science-Exchange-3/>

- **Completed (2016) — Using Ongoing Activities as Surrogates to Predict Potential Ecological Impacts from Marine Renewable Energy**

BOEM and the U.S. Department of Energy partnered on this study to identify and analyze data from ongoing projects and activities (surrogates) with stressors and receptors similar to those expected from marine renewable energy projects. Two reports examined potential impacts of electromagnetic fields from operating power cables, and one examined mooring configurations of offshore surrogates such as aquaculture facilities and oceanographic buoys as fish attracting devices.

First Report (BOEM 2015-021): <https://www.boem.gov/2015-021/>

Second Report (BOEM 2015-042): <https://www.boem.gov/2015-042/>

Third Report (BOEM 2016-041): <https://www.boem.gov/2016-041/>

- **Ongoing (2021–2023) — Using Outcomes from Marine Protected Area Implementation to Infer Potential Socioeconomic Consequences of Offshore Energy Development to Commercial Fisheries**

This study by the University of California, Santa Barbara will describe the detectable socioeconomic consequences experienced by the commercial fishing industry due to the implementation of formal or de facto marine protected areas (MPAs) in California. This information will inform impact analyses of prospective offshore energy projects and decommissioning decisions.

Study Profile: <https://www.boem.gov/pc-21-02>

- **Completed (2012) — Identification of Outer Continental Shelf Renewable Energy Space-Use Conflicts and Analysis of Potential Mitigation Measures**

This study by Industrial Economics, Incorporated captured baseline space-use information on



the Atlantic and Pacific Coasts; the Pacific study area included federal waters offshore Washington, Oregon, and northern California. It collected data on more than a dozen space uses (including commercial fishing and shipping), identified potential and known conflicts that may arise with renewable energy development, and provided insights on potential mitigation and avoidance measures.

Report (BOEM 2012-083): <https://epis.boem.gov/final%20reports/5203.pdf>

## ARTICLE 5 LAND RESOURCES

### **Section 30240 Environmentally sensitive habitat areas; adjacent developments**

- (a) *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
- (b) *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

#### *Analysis and Comment:*

The lease sale is not likely to result in the degradation of sensitive habitat areas. Impacts to sensitive habitat areas are not expected for site characterization and assessment activities. Noise from HRG surveys and post-lease site assessment and site characterization activities vessels may alter fish behavior within the WEA, but the effect will be temporary, and is not expected to affect viability of regional populations. Any impacts that could occur would be from accidental events, such as vessel grounding or collision.

Geotechnical surveys (vibracores, piston cores, gravity cores) related to offshore renewable energy activities are typically numerous, but very brief, sampling activities that introduce relatively low levels of sound into the environment (see Table 6). General vessel noise is produced from vessel engines and dynamic positioning to keep the vessel stationary while equipment is deployed, and sampling conducted. Recent analyses of the potential impacts to protected species exposed to noise generated during geotechnical survey activities determined that effects to protected species from exposure to this noise source are extremely unlikely to occur (NMFS, 2021).

The disturbance distances to 160 dB re 1  $\mu$ Pa RMS for marine mammals and 175 dB re 1  $\mu$ Pa RMS for sea turtles were calculated using a spherical spreading model (20 LogR). These results describe maximum disturbance exposures for protected species to each potential sound source.

For additional information about BOEM's review of this issue in the EA, please see sections 2.2.1.6, 2.2.1.7, and 3.6.2.1 as described in Table 2.

