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STAFF REPORT: REGULAR CALENDAR

Consistency Determination No.:	**CD-0004-22**
Applicant:	**Bureau of Ocean Energy Management**
Location:	In federal waters offshore of San Luis Obispo County, approximately 20 miles off Cambria
Project Description:	Conduct a lease sale for up to 240,898 acres of federal waters for the future development of offshore wind energy facilities. Permit lessees to conduct site characterization and assessment activities and submit a construction and operations plan for development of offshore wind energy on their leases.
Staff Recommendation:	Conditional Concurrence

SUMMARY OF STAFF RECOMMENDATION

The Bureau of Ocean Energy Management (BOEM) seeks the Commission's concurrence that proposed leasing and lease activities within the Morro Bay Wind Energy Area (Morro Bay WEA, or WEA), located approximately 20 miles off Cambria, is consistent with California's Coastal Management Program (CCMP). The CCMP consists of the enforceable policies of Chapter 3 of the Coastal Act (Cal. Pub. Res. Code §§ 30200-30265.5). BOEM anticipates issuing up to three leases, covering up to 240,898 acres, as part of the Morro Bay WEA lease sale. BOEM's leases would allow lessees to perform geophysical, geotechnical, and biological surveys and would permit site assessment activities, including the temporary placement of up to three metocean buoys and oceanographic devices. After BOEM's lessees complete surveys and site assessment activities, the lessees would submit a construction and operations plan (COP) to develop a lease. The submission of a COP starts the federal environmental review process for specific wind development projects and would require BOEM's lessees to receive consistency certifications from the Commission prior to any further development being approved by BOEM.

The proposed lease sale is the culmination of many years of work by BOEM, as well as other federal and state agencies, to develop offshore wind resources in California. The state of California has set aggressive goals to reduce greenhouse gas emissions, move to clean energy sources, and achieve carbon neutrality as soon as possible, but no later than 2045. California will need to roughly triple its current electric power capacity to meet the 2045 target for clean energy, and the California Energy Commission has modeled scenarios that involve producing up to 10 gigawatts of energy from offshore wind. Likewise, the federal government has set a goal to deploy 30 gigawatts of offshore wind in the United States by 2030 and has been working hard to develop those wind resources quickly, while still protecting coastal uses and resources. On the U.S. east coast, there are currently two operating offshore wind farms, one more that is fully permitted, and fifteen additional projects that have reached the permitting phase. This is the first proposed lease sale of offshore WEAs on the west coast.

The federal Energy Policy Act of 2005 set up the legal framework under which BOEM analyzes potential WEAs, conducts planning, leases sites, and oversees the site assessment and construction and operation of commercial wind facilities. Pursuant to its authority under that law, in 2016 BOEM established a Renewable Energy Task Force with California to facilitate coordination among federal agencies and affected state, local, and tribal governments throughout the offshore wind leasing process. Following the first Task Force meeting, BOEM and the state, led by the California Energy Commission, engaged in a collaborative, data-based offshore wind energy planning process to foster coordinated and informed decisions about California's ocean resources. In addition to participating with the Task Force, Commission staff also participate in a state interagency working group to coordinate the state's regulatory, research, and planning work on offshore wind. Other agencies participating in the working group include the California Energy Commission, Ocean Protection Council, Department of Fish & Wildlife, Public Utilities Commission, State Lands Commission, Governor's Office of Planning and Research, and Department of Parks & Recreation. This working group provided joint comments to BOEM on that agency's environmental

review and overall process and has also coordinated on outreach to Tribes and fishing communities. Although numerous other state agencies have been involved and have an interest in the offshore wind leasing and development process, the Coastal Commission is the only state agency with authority to review activities that occur more than 3 nautical miles offshore in federal waters. This is the second of two consistency determinations (CDs) brought before the Commission by BOEM; the Commission conditionally concurred with BOEM's proposed leasing and lease activities within the Humboldt WEA in April 2022.

Scope of Federal Consistency Review

BOEM's current CD describes the activities related to lease assessment and exploration activities but does not describe or consider potential effects related to future construction and operation of any commercial wind power facilities. BOEM considers the impacts from any actual construction and operation activities to be too speculative to analyze at this time, given that the location, layout, and other design parameters of any future floating offshore wind projects are currently unknown, and that environmental effects of the projects will depend in part on factors such as turbine size, foundation type, project layout, installation methods, mooring lines, and location and type of associated onshore facilities.

The Commission agrees that a primary focus for this CD is to analyze effects of lease exploration activities—such as site characterization and assessment—and that it is not possible at this time to analyze the precise effects that future construction and operation of offshore wind projects will have on coastal resources. However, it is reasonably foreseeable that the leases will lead to construction and operation of at least some offshore wind facilities. It is also feasible to describe, at least at a high level, the types of impacts that such facilities could have on coastal resources. Review of this CD is the state's opportunity to examine the impacts of offshore wind development at a programmatic level and to assess whether the Morro Bay WEA is an appropriate place to site offshore wind in California. This review also presents the opportunity to identify data and information needs for future federal consistency reviews of specific projects and to communicate the Commission's expectations on the anticipated scope of those future reviews. Therefore, throughout this report, lease exploration activities are analyzed for consistency with the CCMP, and future lease development activities are separately described and, to the extent that potential effects are reasonably foreseeable, also analyzed for consistency.

Lease Exploration and Development Activities

The issuance of a lease provides lessees with the exclusive right to conduct studies in their lease areas and easement areas to inform the development of a site-specific COP. Site assessment may include a variety of activities such as installation of buoys with data collection equipment and implementation of different types of surveys. Site assessment may include the installation of up to three buoys outfitted with a variety of scientific sampling equipment. These buoys float on the ocean surface and are affixed to the ocean floor with an anchor. Buoys can be installed in about one day and require one maintenance trip per year. Site characterization activities would also likely include additional geophysical, geotechnical, biological, archaeological, and ocean use surveys.

BOEM expects lessees would make up to 873 vessel trips in the WEA to complete their surveys over a three-year period.

The leases will not permit actual development of wind energy structures or facilities, and lessees will only obtain the right to construct such facilities after submitting construction and operation plans to BOEM, obtaining the Coastal Commission's concurrence with those proposed activities, and obtaining BOEM's approval of them. Future development associated with offshore wind projects will likely include floating wind turbines, mid-water suspended electrical cables linking the turbines and running to a substation, mooring cables and anchors attaching the turbines to the seafloor, and an electrical export cable running from the substation to shore. There are four main types of floating platform, and each type of platform is stabilized by at least three mooring lines anchored to the seabed. There are also three primary types of mooring systems, some of which are primarily used on certain types of platforms, and four primary anchor technologies for securing the mooring lines to the seabed, which are selected depending on the composition of the sediment.

In addition to the mooring lines, an array of electrical cables, also known as inter-array cables, extend between multiple floating platforms and subsequently connect with terminal cables that lead to an electrical substation. Inter-array cables are suspended freely in the water column and are designed to compensate for the movement of the floating platform and the forces of the water column by using bend stiffeners, intermediate buoys, sinkers, or other devices. Although the exact size of future turbines in the Morro Bay WEA is unknown, they are expected to be substantially larger than onshore turbines. A 15-megawatt turbine would be expected to have the following approximate dimensions: a hub height of 486 feet, a rotor diameter of 807 feet and a maximum height at the blade tip of 889 feet. If turbines of this size were installed in the Morro Bay WEA, they would likely have a distance between turbines of 0.917-1.22 miles.

As part of offshore wind development, onshore facilities would be needed for the cable landing, and the location and cable landing infrastructure would need to be resilient to sea level rise. With this industry beginning on the West Coast, onshore facilities would also be needed for offshore wind turbine manufacturing and maintenance in West Coast ports and harbors. The port locations that would serve the offshore wind industry on the Central Coast are currently unknown, as are the locations for cable landings. These coastal facilities are expected to have coastal impacts and will be analyzed under their own coastal development permits.

Offshore wind turbines would be expected to have a service life of approximately 20 years, with blades needing repair every 2-5 years on average. Due to wave pressure, floating offshore wind turbines require heavier maintenance than onshore wind turbines. Approximately every 10 years, the entire system would need to be disconnected and towed to shore for repairs, followed by reinstallation.

Coastal Effects of Proposed Activities

The key Coastal Act issues raised by BOEM's proposed lease sale in the Morro Bay WEA and reasonably foreseeable future activities are the potential for adverse impacts to marine resources, commercial and recreational fishing, environmental justice

communities and Tribal and cultural resources. Lease activities have the potential to adversely affect marine resources through seafloor habitat disturbance and increasing turbidity, elevated levels of underwater sound during surveys, increased risk of ship strikes due to increased vessel traffic, and incrementally increased entanglement risk due to the placement of buoys. Future lease development has the potential to adversely affect marine resources seafloor disturbance, turbine strikes, increased entanglement risk, marine species displacement, avoidance or attraction, increased ship strike risk, elevated levels of underwater sound, fish aggregation and the artificial reef effect, invasive species, weakened upwelling and electromagnetic fields. To minimize effects to marine resources, the staff recommends that the Commission adopt **Conditions 1, 2, and 3** to protect marine habitats and sensitive species. **Condition 1** requires BOEM to work with Coastal Commission staff to ensure that lessees' survey plans and Site Assessment Plans (SAPs) are coordinated, consistent, minimize impacts to coastal resources, and provide the data and information necessary for analysis of future consistency certifications. **Condition 1** also requires lessees to comply with marine wildlife protection and monitoring measures, to prepare a site-specific spill prevention and response plan and a critical operations and curtailment plan, and to provide an anchoring plan. **Condition 2** requires avoidance of intentional contact with hard substrate, rock outcroppings, seamounts or deep-sea coral/sponge habitat. **Condition 3** requires a vessel speed restriction for survey activities, including transit, of no more than 10 knots.

Lease activities and future offshore wind development also have the potential to adversely affect fishing and fishermen through exclusion and displacement from fishing grounds, increase costs and time at sea to reach new fishing grounds, loss of future fishing grounds and loss or disruption of harbor space and fishing infrastructure at ports. To minimize adverse impacts to commercial and recreational fishing, the staff recommends that the Commission adopt **Conditions 4 and 7**. **Condition 4** requires BOEM to ensure safe navigation through the lease areas. **Condition 7** requires lessees to have an independent fisheries liaison that coordinates with the fishing community to ensure surveys and site assessment activities avoid conflicts with fisheries, and requires BOEM to work with state agencies, fishermen and offshore wind developers to develop a statewide strategy for avoidance, minimization and mitigation of impacts to fishing and fisheries.

Lease exploration and development has the potential to adversely affect certain communities in the Morro Bay area, and at other Central Coast port locations in a disproportionate way. In particular, environmental justice communities could experience impacts from disproportionate exposure to environmental changes due to development or expansion of port facilities on the Central Coast (e.g. air emissions, noise, reduced public access to the coast). Further, California Native American Tribes could be affected by impacts to culturally important places, species and habitats. Early and ongoing engagement is critical to avoid impacts, minimize those that cannot be avoided and ensure that disproportionately affected communities benefit from future lease development. To minimize potential adverse effects to environmental justice communities, staff recommends that the Commission adopt **Condition 5**, which requires engagement with environmental justice communities on all elements of the

lessees' project development processes including a workforce plan, survey plan, SAP, and COPs. To minimize adverse effects to California Native American Tribes and cultural resources, the staff recommends that the Commission adopt **Condition 6**, which requires engagement with federally recognized and non-federally recognized California Native American Tribes on all elements of the lessees' project development process including a workforce plan, survey and SAPs, and COPs. This includes developing communication protocols in the event of an unanticipated discovery of a potential tribal resource.