*Table 6 Summary of Maximum Disturbance Distances for Protected Marine Mammal Species from Mobile HRG Sources*

towed at a Speed of 4.5 knots

HRG SOURCE	DISTURBANCE DISTANCE (m)					
	Low Frequency (e.g., Baleen Whales) <sup>a</sup>	Mid-Frequency (e.g., Dolphins and Sperm Whales) <sup>a</sup>	High Frequency (e.g., Porpoise)	Phocids (true seals)	Otariids (sea lions and fur seals)	Sea Turtles
<b>Mobile, Impulsive, Intermittent Sources</b>						
Boomers, Bubble Guns (4.3 kHz)	224	224	224	224	224	40
Sparkers (2.7 kHz)	502	502	502	502	502	90
Chirp Sub-Bottom Profilers (5.7 kHz)	282	282	282	282	282	50
<b>Mobile, Non-Impulsive, Intermittent Sources</b>						
Multi-beam Echosounder (100 kHz)	NA	370	370	NA	NA	NA
Multi-beam Echosounder (>200 kHz)	NA	NA	NA	NA	NA	NA
Side-scan Sonar (>200 kHz)	NA	NA	NA	NA	NA	NA

Notes:

<sup>a</sup> PTS injury distances for listed marine mammals were calculated with NOAA’s sound exposure spreadsheet tool using sound source characteristics for HRG sources in Crocker and Fratantonio (2016).

NA = not applicable due to the sound source being out of the hearing range for the group.

The potential effects of offshore wind energy development on environmentally sensitive habitats will be evaluated if a COP is submitted by a lessee and the project information is available. Activities which would be reviewed include anchoring floating wind turbines and laying transmission cables.

In order to be able to make informed decisions regarding a submitted COP, BOEM is working to complete studies relating to this issue. Please see the studies listed below and the studies listed in Section 30230 Marine Resources: Maintenance:

- **Ongoing (2020-2023) — Offshore Acoustic Bat Study along the California Coastline**

This study by the the U.S. Geological Survey will expand monitoring of seasonal bat migration activities offshore and along the coast of California and will produce regional datasets. It will quantify the extent and seasonality of bat activity in the nearshore area of the California coast and increase BOEM’s understanding of the temporal and spatial distribution of bats in the area to evaluate the potential effects of offshore wind energy development on them.

Study Profile: <https://www.boem.gov/PC-19-03-profile>

- **Ongoing (2020–2023) — ADRIFT: Spatial and Temporal Distribution of Cetaceans in the California Current Ecosystem Using Drifting Archival Passive Acoustic Monitoring**

This study by the National Oceanic and Atmospheric Administration will collect and analyze passive acoustic data in the California Current Ecosystem to improve understanding of the distribution of protected cetacean (whale, dolphin, and porpoise) species, including in the



vicinity of wind energy Call Areas offshore northern and central California. It will employ a novel method of using drifting acoustic recorders, allowing for data to be collected over larger spatial and temporal scales compared to traditional methods. The findings will assist BOEM in assessing potential impacts and overall acoustic contribution of BOEM-regulated activities. Study Profile: <https://www.boem.gov/PC-20-04>

### **Section 30244 Archaeological or paleontological resources**

*Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.*

#### *Analysis and Comment:*

Bottom-disturbing activities have the potential to affect historic properties. However, existing regulatory measures, information generated for a lessee's initial site characterization activities, and the unanticipated discoveries requirement make the potential for bottom-disturbing activities (e.g., coring, anchoring, installation of meteorological buoys) to have an adverse effect (i.e., cause significant impact or damage) on historic properties very low. Visual impacts to onshore cultural resources from meteorological structures and vessel traffic associated with surveys and structure construction are expected to be negligible and temporary in nature.

Historic properties are defined as any pre-contact period or historic period district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) (54 USC § 300308). This can also include properties of traditional religious and cultural importance to a Tribe that meet criteria for inclusion in the NRHP (54 USC § 302706). Both site characterization (i.e., HRG survey and geotechnical exploration) and site assessment activities (i.e., installation of meteorological buoys) have the potential to affect historic properties. Construction activities associated with the placement of site assessment structures that disturb the ocean bottom have the potential to affect historic properties on or under the seabed. Vessel traffic associated with surveys and construction, although indistinguishable from existing ocean vessel traffic could, at times, be visible from coastal areas, potentially impacting historic properties onshore. Similarly, although indistinguishable from other lighted structures on the OCS, some meteorological buoys might be visible from historic properties onshore.

Site characterization activities include shallow hazards assessments, and geological, geotechnical, archaeological, and biological surveys, and may include installation, operation, and decommissioning of data collection buoys. HRG surveys do not impact the seafloor and therefore have no ability to impact cultural resources. Geotechnical testing and sediment sampling does impact the bottom and, therefore, does have the ability to impact cultural resources. However, if the Lessee conducts HRG surveys prior to conducting geotechnical/sediment sampling, the Lessee may avoid impacts on historic properties by relocating the sampling activities away from potential cultural resources. Therefore, BOEM would require the Lessee to conduct HRG surveys prior to conducting geotechnical/sediment

sampling, and, when a potential historic property is identified, the Lessee will be required to avoid it.

While non-federally recognized tribes are not able to formally participate on the California Task Force, the State of California has an obligation to consult with all California Native American tribes regardless of federal recognition. As part of that effort, the California Energy Commission has taken the lead on providing information to, and gathering initial input from, both federally recognized and non-recognized tribes in California on offshore wind planning efforts.

Initial outreach activities focused on tribes whose current and/or ancestral territories are along the coast. The State hosted five regional informational meetings between November 21, 2016 and May 18, 2017 and a sixth webinar informational meeting for all California tribes on June 30, 2017.

Subsequent to the informational meetings, the Governor's Tribal Advisor and the Energy Commission formed a State Tribal Offshore Renewable Energy Working Group (Working Group) to gain input from federally and non-federally recognized tribes, inform the California offshore renewable energy planning efforts, and simplify the exchange of information between the State and tribes. The Working Group held its first webinar meeting on June 30, 2017 and a second on September 5, 2018.

Engagement with Tribal governments between October 2018 and December 2021 occurred as bilateral meetings between BOEM and individual Tribes; as joint meetings among the CEC other State agencies, BOEM, and Tribes on the North Coast and Central Coast; and as a multi-Tribe Section 106 consultation webinar with BOEM. Input received during several Tribal meetings included expressions of key interests, concerns, and recommendations for offshore wind development in California.

Although site assessment activities have the potential to affect cultural resources either on or below the seabed or on land, existing regulatory measures, coupled with the information generated for a Lessee's initial site characterization activities and presented in the Lessee's SAP, make the potential for bottom-disturbing activities (e.g., anchoring, installation of meteorological buoys) to cause damage to cultural resources very low.

A National Park Service unit and numerous properties listed on the National Register of Historic Properties (National Register) are located along the coastline near the Humboldt WEA. These include, but are not limited to: Redwood National and State Parks; Tolowot, Gunther Island Site 67; Humboldt Lagoons; Dry Lagoon; Patrick's Point and Del Norte Coast Redwoods State Parks; Trinidad Head Lighthouse; and Punta Gorda Lighthouse. Also located near the WEA 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). Regulations at 30 CFR § 585.621 states that a COP must be submitted in such a fashion that "[d]oes not cause undue harm or damage to natural resources; life (including human and wildlife);

property; the marine, coastal, or human environment; or sites, structures, or objects of historical or archaeological significance.”

For additional information about BOEM’s review of this issue in the EA, please see section 4.3.5 as described in Table 2.

In order to make certain that all archaeological or paleontological resources are properly identified, so that mitigation measures can be appropriately determined and applied, please see the studies listed below for more information about BOEM’s efforts to inform future COP decision-making.

- **Ongoing (2021–2024) — West Coast Tribal Cultural Landscapes**

This study by the Udall Foundation’s John S. McCain III National Center for Environmental Conflict Resolution will develop cultural landscape assessments for several West Coast Tribal Nations with ties to areas of potential renewable energy development offshore California and Oregon. It will improve understanding about cultural and archaeological resources and places of importance and assist in assessing potential impacts of offshore renewable energy development.

Study Profile: <https://www.boem.gov/pc-21-01>

- **Completed (2013) — Inventory and Analysis of Coastal and Submerged Archaeological Site Occurrence on the Pacific OCS**

This study by ICF International assessed the potential for submerged prehistoric sites on the California, Oregon, and Washington Outer Continental Shelf (OCS), and identified coastal properties and significant coastal cultural resources subject to potential visual impacts from offshore energy development. It also produced a proprietary inventory of known, reported, and potential historic shipwrecks.