In addition to the issues raised above, offshore wind lease exploration activities and future development of lease areas raise potential Coastal Act concerns related to coastal hazards, scenic and visual resources, public access and recreation, air quality and fill of coastal waters. Each of these issues is addressed in more detail in the staff report and will require more in-depth analysis when the Commission reviews specific offshore wind projects in the future.

With **Conditions 1 through 7** included, staff recommends that the Commission find BOEM's proposed activities fully consistent with the CCMP.

TABLE OF CONTENTS

EXHIBITS

Scope of Federal Consistency Review Exhibits

1-1. Morro Bay WEA Vicinity Map
1-2. Current Offshore Wind Platform, Mooring and Anchor Types
1-3. Schematic of a Full-scale Floating Wind Energy Development
1-4. Subsea Cables and Cable Landings in the Vicinity of Morro Bay

Marine Resources and Water Quality Exhibits

2-1a. Seafloor Features
2-1b. Habitat Areas of Particular Concern: Groundfish
2-1c. Deep Sea Corals and Sponges
2-2a. Southern Sea Otter Density
2-2b. Northern Elephant Seal Distribution
2-3. Summer/Fall Whale Density/Presence Maps off West Coast
- 2-3a. Blue Whale Density
- 2-3b. Fin Whale Density
- 2-3c. Humpback Whale Density
- 2-3d. Minke Whale Density
- 2-3e. Blue Whale Core Use Areas
- 2-3f. Proposed Humpback Whale Critical Habitat
- 2-3g. Biologically Important Areas – Baleen Whales
- 2-3h. Baird's Beaked Whale Density
- 2-3i. Long Beaked Common Dolphin Density
- 2-3j. Northern Right Dolphin Density
- 2-3k. Pacific White-Sided Dolphin Density
- 2-3l. Risso's Dolphin Density
- 2-3m. Bottlenose Dolphin Density
- 2-3n. Dall's Porpoise Density
- 2-3o. Short Beaked Common Dolphin Density
- 2-3p. Sperm Whale Density
- 2-3q. Striped Dolphin Density
- 2-3r. Gray Whale Migration and Potential Presence Maps

2-4. Leatherback Turtle Sightings, Critical Habitats, and Distribution
2-5. Seabird and Marine Mammal Considerations for Morro Bay and Humboldt WEAs
- 2-5a. Seabird Considerations
- 2-5b. Marine Mammal Considerations

2-6. Bird Density Maps
- 2-6a. Marbled Murrelet Spring/Summer Density
- 2-6b. Scripps's Murrelet Spring Density
- 2-6c. Brown Pelican Seasonal Density
- 2-6d. Pink Footed Shearwater Density
- 2-6e. Ashy Storm Petrel Spring/Fall Density

Commercial and Recreational Fishing Exhibits

3-16. Morro Bay Hours to port, inspired by North Coast Fishermen's Mapping Project

Coastal Hazards Exhibits

4-1. AIS Shipping Vessel Traffic 2017
4-2. Significant Wave Height
4-3. Geologic Faults Within WEA

Scenic and Visual Resources Exhibits

5-1. Map of State Parks near the WEA
5-2. Visual Simulations

Tribal and Cultural Resources Exhibits

6-1. Map of Predicted locations for possible submerged cultural resources

Environmental Justice Exhibits

7-1. CES 4.0 Population Characteristics near WEA
7-2. CalEnviroScreen 4.0 near WEA
7-3. AB 1550 Low-income Communities near WEA

I. FEDERAL AGENCY'S CONSISTENCY DETERMINATION

The Bureau of Ocean Energy Management has determined that the project is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP).

II. MOTION AND RESOLUTION

Motion:

*I move that the Commission **conditionally concur** with Consistency Determination CD-0004-22 on the grounds that, if modified in accordance with the conditions recommended by staff, the project described therein would be fully consistent, and thus consistent to the maximum extent practicable, with the enforceable policies of the CCMP.*

Staff Recommendation:

Staff recommends a YES vote on the motion. Passage of this motion will result in a concurrence with the determination of consistency, provided the project is modified in accordance with the recommended condition(s), and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

Resolution:

*The Commission hereby **conditionally concurs** with Consistency Determination CD-0004-22 on the grounds that the project is fully consistent, and thus consistent to the maximum extent practicable, with the enforceable policies of the CCMP, provided that BOEM agrees to modify the project consistent with the recommended conditions, as provided for in 15 CFR §930.4.*

Conditions:

1. **Plan Review and Coordination:** BOEM will work with Coastal Commission staff to ensure lessees' survey and site assessment plans (SAPs) are coordinated, consistent, minimize impacts to coastal resources and provide the data and information necessary for analysis of future consistency certifications, as appropriate. As part of this effort, BOEM will:
    a. Encourage continuous and open communication and dialogue between BOEM, the lessees, the Coastal Commission and other relevant state agency staff during BOEM's review of survey plans, and SAPs.

b. BOEM will coordinate with the Coastal Commission and other relevant state agencies to provide access to lessees' survey plan submissions, to the extent feasible.

c. BOEM will encourage lessees to collaborate on their survey plans to the maximum extent feasible to increase efficiency and minimize impacts of geophysical and other surveys conducted during the site assessment phase.

d. Per federal regulation 30 CFR 585.113, documents and data resulting from research, surveys and other data collection efforts conducted during the leasing phase by lessees that are subject to the Freedom of Information Act will be publicly available to the maximum extent feasible upon submittal to BOEM.

e. BOEM will require that lessees use low-energy equipment, as defined by California State Regulation 2 CCR sec. 2100.03 (g), to complete their geophysical surveys. Low-energy equipment is limited to subbottom profilers (e.g., mini-sparkers, boomers, chirp, and general subbottom profiler systems), echosounders (e.g., single beam and multibeam echosounders), and side-scan sonars. BOEM will encourage lessees to use geophysical survey operators that conduct their surveys consistent with the provisions of the California State Lands Commission's low-energy geophysical survey program.

f. In addition to the requirements described in the EA, BOEM will require lessees to include the following measures as part of any survey. If future consultation with the National Marine Fisheries Service (NMFS), US Fish and Wildlife Service (USFWS) or other state or federal agency results in new requirements on the topics included below, BOEM will work with Commission staff to ensure that any new requirements remain consistent and do not diminish the level of resource protection provided by the measures below:

    i. Marine Wildlife Protection and Monitoring Measures: The Lessee shall implement all Marine Wildlife and Protection measures listed below during all marine operations (e.g., surveys, buoy installation and removal), consistent with vessel and worker safety:

        1. Prior to the start of offshore activities, the lessee shall provide awareness training to all Project-related personnel and vessel crew, including viewing of an applicable wildlife and fisheries training video, on the most common types of marine wildlife likely to be encountered in the Project area and the types of activities that have the most potential for affecting the animals.

        2. A minimum of one qualified marine mammal observer shall be located on each vessel to conduct observations. The number of observers per vessel will be sufficient to ensure

complete viewing coverage of the surrounding marine environment.

3. The observers shall have the appropriate safety and monitoring equipment adequate to conduct their activities (including night-vision equipment for nighttime survey operations).
4. The observers shall have the authority to stop any activity that could result in harm to a marine mammal or sea turtle, except under extraordinary circumstances when complying with this requirement would put the safety of the vessel or crew at risk. In the event that a whale comes in contact with a vessel or survey equipment or becomes entangled in any cable or lines, the observer shall immediately notify NMFS so appropriate response measures can be implemented. Similarly, if any harassment or harm to a marine mammal occurs, the observer shall immediately notify NMFS and any other required regulatory agency.
5. A final report summarizing the results of monitoring activities will be submitted to BOEM and a copy also sent to the Coastal Commission's Executive Director and other appropriate agencies no more than 90 days following completion of survey activities. The report shall include: (a) an evaluation of the effectiveness of monitoring protocols and (b) reporting of: (i) marine mammal, sea turtle, and other wildlife sightings (species and numbers); (ii) any wildlife behavioral changes; (iii) any interactions or conflict with marine wildlife, including reporting of any project delays or cessation of operations due to the presence in the project area of marine wildlife species subject to protection.

ii. Site-specific Spill Prevention and Response Plan: The lessee shall submit a site-specific Spill Prevention and Response Plan a minimum of 30 days before commencement of any in-water survey activities or as part of any survey plan or SAP. The Plan shall be kept on the appropriate survey vessels during all survey and SAP operations. The Plan shall identify the worst-case spill scenario and demonstrate that adequate spill response equipment will be available. The Plan also shall include preventative measures the lessee will implement to avoid spills and clearly identify responsibilities of onshore and offshore contractors and the lessee's personnel and shall list and identify the location of oil spill response equipment (including booms), appropriate protocols and response times for deployment. Petroleum-fueled equipment on the main deck of all vessels shall have drip pans or other means of collecting dripped petroleum, which shall be collected and treated

with onboard equipment.

iii. Critical Operations and Curtailment Plan (COCP): The lessee shall include a COCP as part of any survey plan. The COCP shall define the limiting conditions of sea state, wind, or any other weather conditions that exceed the safe operation of offshore vessels, equipment, or divers in the water; that hinder potential spill cleanup; or in any way pose a threat to personnel or the safety of the environment. The COCP shall provide for a minimum ongoing five-day advance favorable weather forecast during offshore operations. The plan shall also identify the onsite person with authority to determine critical conditions and suspend work operations when needed. The Plan shall be kept on the appropriate survey vessels during all survey and SAP operations.

iv. Anchoring Plan: The lessee shall submit an Anchoring Plan to BOEM as part of any survey plan that requires vessel anchoring. The Plan describes how the lessee will avoid placing anchors on sensitive ocean floor habitats and pipelines and shall include the following information:

1. A list of all vessels that will anchor during survey activities and the number and size of anchors to be set;
2. Detailed maps showing proposed anchoring sites that are located at least 40 feet (12 meters) from hard substrate, the distance between the proposed anchoring sites and any hard substrate shall be sufficient to fully protect the hard substrate from anchors and related infrastructure;
3. A description of the navigation equipment that would be used to ensure anchors are accurately set; and
4. Anchor handling procedures that would be followed to prevent or minimize anchor dragging, such as placing and removing all anchors vertically.

2. **No bottom contact:** As part of BOEM's review of survey plans and activities, BOEM will ensure that lessees avoid intentional contact within hard substrate, rock outcroppings, seamounts, or deep-sea coral/sponge habitat and include a buffer that fully protects these habitats from bottom contact, including but not limited to anchoring, mooring, and sediment sampling.
3. **Minimizing the risk of vessel strikes:** BOEM will require vessels conducting lease characterization studies, surveys, metocean buoy installation, maintenance, or decommissioning or any other survey activities to travel at speeds no more than 10 knots during all related activities including vessel transit along the California coast. If future consultation with NMFS, USFWS or other state or federal agency results in different vessel speed requirements, BOEM will work with Commission staff to ensure that any new requirements remain consistent and do not diminish the level of resource protection provided by this

requirement.

4. **Safe Navigation:** BOEM will work with stakeholders including the US Coast Guard (USCG), National Oceanic and Atmospheric Administration (NOAA) /NMFS, the fishing and maritime industries and state agencies to ensure safe navigation through the lease areas. Safe navigation may entail designation of transit corridors.
5. **Engagement with environmental justice and local communities:** BOEM will require lessees to make reasonable efforts to conduct outreach with local affected communities—and in particular to demonstrate long-term engagement with environmental justice communities, including but not limited to low-income communities and communities of color—on all elements of the lessees' project development process, including, but not limited to, a workforce plan, survey plan and SAPs, and a construction and operations plan (COP). This engagement should be coordinated to the maximum extent practicable with other Lessees in the region to reduce the burden on communities. The Lessee is strongly encouraged to compensate members of environmental justice communities for their time participating in engagement activities and events. Development of any Engagement Plan should be conducted in coordination with communities and should include strategies to reach individuals with Limited English Proficiency who may be affected by future offshore wind development.

   As part of the Lessee's engagement with environmental justice communities, the lessee is strongly encouraged to work with the community to develop specific frameworks for community leadership and capacity building. This may include the establishment of lessee-funded independent community-centered and governed working groups that center environmental justice communities to ensure that community decision-making at all stages of the project beyond a consultative position. Lessees and environmental justice communities may choose to develop a formal agreement to monitor community impacts and implement community benefits, which may be amended over time to reflect subsequent analysis of impacts and opportunities for environmental justice.
6. **Engagement with California Native American Tribes:** BOEM will require lessees to make reasonable efforts to demonstrate engagement with federally recognized and non-federally recognized California Native American Tribes that could be affected by future development associated with a lease on all elements of the lessees' project development process, including, but not limited to, a workforce plan, survey plan and SAPs, and a COP. The Lessee is strongly encouraged to develop an engagement framework with Tribes and retain a qualified tribal liaison with knowledge of local tribal law, local indigenous cultures, and tribal ecological science and other traditional knowledge. More specifically, as part of any survey plan or SAP, lessees should work with Tribes to develop a protocol for communication directly with Tribes in the event of an unanticipated discovery of a potential tribal resource as well as a post-discovery process for evaluation of a discovery. Lessees are encouraged to engage with Tribes on other topics of interest to the Tribes that relate to or address impacts that wind-

related development will have on the Tribes, which may include the potential to strengthen energy infrastructure on tribal lands and development of tribal economic enterprise related to offshore wind.

Engagement with Tribes should be coordinated to the maximum extent practicable with other Lessees in the region to reduce the burden on Tribes. The Lessee is strongly encouraged to compensate members of Native American Tribes for their time participating in engagement activities and events. Development of any Engagement Plan should be conducted in coordination with Tribes.

7. **Impacts to Fishing and Fishing Communities:**

    a. BOEM will require lessees to have an independent fisheries liaison that is responsible for the coordination and communication of site activities with affected commercial and recreational fishing communities and harbor districts, including development and implementation of survey plans and SAPs. The fishing liaison will work with fishing communities and the harbor districts to coordinate survey and other activities and to develop a process for reporting and remediating conflicts between mariners and survey vessels/equipment. Lessees and fishing communities (including harbor districts) may choose to develop a signed/formal agreement that can be amended to reflect subsequent analysis and discussion between the fishing industry (entity as described below) or harbor district and developers on mechanisms for addressing impacts to commercial fishing.

    b. BOEM will require lessees to submit reports on process, outreach, and outcomes of engagement with fishing communities and harbor districts and will provide copies of these reports to the Commission. All documents and analysis will be made publicly available and readily accessible, to the maximum extent practicable.

    c. BOEM will work with the Commission and other state and federal agencies to develop and facilitate a working group consisting of fishing organizations and representatives from different regions/ports of the state, representing different fisheries and gear types, and in both the commercial and recreational sectors, lessees and state and federal agency staff. The working group will develop a statewide strategy for avoidance, minimization and mitigation of impacts to fishing and fisheries that prioritizes fisheries productivity, viability, and long-term resilience. The strategy should include protocols for communication, best practices for surveys and data collection, a methodology for comprehensive socioeconomic analysis of direct and indirect impacts to fishing, a framework for compensatory mitigation for unavoidable impacts, and a Fishing Agreement template that memorializes the elements of the strategy. The strategy should include specific consideration for those fisheries that are disproportionately and/or directly affected by offshore wind development.

III. APPLICABLE LEGAL AUTHORITIES

A. STANDARD OF REVIEW

The federal Coastal Zone Management Act ("CZMA"), 16 U.S.C. §§ 1451-1464, requires that federal agency activities affecting coastal resources be "carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs." Id. at § 1456(c)(1)(A). The implementing regulations for the CZMA ("federal consistency regulations"), at 15 C.F.R. § 930.32(a)(1), define the phrase "consistent to the maximum extent practicable" to mean:

> *… fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the federal agency.*

This standard allows a federal activity that is not fully consistent with California's Coastal Management Program ("CCMP") to proceed, if full compliance with the CCMP would be "prohibited by existing law." In its consistency determination (CD), the Bureau of Ocean Energy Management (BOEM) did not argue that full consistency is prohibited by existing law or provide any documentation to support a maximum extent practicable argument. Therefore, there is no basis to conclude that existing law applicable to the federal agency prohibits full consistency. Since BOEM has raised no issue of practicability, as so defined, the standard before the Commission is full consistency with the enforceable policies of the CCMP, which are the policies of Chapter 3 of the Coastal Act (Cal. Pub. Res. Code §§ 30200-30265.5).

The Coastal Commission has certified LCPs for portions of San Luis Obispo County that are relevant to this CD: The County of San Luis Obispo Coastal Plan Policies and Area Plans for the North Coast, San Luis Bay Coastal, Estero, and South County Area. In certifying these LCPs, the Coastal Commission has incorporated them into California's Coastal Management Program, and the LCPs will provide guidance in applying the chapter 3 policies in the context of local circumstances.

B. FEDERAL CONSISTENCY

Conditional Concurrences

The federal consistency regulations (15 CFR § 930.4) provide for conditional concurrences, as follows:

> *(a) Federal agencies, … should cooperate with State agencies to develop conditions that, if agreed to during the State agency's consistency review period and included in a federal agency's final decision under Subpart C … would allow the State agency to concur with the federal action. If instead a State agency issues a conditional concurrence:*
>
> > *(1) The State agency shall include in its concurrence letter the conditions which must be satisfied, an explanation of why the*

> *conditions are necessary to ensure consistency with specific enforceable policies of the management program, and an identification of the specific enforceable policies. The State agency's concurrence letter shall also inform the parties that if the requirements of paragraphs (a)(1) through (3) of the section are not met, then all parties shall treat the State agency's conditional concurrence letter as an objection pursuant to the applicable Subpart . . . ; and*
>
> *(2) The federal agency (for Subpart C) … shall modify the applicable plan [or] project proposal,…pursuant to the State agency's conditions. The federal agency … shall immediately notify the State agency if the State agency's conditions are not acceptable…; and*
>
> *(3) The federal agency…shall approve the amended application (with the State agency's conditions)…*
>
> *(b) If the requirements of paragraphs (a)(1) through (3) of this section are not met, then all parties shall treat the State agency's conditional concurrence as an objection pursuant to the applicable Subpart.*

Right of Appeal

Pursuant to subsection (a)(1) quoted in the prior section and Subpart H of the federal consistency regulations, within 30 days from receipt of notice of a Commission conditional concurrence to which BOEM does not agree, BOEM may request that the Secretary of Commerce override this objection. 15 CFR §§ 930.4(a)(1) & 930.125(a). In order to grant an override request, the Secretary must find that the proposed activity for which BOEM submitted a consistency certification is consistent with the objectives or purposes of the Coastal Zone Management Act, or is necessary in the interest of national security. A copy of the request and supporting information must be sent to the Commission and the U.S. Army Corps of Engineers. The Secretary may collect fees from BOEM for administering and processing its request.

C. Federal Waters Excluded from the Coastal Zone

The Morro Bay WEA, which is the proposed location for lease exploration activities and future offshore wind development, is located entirely within federal waters, approximately 20 miles off the coast of Cambria, in San Luis Obispo County. Federal waters are considered excluded from the coastal zone under the Coastal Zone Management Act [16 U.S.C. §1453(1)]. In this instance, the Commission's review of activities in federal waters focuses on spillover effects on coastal resources within the coastal zone. This review may include effects that activities in federal waters may have on resources within the coastal zone, or effects that activities in federal waters may have on species in federal waters that travel in and out of the coastal zone. For example, the sound used to conduct geophysical surveys may travel from where the survey is being conducted in federal waters to the coastal zone and affect marine life

within the coastal zone. Similarly, geophysical surveys could impact marine species that travel large distances and are known to move between the coastal zone and federal waters, such as marine mammals.

Thus, in its evaluation of this proposed lease sale's consistency with the Coastal Act, this Commission analyzes spillover effects on coastal resources beyond federal waters. Subsequent sections of this report examine project effects within this analytic framework.

IV. FINDINGS AND DECLARATIONS

A. SETTING AND BACKGROUND

Prior Commission Actions

This is the second of two consistency determinations (CDs) to come before the Commission for offshore wind leasing in California. The Commission considered and conditionally concurred with CD-0001-22 in April 2022, which covered leasing activities in the Humboldt Wind Energy Area (WEA).[1] The findings below build on the analysis performed for the Humboldt CD, particularly in the analysis of high-level potential impacts from lease development, but have been modified to address the unique site conditions within the proposed Morro Bay WEA. Therefore, portions of these findings will appear very similar to the findings made for the Humboldt CD.

California's Renewable Energy and Climate Change Goals

California is experiencing the impacts of climate change at a rapid pace. Driven by anthropogenic activities and associated greenhouse gas emissions, California saw an average temperature increase of about 1.8 degrees Fahrenheit and an average sea level rise of about eight inches over the past century (California Natural Resources Agency, 2018). In just the past several years, the state has also suffered its largest wildfires in recorded history, severe drought coinciding with record low snowpack, and increasingly frequent heat waves and major storm events (Office of Environmental Health Hazard Assessment and California Environmental Protection Agency, 2018). These many manifestations of climate change are already causing far-reaching impacts on California's residents, resources, economy, and infrastructure, and are only expected to worsen in the coming decades. Projections indicate that in the next 30 years, sea levels will rise as much as they did over the past 100 years and damaging flood events will occur over ten times more frequently than they do today (Sweet, et al., 2022).