Report (BOEM 2013-0115): <https://espis.boem.gov/final%20reports/5357.pdf>

- **Completed (2014) — Renewable Energy Visual Evaluations**

This study by the University of Arkansas and Argonne National Laboratory developed a GIS-based landscape-visualization tool to assess the potential viewshed effects from offshore renewable energy facilities. Visualizations included wind energy structures, lighting, and meteorological conditions.

Journal Article: [https://blmwyomingvisual.anl.gov/docs/EnvPractice\\_Offshore%20Wind%20Turbine%20Visibility%20and%20Visual%20Impact%20Threshold%20Distances.pdf](https://blmwyomingvisual.anl.gov/docs/EnvPractice_Offshore%20Wind%20Turbine%20Visibility%20and%20Visual%20Impact%20Threshold%20Distances.pdf)

Webinar: <https://www.boem.gov/Science-Exchange-5/>

- **Completed (2017) — Characterizing Tribal Cultural Landscapes**

This study by the National Oceanic and Atmospheric Administration used three case studies from Native American communities in California, Oregon, and Washington. It developed a methodology and process that may help all coastal tribes determine significant archaeological and cultural resources. This information will likely be important to future consideration of marine renewable energy projects.

Guidance Document (BOEM 2015-047): <https://www.boem.gov/2015-047/>

Report (BOEM 2017-001):

Volume I: <https://www.boem.gov/BOEM-2017-001-Volume-1/>

Volume II: <https://www.boem.gov/BOEM-2017-001-Volume-2/>

Webinar: <https://www.boem.gov/Science-Exchange-8/>

- **Completed (2021) — Archaeological and Biological Assessment of Submerged Landforms off the Pacific Coast of California and Oregon, USA**

To better understand the potential for submerged pre-contact archaeological sites on the Pacific OCS, researchers from San Diego State University and a variety of other academic and government institutions employed terrestrial analogues, paleoshoreline mapping, sediment coring, ground-truthing techniques, and biological assessments to explore potential intact submerged geological landforms offshore California's Northern Channel Islands and central Oregon. This study produced a large dataset and a GIS-based model to predict where intact submerged landforms features may be located on the Pacific OCS.

Report: in press

## ARTICLE 6 DEVELOPMENT

### **Section 30251 Scenic and visual qualities**

*The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

#### *Analysis and Comment:*

Installation of meteorological buoys would likely not be visible from shore based on the low profile of the structure; distance from shore; and earth curvature, waves, and atmosphere. Visual impacts to onshore cultural resources would be limited and temporary in nature and would consist predominately of vessel traffic, which most likely also would not be distinguishable from existing vessel traffic.

Changes in coastal viewsheds could impact Tribes for whom unobstructed coastal views hold important cultural and spiritual significance. However, at the lease issuance and site assessment and characterization phase, visual impacts on coastal viewsheds are not anticipated. The Humboldt WEA is over 32 km (20 mi) from shore, and the metocean buoy(s) is not expected to be noticeably visible from shore.

A visual resource impact assessment of installed wind turbines would be included in analyses of specific COP(s) should lease holders choose to submit a COP. Lighting schemes designed to minimize visual impacts would be submitted with any potential COP submissions and would be reviewed by BOEM.

For additional information about BOEM's review of this issue in the EA, please see section 3.12.2.5 as described in Table 2.

The following studies have been completed or will be completed by BOEM in order to better inform BOEM decision-making during COP review.