In the Morro Bay area specifically, climate change is causing notable transformations. Between 1960-2014, the average annual temperature in Morro Bay rose by about 1 degree Fahrenheit (MBNEP, 2021). The average annual temperature is expected to

[1] Adopted findings for CD-0001-22 may be found on the Commission's website: https://documents.coastal.ca.gov/assets/upcoming-projects/offshore-wind/Th8a-4-2022%20adopted%20findings.pdf

climb 2 to 5 degrees Fahrenheit by 2050 (MBNEP, 2021). Increased temperatures are likely to elevate the intensity of heatwaves, alter storm patterns, and increase overall stress on vulnerable populations in the area (City of Morro Bay, 2017). Sea level rise is projected to increase the risk of flooding in coastal areas during storm events and high tides. Beaches and dunes along the coast may face increased erosion, and some shoreline areas may face sustained inundation. (City of Morro Bay, 2017; MBNEP, 2020). Approximately 5.4 feet of sea level rise could convert the vegetated tidal marsh of Morro Bay into unvegetated mudflat and subtidal habitats, and lower amounts of sea level rise is expected to significantly decrease the amount of marsh habitat around the bay (Thorne et al., 2016). Ocean water moving farther upstream in the estuary due to sea level rise may also increase saltwater intrusion into the groundwater table and alter the salinity gradient, jeopardizing freshwater supplies (MBNEP, 2021).

To combat the adverse effects of climate change in the coastal zone, the Commission oversees and supports multiple adaptation efforts across the state. For instance, to date the Commission has awarded over $11.5 million to local governments through its Local Assistance Grant Program to fund LCP updates focused on sea level rise and climate resiliency; has produced multiple guidance documents with policy direction for local governments on sea level rise planning and adaptation; and has reviewed and approved Public Works Plans for several coastal counties that take a comprehensive approach to wildfire resiliency and forest management. These adaptation efforts are critical to facing current and projected climate change impacts. However, absent significant and immediate reductions in global greenhouse gas emissions, the impacts of climate change are only expected to continue and accelerate.

California is an international leader in policies to mitigate the impacts of climate change through reducing greenhouse gas emissions and expanding the use of renewable energy to generate electricity. In 2006, the state passed the Global Warming Solutions Act, which required a reduction in greenhouse gas emissions to the 1990 level by 2020 (Nunez, Chapter 488, Statutes of 2006). The current target, set by Senate Bill 32 is 40 percent below the 1990 level by 2030 (Pavley, Chapter 249, Statutes of 2016).

California also has a goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter (Exec. Order No. B-55-18, 2018). In 2021, Governor Newsom requested the California Air Resources Board to evaluate achieving carbon neutrality by 2035.[2] California is taking bold action to meet these greenhouse gas reduction targets. For example:

- The California Energy Commission's (CEC's) Building Energy Efficiency Standards for 2022 requires commercial buildings and new high-rise multifamily buildings to include photovoltaic solar and battery energy storage.
- Governor Newsom issued executive order N-79-20 in 2020, which established a goal for all sales of new passenger vehicles in California to be zero-emission vehicles by 2035. With the passage of Senate Bill 100 (De León, Chapter 312, Statutes of 2018), California established a landmark policy, requiring renewable

[2] https://www.gov.ca.gov/wp-content/uploads/2021/07/CARB-Letter_07.09.2021.pdf.

> energy and zero-carbon sources to supply 100 percent of the state's electric retail sales to ends-use customers by 2045. California will need to roughly triple its current electric power capacity to meet the 2045 target. The report includes energy scenarios modeling 10 gigawatts of offshore wind coming online by 2045 to meet this goal (California Energy Commission et al., 2021).

The offshore wind energy generation profile can be complementary to solar energy. On average, offshore wind continues to generate electricity as solar generation drops off in the evening (Optis et al., 2020). Including offshore wind in the state's energy portfolio may help California reduce the use of gas-fired power plants in the evening hours during net peak demand (California Energy Commission, 2021).

Recognizing that California offshore wind energy can advance progress toward achieving California's statutory renewable energy and climate mandates, Assembly Bill 525 (Chiu, Chapter 231, Statutes of 2021) requires the CEC to evaluate and quantify the maximum feasible capacity of offshore wind to achieve reliability, ratepayer, employment, and decarbonization benefits and establish megawatt offshore wind planning goals for 2030 and 2045. The CEC's work for AB 525 includes an offshore wind strategic plan that:

- Identifies suitable sea space for WEAs in federal waters that will accommodate the state's offshore wind planning goals.
- Outlines economic and workforce development needs and identifies port space and infrastructure needs, as well as a plan to improve waterfront facilities that could support a range of floating offshore wind energy development activities.
- Identifies transmission investments and upgrades necessary, including potential subsea transmission options, to support the state's offshore wind planning goals.
- Provides a permitting roadmap.
- Identifies potential impacts on coastal resources, fisheries, Native American and Indigenous peoples, and national defense, and strategies for addressing those potential impacts.

Transitioning to 100% renewable energy is a necessary step to slow the pace of climate change. However, it is critical that this transition be done in a way that protects California's invaluable coastal and marine resources. As California considers how to approach offshore wind development, careful planning and comprehensive examination of potential impacts, and a commitment to adaptive management are central to ensuring coastal resource protection. The efforts made to understand, avoid, and minimize impacts now will also help inform future floating wind project design.

Status of Offshore Wind Globally and Nationally

The first offshore wind farm was constructed in Denmark in 1991. Europe has continued to be a global leader in offshore wind ever since, with approximately 2,300 offshore wind turbines active today (WindEurope, 2021). As of 2020, there were 35,500 cumulative megawatts of offshore wind power installed globally (Global Wind Energy Council, 2021). The United Kingdom, China, and Germany are leaders in this effort.

China is also developing offshore wind and has set ambitious targets for development in its waters.

Today, the United States has two operating offshore wind projects: the Block Island Wind Farm in Rhode Island and the Coastal Virginia Offshore Wind pilot project in Virginia (Office of Energy Efficiency and Renewable Energy, 2021a). Beyond these two projects, the Vineyard Wind 1 project, located in federal waters off Massachusetts, is fully approved. There are 15 additional projects on the east coast that have reached the permitting phase. BOEM has designated seven WEAs that may be leased at their discretion in the future.

Most of the offshore wind development in the world and in the United States today is on fixed-bottom foundations. These foundations are only feasible in shallow waters of up to 200 feet in depth, which is part of why development of offshore wind in the U.S. has focused on the shallow waters of the east coast until recently. On the West Coast of the U.S., the continental shelf drops off from the coastline relatively quickly, making fixed-foundation turbines technically infeasible in most federal waters. However, the West Coast has excellent offshore wind resources. Manufacturers and developers have been innovating floating foundations for offshore wind turbines to enable them to access wind resources in deeper waters. The first floating offshore wind turbine was installed in Italy in 2007. Globally, there have only been 18 floating offshore wind turbines, one of which was in Maine. Of these 18 turbines, only 11 are currently active (Maxwell, et al., 2022). More discussion on floating foundation types is in section B of this report.

As offshore wind technology has matured, the size and generating capacity of offshore wind turbines has increased substantially (Office of Energy Efficiency and Renewable Energy, 2021). In 2009, offshore wind turbines in Europe had capacities of roughly 3 megawatts (MW). In 2021 three major turbine manufacturers announced the development of offshore wind turbines ranging from 12-15 MW and these turbines will be available for purchase by 2024 or sooner. Offshore wind turbines are typically much larger than land-based turbines. In 2020, the average land-based turbine has a capacity of 3 MW and a rotor diameter of 410 feet. Turbines located at California's Altamont Pass range from 100 kW to 2 MW. The 15 MW offshore turbines being designed now have a rotor diameter of 787 feet (Bredmose, 2020). Offshore wind is historically known for being more expensive than onshore wind turbines, though this is changing over time with efforts to make offshore wind more cost-efficient.

BOEM's Offshore Wind Leasing Process

In California, most offshore wind development would likely occur in federal waters. BOEM is the federal agency responsible for issuing leases, easements, and rights-of-way for renewable energy projects on the outer continental shelf (OCS) under the Energy Policy Act of 2005. BOEM's competitive commercial leasing process is divided into four phases: planning and analysis, leasing, site assessment, and construction and operations:

- **Planning and Analysis:** BOEM releases a call for information, public comment, and nominations for potential WEAs. BOEM then designates WEAs that appear to be most suitable for leasing.

- **Leasing:** The leasing phase includes the publication of a draft and final lease sale notice, which lays out the auction format, lease stipulations, and other lease requirements for developers. Prior to issuance of the final lease sale notice, BOEM conducts a National Environmental Policy Act (NEPA) review to assess the environmental impacts of issuing leases. The issuance of a lease does not allow for the construction of any facilities; instead, it grants a developer the exclusive right to conduct site assessment activities and create a plan for the use of the area, which BOEM would then review and potentially approve.
- **Site Assessment:** After developers secure a lease, they engage in site characterization and assessment activities to inform the design of their proposed project. Within a year of securing a lease, developers must submit a site assessment plan (SAP) that describes the initial activities necessary to characterize a lease site. Developers then have up to five years to conduct the site characterization and assessment studies and surveys. The site assessment phase ends when the developer submits a construction and operations plan (COP) to BOEM for review.
- **Construction and Operations:** The COP describes the specific project the developer intends to construct and operate. When BOEM receives a COP, it conducts a NEPA review for the specific project under consideration. Once NEPA is complete, BOEM issues a record of decision describing its approval, conditional approval, or denial of the project, and any required modification or mitigation. If the project is approved, the developer moves forward with construction and operations after the record of decision is released.

There are two points in BOEM's process where offshore wind decisions come before the Commission for federal consistency review. The first is at the leasing phase of the process, where BOEM submits a CD, the Commission analyzes the consistency of the lease sale and any related, reasonably foreseeable activities and effects with California's coastal program, and the Commission can concur, conditionally concur, or object to the lease sale. The second federal consistency review occurs at the construction and operations phase. At that stage, the Commission will review a consistency certification, submitted by each developer, covering the specific elements of a proposed offshore wind project. The Commission will be able to concur, conditionally concur, or object to each consistency certification submitted for a specific COP. Currently, BOEM has designated two WEAs in California: the Humboldt WEA and the Morro Bay WEA. BOEM intends to hold a lease sale for both WEAs in the fall of 2022. As mentioned above, the Commission conditionally concurred to CD-0001-22 for leasing the Humboldt WEA in April 2022. BOEM has since submitted a CD for the Morro Bay WEA, which is the subject of this review.

B. Scope of Federal Consistency Review

BOEM seeks the Commission's concurrence that its proposed lease sale for the Morro Bay WEA is consistent with California's Coastal Management Program. BOEM anticipates issuing up to three leases as part of the Morro Bay lease sale. BOEM also anticipates issuing associated easements on the OCS outside of the Morro Bay WEA

for subsea cable corridors and areas for associated offshore collector/converter platforms. These easements would all be located within the central California OCS, extending from the WEA through to federal and state waters and to the onshore energy grid.

BOEM's CD and the Environmental Assessment (EA or Draft EA) it is required to complete under NEPA describes and analyzes the potential environmental impacts related to this lease sale. Specifically, these documents describe and analyze site assessment and characterization activities on the lease areas and on related areas (e.g., potential easement areas). 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. The CD does not describe or consider potential effects related to future construction and operation of any commercial wind power facilities. BOEM considers the impacts from any such actual construction and operation activities to be too speculative to analyze at this time, given that the location, layout, and other design parameters of any future projects are unknown at this time and that environmental effects of the projects will depend in part on factors such as turbine size, foundation type, project layout, installation methods, mooring lines, and location and type of associated onshore facilities. BOEM also notes that 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 development within the lease area. BOEM will conduct future NEPA review for proposed lease development and construction activities if a lessee submits a COP. The applicant for a COP would also need to submit a consistency certification to the Coastal Commission before the COP could be approved. See 30 C.F.R. § 585.627 (requiring submittal of consistency certification as part of COP submittal to BOEM). The Commission would review more detailed, site-specific effects at that time.