- **Completed (2021) - BOEM 2021-032 Assessment of Seascape, Landscape, and Visual Impacts of Offshore Wind Energy Developments on the Outer Continental Shelf of the United States**

As the United States begins large-scale deployment of offshore wind energy facilities, an important challenge for developers and regulators is the assessment of potential seascape, landscape, and visual impacts on important coastal scenic, historic, and recreational resources; Native American tribal properties and treasured seascapes; commercial interests dependent on tourism; and the private property of coastal residents. This document describes the methodology for seascape, landscape, and visual impact assessment (SLVIA) that the U.S. Department of the Interior (DOI) Bureau of Ocean Energy Management (BOEM) uses to identify the potential impacts of offshore wind energy developments in Federal waters on the Outer Continental Shelf (OCS) of the United States. This methodology document describes what is considered in the SLVIAs submitted by offshore wind project developers to BOEM and how decisions about expected impacts of offshore wind developments are made. This SLVIA methodology applies to any offshore wind energy development proposed for the OCS and considered by BOEM, as directed by the Energy Policy Act of 2005 and in compliance with the Outer Continental Shelf Lands Act and the National Environmental Policy Act (NEPA) of 1969. (<https://www.boem.gov/environment/environmental-studies/boem-2021-032>)

- **Completed (2013) - BOEM 2013-0116 Evaluation of Lighting Schemes for Offshore Wind Facilities and Impacts to Local Environments**

Given BOEM's authority under the Energy Policy Act of 2005 (EPA), and the various considerations under the OCS Lands Act and NEPA, BOEM needs to garner a better understanding of the potential impacts to the environment from the development of offshore renewable energy projects, and to identify specific mitigation measures that can be taken to reduce or avoid such impacts. The ESS Project Team, comprised of ESS Group, Inc. (ESS), GL Garrad Hassan America Inc. (GL GH), Curry and Kerlinger LLC (C&K), and Mote Marine Laboratory (MML), was selected to conduct a review of regulations and lighting schemes currently in use and evaluate how proposed lighting schemes for offshore wind facilities may impact local environments and offshore waters as a desktop study, literature review and synthesis.

(<https://epis.boem.gov/final%20reports/5298.pdf>)

- **Completed (2016) - BOEM 2016-002 Development of Guidance for Lighting of Offshore Wind Turbines Beyond 12 Nautical Miles**

In fulfilling its jurisdictional responsibilities under the Energy Policy Act of 2005, the Outer Continental Shelf Lands Act, and the National Environmental Policy Act, the Department of the Interior's Bureau of Ocean Energy Management (BOEM) is actively involved in evaluating potential environmental impacts related to the development and operation of offshore renewable energy. The lighting of offshore wind facilities is a primary concern for avian resources, important for aviation and navigational safety, and also of concern for visual impacts to onshore areas adjacent to renewable energy development.

(<https://www.boem.gov/offshore-lighting-guidance/>)

- **Completed (2013) — Inventory and Analysis of Coastal and Submerged Archaeological Site Occurrence on the Pacific OCS**

This study by ICF International assessed the potential for submerged prehistoric sites on the California, Oregon, and Washington Outer Continental Shelf (OCS), and identified coastal properties and significant coastal cultural resources subject to potential visual impacts from offshore energy development. It also produced a proprietary inventory of known, reported, and potential historic shipwrecks. Report (BOEM 2013-0115):

<https://espis.boem.gov/final%20reports/5357.pdf>

- **Completed (2014) — Renewable Energy Visual Evaluations This study by the University of Arkansas and Argonne National Laboratory**

This study developed a GIS-based landscape-visualization tool to assess the potential viewshed effects from offshore renewable energy facilities. Visualizations included wind energy structures, lighting, and meteorological conditions.

Journal Article: [https://blmwyomingvisual.anl.gov/docs/EnvPractice\\_Offshore%20Wind%20Turbine%20Visibility%20and%20Visual%20Impact%20Threshold%20Distances.pdf](https://blmwyomingvisual.anl.gov/docs/EnvPractice_Offshore%20Wind%20Turbine%20Visibility%20and%20Visual%20Impact%20Threshold%20Distances.pdf)

Webinar: <https://www.boem.gov/Science-Exchange-5/>

### **Section 30253 Minimization of adverse impacts**

*New development shall: ...*

*(3) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board as to each particular development....*

#### *Analysis and Comment*

The Federal and State attainment status of Humboldt County is found at 40 CFR § 81.305. Humboldt County is in attainment for all National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS), with the exception of the state 24-hour particulate matter PM standard (NCUAQMD, 1995). Because Humboldt County has no stationary sources of air pollution on the corresponding OCS, it has not been designated as an Onshore Corresponding Area (OCA). Therefore, the U.S. Environmental Protection Agency (EPA) maintains jurisdiction over air quality management on the OCS offshore Humboldt County, in accordance with Section 328 of the Clean Air Act.

The factors associated with this post-lease site assessment and site characterization activities that can potentially produce adverse impacts on air quality are primary contaminants emitted from vessels and diesel engines. These include carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), fine particulate matter (PM<sub>2.5</sub>), marine diesel, lube oils, and greenhouse gases. Carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter are criteria pollutants that are regulated under the NAAQS, which are health-based standards. Marine diesel and lube oils may contain hazardous air pollutants, primarily benzene, and have adverse human health effects. They are also hydrocarbons, which, if volatilized, become precursors of photochemical smog (i.e., ozone, which is another NAAQS contaminant). Nitrogen dioxide, in the presence of sunlight, also becomes an ozone precursor. The primary

greenhouse gas (GHG) emitted is carbon dioxide. GHGs, in contrast to the other contaminants have a global, rather than local, impact. Carbon dioxide traps heat in the atmosphere and creates adverse impacts such as climate change, ocean acidification, and sea level rise.

BOEM requires all appropriate federal, state, and local air quality regulations be followed by obtaining appropriate permits, adhering to all applicable laws and regulations, and engaging in mitigation measures when air quality issues are found to be relevant.

Once a COP has been submitted by a lessee, BOEM will review potential impacts to air quality of offshore wind energy development. BOEM depends upon the EPA's air quality districts for the state of California to determine effects upon air quality. For more information on the EPA's plans for the State of California, please visit the EPA's website here - <https://www.epa.gov/sips-ca>

For additional information about BOEM's review of this issue in the EA, please see section 3.2 as described in Table 2.



## VIII. References

For a full listing of references considered in regards to the Environmental Assessment, please see the EA section 6.

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IX. **Appendix I**

This table lists the datasets described in Environmental Assessment for the Humboldt WEA and status in Databasin.

Table. The California Offshore Wind Gateway is a portal in Databasin (<https://caoffshorewind.databasin.org>). BOEM and the State of California have asked stakeholders to submit relevant data sets relevant to offshore wind development. BOEM is currently using this to access data discussed in their National Environmental Policy Act Environmental Assessment on commercial wind lease issuance offshore Humboldt County ([boem.gov/humboldt](http://boem.gov/humboldt)). This table lists the datasets described in Environmental Assessment and status in Databasin. Datasets can now be imported in to Databasin using ArcMap format or as a ArcGIS service.