The Commission concurs that a primary focus for this CD is to analyze effects of lease activities—such as site characterization and assessment—and that it is not possible at this time to analyze the precise effects that future construction and operation of offshore wind projects will have on coastal resources. However, issuance of leases will have immediate effects on fishing communities even before any lease development activities occur, as the leases and overall BOEM process injects uncertainty into an occupation that is already heavily regulated and uncertain. Based on past BOEM leases and authorizations for wind development on the east coast, it is also reasonably foreseeable that the leases will lead to construction and operation of at least some offshore wind facilities, and it is feasible to describe, at least at a high level, the types of impacts that such facilities could have on coastal resources. Review of this CD is the state's opportunity to examine the impacts of offshore wind development at a programmatic level; to assess whether the Morro Bay WEA is a suitable site for offshore wind in California and whether there are certain areas within the WEA that are more or less suited to future projects; to ensure that the leasing process will lead to the development of adequate baseline information that will be needed to analyze impacts of future, specific development projects; and to ensure that the leasing process will set up a framework that can be used to analyze and mitigate likely impacts of future wind

projects. Future consistency certifications at the construction and operations phase will examine specific projects and their specific impacts, but they are not well-suited to address larger issues related to the Morro Bay WEA (e.g., assessing the presence of a large feature in the WEA that needs protection, or forming an appropriate working group to study issues related to development of the WEA as a whole).

More detail on the lease exploration activities described by BOEM and other reasonably foreseeable future lease development activities is included below. Because the leases will be in federal waters outside of the defined "coastal zone," the analysis of lease-related activities will focus on impacts those activities have on resources that travel between federal waters and California's coastal zone—such as marine mammals—or on impacts that may travel from federal waters to the coastal zone, such as underwater sound.

Proposed Lease Area

The Morro Bay WEA is approximately 20 miles offshore of the city of Cambria in San Luis Obispo County (see **Exhibit 1-1**). The Morro Bay WEA has been sited to avoid the Monterey Bay National Marine Sanctuary and the proposed Chumash Heritage National Marine Sanctuary. The area is approximately 376 square miles (240,898 acres or 975 square kilometers) in size. In identifying the Morro Bay WEA, BOEM considered the technical criteria needed to ensure that offshore wind development was viable, including wind speeds, seafloor slope, and seafloor depth. In its WEA Area ID Memo, BOEM states:

> *Central California meets key technical criteria used to determine the feasibility of floating offshore wind development. These include sustainable wind speeds, suitable water depths, access to existing transmission interconnections, and a robust local renewable energy demand. Specifically, annual wind speeds of 8 to 10 meters per second are found in the Morro Bay Call Area…which exceeds average speeds of several commercial developments in the North Sea. The water depth, which ranges between 865 and 1,300 meters is technically feasible for several types of floating foundations.*

BOEM also investigated other uses of the area during the area identification process and found that potential wind development within the Morro Bay WEA had the greatest potential to interact with or affect commercial and recreational fishing, maritime navigation, and Department of Defense activities. Additional considerations BOEM examined in identifying the WEA included historic properties, visual impacts, places and resources of importance to Tribes, marine mammals and sea turtles, and other infrastructure. In its CD, BOEM indicates that the northern portion of the Morro Bay call area and the eastern extension of the call area were removed due to potential impacts to Department of Defense activities and stakeholder concerns, respectively. Only the designated Morro Bay WEA, as shown in **Exhibit 1-1**, is being considered under this CD. The considerations that went into identification of the Morro Bay WEA are discussed in the Morro Bay WEA ID Memo (BOEM, 2021).

BOEM expects that vessels used for studies and surveys will stage from the Port of

Morro Bay. However, at this time there isn't a clear understanding of which port facilities will be used to construct and deploy offshore wind turbines and repair them. BOEM indicates that several ports in the region have the possibility of being used for offshore wind turbine construction and maintenance including Morro Bay, Avila Beach, and Port Hueneme due to their proximity to the proposed lease areas. Larger ports to the north and south that may be used for turbine construction include Long Beach/Port of Los Angeles and the Port of San Francisco. Offshore wind projects cannot happen without adequate landside and port infrastructure. Use of smaller ports on the Central Coast for offshore wind turbine construction and maintenance may require the construction of wharfs, warehouses and staging areas. Use of these ports may also create the need for dredging the navigation channels so that vessels and floating turbines can move in and out of the harbors. All of these activities may impact coastal resources and would require a Coastal Act analysis separate from the action before the Commission today. To better understand California's port infrastructure needs, a series of studies are being conducted to inventory California's current port facilities and infrastructure, identify infrastructure gaps and needed upgrades, and identify potential ports to support development of the offshore wind industry. The final study in the series is expected to be completed in December 2022.

Lease Exploration Activities

The issuance of a lease provides lessees with the exclusive right to conduct studies in their lease areas and easement areas to inform the development of a site-specific COP. Site assessment may include a variety of activities such as installation of buoys with data collection equipment and implementation of different types of surveys. These activities will be described in more detail in a SAP or in individual survey plans prepared by the leaseholder and reviewed by BOEM after a lease is granted. However, the types of activities and impacts associated with those activities are described, assessed and authorized as part of BOEM's EA and the lease issuance process.

As described by BOEM, site assessment is likely to include the installation of up to three metocean or met buoys outfitted with a variety of scientific sampling equipment. Metocean buoys float on the surface and are affixed to the ocean floor with an anchor. Disc, boat-shaped, spar met buoys are most likely to be adapted for offshore wind data collection. The shape of the buoy and its intended location influence the specific mooring and anchoring design to be used. A spar buoy can be stabilized through an onboard ballasting mechanism approximately 60 feet below the water surface, with approximately 30-40 feet of the buoy above the water surface. Spar buoys use tension leg mooring systems. In contrast, boat-shaped buoys have been moored with a solid cast iron anchor weighing approximately 11,000 pounds with a 2.3 square meter (24.75 square feet) footprint. The mooring line for the boat-shaped buoy is comprised of a chain, jacketed wire, nylon rope, polypropylene rope, and subsurface floats to keep the mooring line taut to semi-taut. The mooring line is approximately 1,200 meters (4,261 feet) long.

Buoys can be installed in about one day and require one maintenance trip per year, BOEM anticipates up to three buoys being installed in the Morro Bay WEA during the lease exploration phase. For installation, buoys would typically be towed or carried

aboard a vessel to the installation location. Once at the location site, the buoy would either be lowered to the surface from the deck of the vessel or placed over the final location, and then the mooring anchor chain dropped. After installation, the transport vessel would likely remain in the area for several hours while technicians configure operations of all systems and equipment on the buoy. The types of vessels used to install these buoys in the past included an 84-foot research vessel with a Zodiac rigid-hulled inflatable boat. Buoy decommissioning is also expected to take one day and would occur in year six or seven after lease execution. On-site inspections and preventative maintenance, such as addressing marine fouling, wear, or lens cleaning are expected to occur once a year. BOEM anticipates the total number of vessel trips for met buoy installation, maintenance, and decommissioning over a 5-year period to be around 21-30 vessel trips in the Morro Bay WEA.

BOEM anticipates that most met buoys will power their instrumentation and telemetry systems using solar arrays, lithium or lead acid batteries, and diesel generators. If diesel generators are used, BOEM will require an onboard fuel storage container with appropriate spill protection and an environmentally sound method to perform refueling activities. BOEM did not provide an estimate for vessel trips required for potential refueling activities.

Site characterization activities would also likely include additional geophysical, geotechnical, biological, archaeological, and ocean use surveys. Table 1-1 below, which was included with BOEM’s CD, outlines the survey equipment or methods used for each type of survey.

Table 1-1. Types of Surveys, Equipment/Methods, and Resource Surveyed

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

BOEM expects a total of between 150-555 24-hour survey days or round trips would be needed for lessees to complete their surveys. Site characterization survey vessels used offshore the west coast may range from vessels 36 feet long that make day trips to vessels that are 211 feet long and collect data for weeks at a time. Table 1-2 below from BOEM's EA provides a breakdown of anticipated vessel trips for the different types of surveys expected. A large number of vessels, particularly cargo vessels, travel through the Morro Bay WEA, and the survey vessel trips will add to vessel traffic in the vicinity of the Morro Bay WEA.

Table 1-2: Projected Maximum Vessel Trips for Site Characterization

Survey Task	Number of Survey Days/Round Trips[1] Based on 24-hour Days	Number of Survey Days/Round Trips[1] Based on 10-hour Days
HRG surveys of all OCS blocks within lease area(s)	64	153
Geotechnical sampling	18	247
Avian surveys	30-54[2]	30-54[2]
Fish surveys	8-365	8-365
Marine mammal and sea turtle surveys	30-54[2]	30-54[2]
Total:	150-555	464-873

Notes:

1 A range has been provided when data or information was available to determine an upper and lower number of round trips. Otherwise, only a maximum value was determined.

2 Avian, marine mammal and sea turtle surveys are most likely to occur at the same time, from the same vessel. However, since it is possible that they may occur separately, totals include vessel trips for both.

3 Number of surveys are conservative estimates, meaning the highest possible number of trips is assumed, even though it is unlikely this many trips will take place.

HRG = high-resolution geophysical

BOEM expects that lessees would survey their entire proposed lease area during the 5-year site assessment term, and that survey vessels would travel at a speed of 4.5 knots. For geophysical surveys, BOEM expects that lessees would not use air guns, and that the methods used for geophysical surveying would be limited to multibeam echosounders, magnometers, side-scan sonar, and shallow and medium seismic penetration sub-bottom profilers. These geophysical survey activities are expected to generate noise and will be discussed in greater detail in the marine resources section.

Finally, BOEM expects that lessees would stage their lease exploration activities from the Port of Morro Bay.

Lease Development Activities

Specific lease development projects are not being proposed at this time. On the East Coast, the timeframe between leasing and construction for the Vineyard Wind Project was six years. Floating offshore wind technologies that will be used in the Pacific are still being developed. However, there is a general sense of what these offshore wind projects will entail. Offshore wind projects are expected to include floating wind turbines, mid-water suspended electrical cables linking the turbines and running to a substation, mooring cables and anchors attaching the turbines to the seafloor, and an electrical export cable running from the substation to shore. Environmental assessments of floating offshore wind turbines are dependent in part on the type of platform, mooring, and anchor selected. Color, quantity, and the type of materials used will further vary assessment results.

Floating offshore wind turbines differ from fixed-foundation turbines in the type of platform and anchoring system used to support the turbine. Maxwell et al. (2022) provides a synthesis of floating offshore wind technologies and their potential environmental impacts. For a diagram of the different types of floating offshore wind turbines, moorings and anchors, please see **Exhibit 1-2**. There are four main types of floating platform: barge, spar, tension leg platform, and semi-submersible platform. Each type of floating platform is stabilized by at least three mooring lines anchored to the seabed. For some mooring configurations, the mooring lines will experience some drift, resulting in each turbine also drifting within a certain radius of its station. The three primary types of mooring systems are catenary, taut, and semi-taut. Catenary mooring is most used with spar, semi-submersible, and barge platforms. The taut leg mooring system is most used with the tension leg platform. Semi-taut mooring systems are also used on semi-submersible platforms. The best anchor technology for securing the mooring lines to the seabed depends on the composition of the sediment. The four primary anchor types are drag-embedment, suction caissons, gravity anchor, and anchor piles. Suction caisson and gravity anchors are typically less impactful to benthic ecosystems as they do not drag as much on the seabed. Substantial innovation is ongoing in developing anchors for the offshore wind industry, particularly in deeper waters (Maxwell et al., 2022).

In addition to the mooring lines, an array of electrical cables, also known as inter-array cables, connects each of the turbines and transmit the generated electricity to shore. For a schematic of full scale floating offshore wind development, including inter-array cables and offshore substations, please see **Exhibit 1-3**. These inter-array cables extend between multiple floating platforms and subsequently connect with terminal cables that lead to an electrical substation. Inter-array cables are suspended freely in the water column and are designed to compensate for the movement of the floating platform and the forces of the water column by using bend stiffeners, intermediate buoys, sinkers, or other devices. The depth of the inter-array cables in the water column is determined by specific project design. In some cases, inter-array cables may be buried or weighted to the seafloor between the platforms. The inter-array cables potentially represent a sizeable physical and environmental footprint of future projects, as they must span the distance between turbines throughout the wind energy development. Typical spacing for offshore wind turbines is between six to eight times the diameter of the rotor (Maxwell et al., 2022). Although the specifics of future projects are unknown; a BOEM-funded visual simulation of turbines in the Morro Bay WEA assumed that turbines would have a generating capacity of 15 MW, a hub height of 486 feet, a rotor diameter of 807 feet and a maximum height at the blade tip of 889 feet.[3] If turbines of this size were installed in the Morro Bay WEA, they would likely have a distance between turbines of 0.917-1.22 miles.

Due to the location of the Morro Bay WEA, substations for offshore wind projects would likely also be offshore, either floating or on the seafloor. A single cable route would export the electricity from the substation to shore. Onshore facilities would be needed for the cable landing, and the location and infrastructure would need to be resilient to

[3] More information on this visual simulation may be found in the Scenic and Visual Resources section

sea level rise. As discussed above, onshore facilities will also be needed for turbine manufacturing and maintenance.

Offshore wind turbines are expected to have a service life of approximately 20 years, with blades needing repair every 2-5 years on average (Mishnaevsky and Thomsen, 2020). Due to wave pressure, floating offshore wind turbines require heavier maintenance than onshore wind turbines. Approximately every 10 years, the entire system would need to be disconnected and towed to shore for repairs, followed by reinstallation (Toulotte, 2021).

Monitoring and Adaptive Management

Floating offshore wind is a new industry to California but also worldwide. As a result, there is a great deal of uncertainty as to the specific impacts floating offshore wind turbines, and facilities in aggregate, will have on marine species and the surrounding physical environment. And although we can draw on data and information from other parts of the world and from similar industries in California, realistically, we will not be able to know the full scope and scale of impacts from offshore wind to California's marine resources until projects are in the water and we are able to monitor and measure the resulting effects. Thus, comprehensive monitoring and adaptive management plans for all offshore wind projects will be a critical in ensuring coastal resources are protected.

Over the next several years, before specific projects come before the Commission for review under the Coastal Zone Management Act (CZMA), the Commission expects that its staff will work collaboratively with BOEM and other federal and state partners as well as Tribal and non-governmental experts and industry representatives to review the relevant science on survey methodologies, monitoring approaches and technologies, adaptive management strategies and other relevant topics for floating offshore wind. This body of knowledge will inform baseline data collection and development (and regulatory review) of comprehensive monitoring plans for future offshore wind projects. A critical element of these comprehensive monitoring plans is data transparency and the sharing of baseline data collection with stakeholders and the interested public, so that decisions on how assess the impacts of specific proposed lease development projects during the COP phase are well-informed.

Stakeholder feedback indicates a strong desire to understand impacts prior to a future full-scale buildout of lease areas and has suggested the concept of demonstration projects as a way to achieve this. In fact, a smaller-scale offshore wind project, described by its proponents as a demonstration project, has been proposed in state waters off of Vandenburg Space Force Base. Regardless of whether a demonstration project is constructed prior to construction of larger scale projects, the Commission anticipates that future proposed projects would not likely experience simultaneous review and approval, meaning that construction of future projects would take place incrementally, and to some extent, sequentially. Additionally, because this is a new industry on the West Coast, developers do not have the supporting infrastructure and capacity needed to construct a project all at once. Due to few locations for turbine construction and assembly, most projects are expected to be constructed in phases. This likely phased approach to construction would allow for observation and monitoring

of impacts that would be applied, if necessary, to address unforeseen or even underestimated impacts.

C. CUMULATIVE CONTEXT: THE BIG PICTURE

The leasing and potential future development of the Morro Bay WEA will have a variety of effects on coastal resources. CDs must consider both the direct effects of project-related activities as well as the "indirect (cumulative and secondary) effects which result from the activity and are later in time or farther removed in distance but are still reasonably foreseeable." 15 C.F.R. § 930.11(g). As the CZMA regulations describe: "Indirect effects are effects resulting from the incremental impact of the federal action when added to other past, present, and reasonably foreseeable actions, regardless of what person(s) undertake(s) such actions." *Id*.

Here, potential effects of leasing and future lease development should be understood within the larger context, as some impacts that may not be particularly significant by themselves may be more significant when viewed as one of myriad impacts and stressors that are affecting the marine environment, the fishing industry, or other resources or communities. Given that the leasing of the Morro Bay WEA will be part of the first leases for offshore wind on the West Coast, it is also important to understand the lease in the context of larger efforts to ramp up the development of offshore wind on the U.S. Pacific coast. The analysis of the effects of this proposed leasing activity, and any mitigation proposed to address its impacts, may have precedent-setting value in terms of how future wind leasing and development occur. Analysis of relevant cumulative impacts is addressed in the substantive sections of the Findings, below. This section provides the big-picture context for understanding the proposed lease and its potential cumulative effects.

Morro Bay Offshore Wind in Context

As discussed in section A, both the federal and state governments have aggressive renewable energy targets, and the Morro Bay WEA is one piece of BOEM's offshore wind development plans. As mentioned above, BOEM is planning to lease the Humboldt WEA at the same time as the Morro Bay WEA. Other activities taking place on the OCS near the Morro Bay WEA include military activities and launches from Vandenberg Space Force Base in the Point Mugu Sea Range[4], fishing, and shipping traffic. The military coordinated with BOEM throughout the siting process for the Morro Bay WEA, and BOEM's proposal addresses military and national security concerns. Additionally, a number of subsea cables come to shore in the Morro Bay region, although they do not currently intersect the Morro Bay WEA. The Commission has approved eleven cable landings in the Morro Bay region, two of which have since been decommissioned and

[4] The Commission recently concurred with CD-0003-20 by the U.S. Navy for continuation and expansion of military readiness training and testing activities on Point Mugu Sea Range in December 2020. The staff report may be found here: https://documents.coastal.ca.gov/reports/2020/12/F13b/F13b-12-2020-report.pdf

removed.[5] A map of cables offshore in the area is available in **Exhibit 1-4**. Farther south there are also offshore oil and gas facilities on the OCS; the closest one is Platform Irene at approximately 73 miles to the southeast.

Additionally, the Morro Bay WEA is near several areas that are managed for conservation and protection of marine life. The WEA is immediately adjacent to the Monterey Bay National Marine Sanctuary and the proposed Chumash Heritage National Marine Sanctuary. The Davidson seamount, which provides valuable deep-sea habitat and is also a part of the Monterey Bay National Marine Sanctuary, is approximately 30 miles to the west. Finally, the Channel Islands National Marine Sanctuary is approximately 100 miles to the southeast. The allowable activities in each of these sanctuaries is guided by their respective Sanctuary management plans. However, NOAA and BOEM expect that supporting infrastructure, such as electric export cables would be allowed to run through the Sanctuary boundaries as long as measures are in place to protect marine life during cable laying and construction activities.

As described above, the California State Lands Commission (CSLC) has received two lease applications for offshore wind development within state waters off Vandenberg Space Force Base, which are also approximately 73 miles to the southeast of the Morro Bay WEA. These projects would be required to receive coastal development permits (CDPs) before moving forward. Finally, other offshore wind development may be considered by California in the future. The CEC, as directed by assembly bill 525, is embarking on a coast-wide planning effort to identify areas of the ocean in federal waters that could be appropriate for future offshore wind development. This effort is proceeding in collaboration with the Commission, other agencies, and stakeholder involvement. It is likely that if additional offshore wind areas are identified through this process, they could be considered by BOEM for future leasing.

Cumulative Effects on Marine Resources

As offshore wind lease development occurs on the West Coast, migratory species will likely have to navigate multiple offshore wind developments and infrastructure as they go through their annual migrations, in which they typically move to the north in the summer and the south in the winter. Each offshore wind development project incrementally increases the risk of bird strikes, vessel strikes and entanglement, and increases the impacts of displacement. Whales and seabirds are of particular concern for these types of impacts. Individuals that are displaced from their normal migratory routes or foraging grounds must expend more energy to find food, leading to lower fitness and potentially impacting successful reproduction.

The impact of one offshore wind development may not create enough displacement or changes to show an effect, but effects may become evident as more offshore wind farms are developed. Each offshore wind development project would also incrementally increase the effects of artificial lighting on birds and would add to existing underwater sound from shipping and other sources. Although the operational sound of offshore

[5] CDPs numbers for approved cables include: E-00-004, E-98-029, E-08-021, E-99-011, E-98-027, E-01-029, and 9-20-0275. Some of these permits covered multiple cables.

wind development is expected to be low, with enough turbines over a large enough area, the underwater sound could lead to changes in marine wildlife behavior.

The effects of offshore wind in the Morro Bay WEA will add to other stressors that marine life already has to manage on the West Coast.

Additionally, more offshore wind development has the potential to create greater impacts on ocean processes, particularly upwelling. A modeling study by Integral Consulting showed that impacts to upwelling from the Morro Bay WEA on its own were present, but modest. However, prior models including larger areas of offshore wind development showed greater impacts to upwelling intensity and larger areas impacted by changes to upwelling. As more offshore wind development is considered and eventually leased, it is important to continue tracking the impacts to upwelling on a regional scale.

Finally, installation of offshore wind turbines over multiple leases and WEAs has the potential to cumulatively impact benthic habitats and species. These changes may include the artificial reef effect, anchoring impacts to sensitive benthic habitats and associated species. The cumulative effects of offshore wind development on these habitats and species are not well understood at this time. Comprehensive baseline and post-project monitoring and implementation of an adaptive management framework will be critical in understanding cumulative effects and ensuring that effects are minimized.