Dataset Category	Datasets in the BOEM Environmental Assessment	In Databasin	Geospatial Layer Name	Ready for Databasin Import
Wind	2017	YES		
	2020	NO	Could not access	
Vessel Traffic	AIS 2017	YES		
Geology	2018 USGS Cascadia MBES Boundary	NO	Cascadia_MBES_Extent.lyr	X
	2018 USGS Bathymetry	NO	Cascadia_MBES	X
Marine and Coastal Habitats	2018 USGS Cascadia MBES Boundary	NO	Cascadia_MBES_Extent.lyr	X
	Canyon Margins	NO	Humboldt_Canyons.lyr	X
	Rocky Outcrops	NO	Humboldt_Outcrops.lyr	X
	Sediment Waves	NO	Humboldt_Sediment_Waves.lyr	X
	Seafloor Slump	NO	Humboldt_Slumps.lyr	X
Marine Mammals & Sea Turtles	Blue Whale Distribution/Density	YES		
	Fin Whale Distribution/Density	YES		
	Sei Whale Distribution/Density	YES		
	Minke Whale Distribution/Density	NO	Minke_Distribution.lyr	X
	Humpback Whale Distribution/Density	YES		
	North Pacific Gray Whale Distribution/Density	NO	Pacific_Gray_Whale_.lyr	X
	Sperm Whale Distribution/Density	YES		
	Killer Whale Distribution/Density	YES		
	Baird's Beaked Whale Distribution/Density	YES		
	Cuvier's Beaked Whale Distribution/Density	YES		
	Stejneger's Beaked Whale Distribution/Density	no data available		
	Risso's Dolphin Distribution/Density	YES		
	Rough-toothed Dolphin Distribution/Density	NO	Not a current data priority	
	Northern Right Whale Dolphin Distribution/Density	YES		
	Pacific White-sided Dolphin Distribution/Density	YES		
	Dall's Porpoise Distribution/Density	YES		
	Harbor Porpoise Distribution/Density	YES		
	Steller Sea Lion Distribution/Density	YES		
	California Sea Lion Distribution/Density	YES		
	Northern Elephant Seal Distribution/Density	YES		
Harbor Seal Distribution/Density	no data available			
Guadalupe Fur Seal Distribution/Density	YES			
Leatherback Sea Turtle Distribution/Density	YES			
	Brant Distribution/Density	NO		
	Harlequin Duck Distribution/Density	NO		
	Black Oystercatcher Distribution/Density	NO		
	Western Snowy Plover Distribution/Density	YES		
	Marbled Godwit Distribution/Density	NO		
	Red Knot Distribution/Density	NO		
	Short-billed Dowitcher Distribution/Density	NO		
	Lesser Yellowlegs Distribution/Density	NO		
	Willet Distribution/Density	NO		
	Marbled Murrelet Distribution/Density	YES		
	Scripps's Murrelet Distribution/Density	NO		
	Guadalupe Murrelet Distribution/Density	NO		
	Craveri's Murrelet Distribution/Density	NO		
Ancient Murrelet Distribution/Density	NO			

Table. The California Offshore Wind Gateway is a portal in Databasin (<https://caoffshorewind.databasin.org>). BOEM and the State of California have asked stakeholders to submit relevant data sets relevant to offshore wind development. BOEM is currently using this to access data discussed in their National Environmental Policy Act Environmental Assessment on commercial wind lease issuance offshore Humboldt County ([boem.gov/humboldt](http://boem.gov/humboldt)). This table lists the datasets described in Environmental Assessment and status in Databasin. Datasets can now be imported in to Databasin using ArcMap format or as a ArcGIS service.

<b>Dataset Category</b>	<b>Datasets in the BOEM Environmental Assessment</b>	<b>In Databasin</b>	<b>Geospatial Layer Name</b>	<b>Ready for Databasin Import</b>
Coastal and Marine Birds	Cassin's Auklet Distribution/Density	YES		
	Rhinoceros Auklet Distribution/Density	NO		
	Tufted Puffin Distribution/Density	NO		
	Western Gull Distribution/Density	YES		
	California Gull Distribution/Density	YES		
	Caspian Tern Distribution/Density	NO		
	Laysan Albatross Distribution/Density	YES		
	Black-footed Albatross Distribution/Density	YES		
	Short-tailed Albatross Distribution/Density	NO		
	Fork-tailed Storm-Petrel Distribution/Density	YES		
	Ashy Storm-Petrel Distribution/Density	NO		
	Black Storm-Petrel Distribution/Density	NO		
	Murphy's Petrel Distribution/Density	NO		
	Hawaiian Petrel Distribution/Density	NO		
	Cook's Petrel Distribution/Density	NO		
	Buller's Shearwater Distribution/Density	NO		
	Pink-footed Shearwater Distribution/Density	NO		
	Black-vented Shearwater Distribution/Density	NO		
Brandt's Cormorant Distribution/Density	YES			
Double-crested Cormorant Distribution/Density	YES			
Brown Pelican Distribution/Density	YES			
Commercial Fisheries	Vessel Monitoring System California Landing Receipts Data	NO YES	Multiple layers	X
Air Quality		N/A		
Water Quality		N/A		
Recreation and Tourism		N/A		
Socioeconomics		N/A		
Historic Properties		N/A		
Environmental Justice		N/A		
Tribes and Tribal Resources		N/A		