Cumulative Effects on Fishing

The fishing industry will also almost certainly experience cumulative effects from potential future offshore wind and other marine development in the region. The Morro Bay WEA covers an area of approximately 375 square miles (the Humboldt WEA currently covers an area of 206 square miles). Additionally, call areas off the coast of Oregon represent around 2,000 square miles of potential OCS leases, including an area adjacent to the CA/OR border.[6] Areas off the coast of Washington may also be considered for future calls, leasing, and development. It is unknown to what level of development fishing and offshore wind can co-exist. Each development opportunity, while addressing critical climate goals and providing renewable power to the region, will come at a cost to the fishing industry and the provision of wild caught seafood products to the nation. The Coastal Commission evaluates whether proposed projects are consistent with the state's coastal management program, taking into account the projects' individual and cumulative effects on coastal uses and resources. Through its NEPA requirements, BOEM is also tasked with considering and disclosing the individual and cumulative impacts of its actions, and it is expected that these reviews will be provided during subsequent stages of development for future projects. Given the known range of fisheries coastwide, it can be anticipated that impacts to fisheries from the development of more than one lease area will occur in predominantly offshore fisheries such as the groundfish fishery, highly migratory species (HMS) fishery, and even the salmon or hagfish fishery. Proper siting of lease areas that avoid known fishing grounds

[6] Proposed Oregon Call Areas Map (boem.gov)

based on best available data[7] is a key factor in minimizing the overall impacts to the fishing industry. For more nearshore fisheries, such as Dungeness crab, halibut, shrimp, or squid, cumulative impacts will be largely dependent on the location and siting of future infrastructure, such as cables and substations. Close coordination between BOEM, state and federal agencies, and lessees and potentially impacted fisheries coastwide will ensure that the totality of impacts to the industry is minimized while still maximizing the region's renewable energy goals.

D. Coordination with other Agencies, Consultations with Tribes and Fishing Communities

Coordination with State and Federal Agencies

In 2016, BOEM established an intergovernmental Renewable Energy Task Force (Task Force) with California to facilitate coordination among federal agencies and affected state, local, and tribal governments throughout the offshore wind leasing process. Following the first Task Force meeting and through the leadership of the CEC, BOEM and the state engaged in a collaborative, data-based offshore wind energy planning process to foster coordinated and informed decisions about California's ocean resources. To support the planning process, BOEM, the California Public Utilities Commission, and the CEC funded the California Offshore Wind Energy Gateway. The Gateway assembles geospatial information on ocean wind resources, ecological and natural resources, ocean commercial and recreational uses, and community values. The information in the gateway has since been used to develop models in the Environmental Evaluation Modeling System (EEMS) to provide a transparent and data-driven means for assessing a range of considerations at a given location, such as existing energy potential, ocean uses, fisheries, and marine life occurrence. Commission staff have participated in the Task Force since its development and have used the tools and data provided through the Offshore Wind Energy Gateway and EEMS model throughout this report. Additionally, data and information gathered through the task force have informed BOEM and the state of conflicts with existing ocean uses, viewshed, fishing, and wildlife. BOEM has used the information gathered to inform its WEA identification process.

In addition to the Task Force, Commission staff also participate in a state interagency working group to coordinate the state's regulatory, research, and planning work on offshore wind. California State Agencies participating in the working group include the:

- California Energy Commission
- Ocean Protection Council
- Department of Fish & Wildlife

[7] The OSW Energy Gateway and Environmental Evaluation Modeling System (EEMS) modelling tool contain regionwide fisheries and environmental data. The OSW Energy Gateway is hosted on Data Basin, a science-based mapping and analysis platform and available for data exploration here: https://caoffshorewind.databasin.org/

- Public Utilities Commission
- State Lands Commission
- Governor's Office of Planning and Research
- Department of Parks & Recreation

The state interagency working group has worked together to provide state comments to BOEM on the Morro Bay lease sale EA Scoping and on the Draft EA. As discussed further below, the working group has also coordinated on outreach to Tribes, in addition to the tribal consultation done by Commission staff and has coordinated on outreach to fishing communities.

In its CD and communications with Commission staff, BOEM indicates that it may engage in the following legal or agency consultations as part of its federal environmental review process for offshore renewable energy projects; BOEM has indicated that most consultations will begin at a later date, if BOEM issues a lease and later receives a project-specific SAP or COP:

- National Marine Fisheries Service (NMFS): Essential Fish Habitat Consultations
- NMFS: Endangered Species Act Consultations
- U.S. Fish and Wildlife Service (USFWS): Endangered Species Act Consultations
- National Historic Preservation Act Consultations (Section 106)
- Clean Water Act Consultations
- Clean Air Act Consultations
- Migratory Bird Treaty Act Consultations
- Tribal Consultations
- United States Coast Guard: Navigational Safety Risk Assessment

BOEM is not currently engaged in consultations under the Marine Mammal Protection Act. When a lease is issued, BOEM anticipates its lessees will need to consult with NMFS and the USFWS before starting their lease exploration activities.

At this time, there are no other formal approvals from state agencies, with the exception of this CD, needed for the proposed lease sale to move forward. During lease exploration activities, any geophysical survey activities that occur within state waters would need to be authorized by the CSLC. Additionally, NOAA staff have indicated that exempted fishing permits or letters of authorization may be needed for any fish surveys dependent on the type of activities, species and/or amount of take. Finally, any directed research where marine species are taken in federal waters and then possessed while traveling through state waters (e.g., bringing specimens back to a laboratory) requires a California Department of Fish and Wildlife (CDFW) Scientific Collecting Permit. Later, when lessees submit their COPs and begin seeking approval for development of their leases, other state and local agencies, such as the CSLC and possibly local governments, will have permitting or leasing authority over development in state waters

and onshore. This may include approval authority for infrastructure required to bring the electricity to shore and connect it to the grid, and port-related development to support construction and operation of future projects.

Early Engagement with Tribes

State and federal agencies have conducted numerous efforts to engage Tribes and provide information on potential offshore wind development. In 2016, BOEM sent formal letters to all federally recognized Tribes with known or potential interest in California's offshore environment, inviting them to join the BOEM California Intergovernmental Renewable Energy Task Force. The first task force meeting in October 2016 included representatives from six Tribes: Bear River Band of the Rohnerville Rancheria, Blue Lake Rancheria, Cher-Ae Heights Indian Community of the Trinidad Rancheria, Coyote Valley Band of Pomo Indians, Santa Ynez Band of Chumash Indians, and Tolowa Dee-ni' Nation.

In 2017, the Governor's Tribal Advisor and the CEC formed a State Tribal Offshore Renewable Energy Working Group (Tribal Working Group) to gain input from federally recognized and non-federally recognized Tribes, inform the California offshore renewable energy planning efforts, and simplify the exchange of information between the State and Tribes (BOEM, 2018). This Tribal Working Group provided input on the planning and siting process for offshore wind, the need to consider and avoid impacts to tribal cultural resources, the need to avoid environmental impacts, and the potential construction, operation, and decommissioning impacts surrounding these projects. Additional description of BOEM's and the state's early outreach to Tribes may be found in Appendix 4 of BOEM's Outreach Summary Report dated September 2018, and an Addendum discussing outreach activities through 2021 (BOEM, 2021).

Finally, additional in-person outreach meetings were conducted in late November and early December 2021 between state agencies, including the Coastal Commission, and some Central Coast Tribes, including the Santa Ynez Band of Chumash Indians, the Coastal Band of Chumash, the Barbareño/Ventureño Band of Mission Indians, Yak Titᵸu Yak Tiłhini – Northern Chumash Tribe, and the Salinan Tribe of Monterey and San Luis Obispo Counties. Issues discussed at these meetings included:

- Concerns about capacity and how or when to engage in the regulatory and permitting process;
- Concerns about impacts to the proposed Chumash Heritage National Marine Sanctuary;
- Impacts to marine life, seabirds, and culturally important species
- Viewshed impacts;
- Coastal impacts due to port development; and
- The importance of protecting sacred lands.

Consultations with Tribes

During the early outreach described above, in October 2021, Commission staff reached out to representatives of Native American Tribes with formal tribal consultation invitations. Through outreach and invitations, Commission staff contacted the following Native American Tribes that may be affiliated with the Morro Bay area; contact information for these Tribes was provided by the Native American Heritage Commission:

- Salinan Tribe of Monterey and San Luis Obispo Counties
- Xolon-Salinan Tribe
- Esselen Tribe of Monterey County
- Amah Mutsun Tribal Band
- Amah Mutsun Tribal Band of Mission San Juan Bautista
- Costanoan Ohlone Rumsen-Mutsen Tribe
- Costanoan Rumsen Carmel Tribe
- Indian Canyon Mutsun Band of Costanoan
- Coastal Band of the Chumash Nation
- Northern Chumash Tribal Council
- Yak Titᵞu Titᵞu Yak Tiłhini – Northern Chumash Tribe
- Barbareño/Ventureño Band of Mission Indians
- Santa Ynez Band of Chumash Indians

Commission staff received five responses requesting tribal consultation from the Xolon-Salinan Tribe, the Coastal Band of the Chumash Nation, the Northern Chumash Tribal Council, Yak Titᵞu Titᵞu Yak Tiłhini – Northern Chumash Tribe, and the Santa Ynez Band of Chumash Indians. Commission staff set up zoom consultation meetings in late April and early May 2022, attended by the Xolon-Salinan Tribe, the Northern Chumash Tribal Council, and Yak Titᵞu Titᵞu Yak Tiłhini – Northern Chumash Tribe. Additional discussion about the content of these consultations can be found in section K, Tribal and Cultural Resources.

Outreach to Fishing Communities

As part of the process of developing its EA for the lease sale, BOEM has held virtual scoping meetings with members of the public, including the fishing community. Coastal Commission staff, CDFW, CSLC, and CEC held a series of meetings with the fishing community on the North and Central Coast in the Fall of 2021 and Spring of 2022, which BOEM also attended. After initial outreach meetings in the Fall of 2021, the aforementioned agencies returned to the North and Central Coast on March 16-17, 2022 and May 16-17, 2022, respectively, to discuss findings, information gaps (and future studies), and statewide spatial planning efforts with local fishing communities. These meetings were facilitated with the intent of gaining an understanding of the

potential impacts of offshore wind development on fisheries and to begin developing a mitigation framework that would ensure fisheries impacts were addressed through continued engagement between fishing communities, state agencies, and developers. Key contributors in this outreach were leaders of the fishing community from the Humboldt Bay Fishermen's Marketing Association, Crescent City Fishermen's Marking Association, Salmon Troller's Marketing Association, Morro Bay Commercial Fishermen's Association, and Commercial Fishermen of Santa Barbara. Meeting notes for outreach activities are available on the Coastal Commission's website.

E. Marine Resources and Water Quality

Section 30230 of the Coastal Act states:

> *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.*

Section 30231 of the Coastal Act states:

> *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.*

Morro Bay Wind Energy Area

The Morro Bay WEA is in the California current ecosystem, which flows south from British Columbia, Canada to Baja California, Mexico. The WEA is located entirely on the continental slope; ecologically, this area is a transition zone between coastal species that are found in greater abundance closer to shore, and species that are more common beyond the continental shelf in the open ocean. The Morro Bay WEA is mostly on a plateau with the western edge consisting of slopes. Lease exploration and eventual lease development of the Morro Bay WEA may affect marine resources in several ways. Lease exploration has the potential to negatively affect marine resources through seafloor disturbance and increased turbidity, elevated levels of underwater sound, and increased entanglement and ship strike risk. Lease development has the potential to adversely affect marine resources through habitat disturbance, turbine strikes, increased entanglement risk, marine species displacement, avoidance, and attraction, ship strike risk, elevated levels of underwater sound, fish aggregation and artificial reef effect, invasive species weakened upwelling, and electromagnetic fields. Both lease

exploration and lease development have the potential to increase the probability of oil spills, which would adversely affect water quality. The Coastal Act has specific provisions relating to oil spills, and therefore the oil spill analysis and findings are discussed in section G of these findings.

Lease Exploration Impacts

Lease exploration activities may include installing and anchoring meteorological buoys in the lease area, using sound to conduct geophysical surveys, and using research vessels to conduct biological, archaeological and geotechnical studies in the WEA. Up to three buoys are expected to be installed and remain in the WEA for 5 years, and BOEM anticipates a total of 21-30 vessel trips for buoy installation, maintenance and removal. BOEM anticipates significantly higher vessel trips for geophysical surveys (64-153 trips), geotechnical sampling (18-247 trips), avian surveys (30-54 trips), marine mammal and sea turtle surveys (30-54 trips) and fish surveys (8-365). BOEM notes in its EA that this is the highest possible number of vessel trips, and the number of vessel trips that would actually occur is likely to be much lower. Specifically, avian, marine mammal and sea turtle surveys would most likely occur at the same time from the same vessel.

Seafloor Disturbance and Water Quality

According to BOEM's EA, the seafloor within the Morro Bay WEA consists of soft bottom sediment with some geological features such as pockmarks, submarine landslides, and steep seafloor slopes. Although most of the Morro Bay WEA contains soft sediments on the seafloor, portions of the area include deep sea corals, and habitat areas of particular concern (HAPC), specifically rocky reefs. Maps of the WEA and seafloor features, surrounding deep sea corals and HAPC concern may be found in **Exhibits 2-1a, 2-1b, and 2-1c**.

Anchoring and collection of sediment samples associated with lease exploration has the potential to cause localized seafloor disturbance and water quality effects by temporarily decreasing water clarity and increasing turbidity. Indirect impacts of decreased water clarity and increased turbidity include clogging filtration systems for filtering animals, decreasing sight range for visual predators and prey, and smothering benthic organisms (Maxwell et al., 2022). Anchoring and sediment sampling may also directly or indirectly impact sensitive benthic species inhabiting areas of hard substrate habitat or rock outcroppings. BOEM expects collection of sediment samples to impact up to 108 square feet of seafloor per sample and anchoring to create a larger area of seafloor disturbance. Anchors for boat and discus shaped buoys are expected to have a footprint of 6 square feet with an anchor sweep impact area of approximately 8.5 acres per buoy anchoring.

In its EA, BOEM states:

> *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.*

The mud and sand seafloor in the Morro Bay WEA is expected to recover quickly from disturbance related to sample collection and temporary anchor placement. A study on anchoring impacts by the Oregon Wave Energy Trust found that gravel and broken shells were more common around anchoring sites, but this did not significantly affect median sediment grain size or the benthic macrofauna community on soft-bottom habitat (Henkel et al., 2016).

However, the Morro Bay WEA contains a significant area that is mapped as rocky reef habitat, which may be seen in **Exhibit 2-1b**. This habitat covers the southwestern portion of the WEA identified as a HAPC. The Morro Bay WEA also contains deep sea corals and sponges, which act as habitat for other benthic species; the locations of deep sea corals and sponges in relation to the WEA are shown in **Exhibit 2-1c**. These habitats are rare, provide important nursery grounds, food sources and shelter for sensitive species and are slow to recover from damage and should be protected from anchoring impacts, including indirect impacts relating to increased turbidity. To ensure that the biological productivity of these important habitat areas is sustained, **Condition 2** requires BOEM to ensure that lessees avoid intentional contact with hard substrate, rock outcroppings, seamounts, or deep-sea coral and sponge habitat during all lease exploration activities and requires a buffer that fully protects these habitats. In addition, **Condition 1(f)(iv)** requires that BOEM require lessees to submit an Anchoring Plan for any survey plan that requires vessel anchoring and **Condition 1(b)** provides for Commission staff review of all survey plans. With these protections in place, impacts to hard substrate habitat areas will be minimized or avoided.

Elevated Levels of Underwater Sound

Lease exploration activities may result in habitat exclusion or avoidance by marine species due to the use of sound in geophysical surveys. Geophysical surveys can be conducted using high or low energy equipment. In previous actions, the Commission has denied or objected to projects proposing use of high energy geophysical surveys because of the significant adverse impacts to marine species including marine mammals, sea turtles, fish and invertebrates. For offshore wind lease exploration, BOEM indicates in its CD and EA that only low-energy surveys will be authorized under the proposed leases. Low-energy surveys, while significantly less problematic than high-energy surveys, do still have the potential to result in impacts to marine mammals and sea turtles. Fish and invertebrates would be less affected by these types of surveys than marine mammals and sea turtles, but more research, focusing on the relevant aspects of sound for fish and marine invertebrates, is needed to fully understand the impacts.

According to BOEM's EA, six species of baleen whales and 12 species of toothed or

beaked whales are expected to occur in the vicinity of the Morro Bay WEA. Additionally, five species of seals and sea lions and one species of sea turtle are expected to occur in or near the Morro Bay WEA. Finally, the Southern sea otters are not present within the Morro Bay WEA, but are present close to shore, typically within state waters (see **Exhibit 2-2a**). The southern sea otter is listed as federally threatened and is a fully protected species under California state law. Table 2-1 below, from BOEM's EA, lists the marine mammals present in the area, and provides their federal protected status. The Northern elephant seal, Guadalupe fur seal, and Pacific right whale, which are included in the table below, are also protected under the California Endangered Species Act, and are listed as fully protected. No density estimates are available on the California Offshore Wind Energy Gateway for Guadalupe fur seals, or northern elephant seals. However, species distribution mapping shows moderate probabilities of northern elephant seals in the vicinity of the WEA, with greater probabilities further to the north (see **Exhibit 2-2b**).

Table 2-1: Protected Marine Mammal and Sea Turtle Species Expected to Occur in the Project Area (DPS refers to Distinct Population Segment as defined under the ESA)

Common name	Scientific Name	Stock	ESA/MMPA Status	Occurrence
Baleen Whales				
Blue whale[1]	*Balaenoptera musculus*	Eastern North Pacific	Endangered/ Depleted	Late summer and fall
Fin whale[1]	*Balaenoptera physalus*	California, Oregon, and Washington	Endangered/ Depleted	Year round
Sei whale[1]	*Balaenoptera borealis*	Eastern North Pacific	Endangered/ Depleted	Uncommon
Minke whale[1]	*Balaenoptera acutorostrata*	California, Oregon, and Washington	-	Occasional
Humpback whale[1]	*Megaptera novaeangliae*	California, Oregon, and Washington (Central American DPS and Mexico DPS)	Endangered/ Threatened	Spring to fall
North Pacific Gray Whale[1]	*Eschrichtius robustus*	Eastern North Pacific	-	Oct-Jan and March-May
Toothed and Beaked Whales				
Sperm whale[1]	*Physeter macrocephalus*	California, Oregon, and Washington	Endangered/ Depleted	Year round
Killer whale	*Orcinus orca*	Eastern North Pacific Transient/ West Coast Transient[2]	-	Sporadic
Killer whale – southern resident	*Orcinus orca*	Southern Resident	Endangered	Uncommon

Baird's beaked whale	*Berardius bairdii*	California, Oregon, and Washington	-	
Cuvier's beaked whale	*Ziphius cavirostris*	California, Oregon, and Washington	-	Uncommon
Stejneger's beaked whale	*Mesoplodon stejnegeri*	California, Oregon, and Washington	-	
Risso's dolphin	*Grampus griseus*	California, Oregon, and Washington	-	Year round
Rough-toothed dolphin	*Steno bredanensis*	N/A[3]	-	
Northern right whale dolphin	*Lissodelphis borealis*	California, Oregon, and Washington	-	Year round
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	California, Oregon, and Washington	-	Year round
Dall's porpoise	*Phocoenoides dalli*	California, Oregon, and Washington	-	Year round
Harbor porpoise	*Phocoena phocoena*	Morro Bay stock		Late Spring to early fall
Sea Lions and Seals				
Steller sea lion	*Eumetopias jubatus*	Eastern DPS	De-listed with critical habitat	Year round
California sea lion	*Zalophus californianus*	U.S. Stock	-	Year round
Northern elephant seal	*Mirounga angustirostris*	California	-	Year round
Harbor seal	*Phoca vitulina richardsi*	California	-	Year round
Guadalupe fur seal[1]	*Arctocephalus townsendi*	Throughout its range	Threatened	Spring/ Summer, seasonal low numbers
Sea Turtles				
Leatherback sea turtle	*Dermochelys coriacea*	Throughout range	Endangered	Uncommon

Notes:

1. Critical habitat has not been designated for these ESA-listed species.
2. This stock is mentioned briefly in the Pacific Stock Assessment Report (Carretta et al., 2018; Carretta et al., 2016) and referred to as the "Eastern North Pacific Transient" stock, however, the Alaska Stock Assessment Report contains assessments of all transient killer whale stocks in the Pacific and the Alaska Stock Assessment Report refers to this same stock as the "West Coast Transient" stock (Muto et al., 2016; 2018).
3. Rough-toothed dolphin has no recognized stock for the U.S. West Coast.

ESA = Endangered Species Act MMPA = Marine Mammal Protection Act

The use of sound in geophysical surveys may affect the behavior of marine mammals due to masking their ability to hear important environmental sounds and requiring more intense vocalizations; intense sounds may damage their ability to hear. BOEM's EA finds that underwater sound may change a number of important biological behaviors including migration, feeding, resting, communication, and breeding. The type and severity of a potential effect is, in part, due to the hearing thresholds exhibited by different types of marine mammals. Specifically, baleen whales hear lower frequencies. Sperm whales, beaked whales, and dolphins hear mid-frequencies, and porpoises hear high frequencies. Seals, sea lions and sea turtles also hear low frequencies. Table 2-2 below outlines the general hearing range and impulsive acoustic thresholds for marine mammals and sea turtle species.

Table 2-2: Impulsive Acoustic Thresholds Identifying the Onset of PTS and TTS for Marine Mammals[1] and Sea Turtle[2] Species

Hearing Group	Generalized Hearing Range	Permanent Threshold Shift Onset	Temporary Threshold Shift Onset
Low frequency (e.g., Baleen Whales)	7 Hz to 35 kHz	219 dB Peak	213 dB Peak
		183 dB cSEL	179 cSEL
Mid-frequency (e.g., Dolphins and Sperm Whales)	150 Hz to 160 kHz	230 dB Peak	224 dB Peak
		185 dB cSEL	178 dB cSEL
High frequency (e.g., porpoise)	275 Hz to 160 kHz	202 dB Peak	148 dB Peak
		155 dB cSEL	153 dB cSEL
Phocid pinnipeds (true seals) (underwater)	50 Hz to 86 kHz	218 dB Peak	212 dB Peak
		185 dB cSEL	181 dB cSEL
Otariid pinnipeds (sea lions and fur seals) (underwater)	60 Hz to 39 kHz	232 dB Peak	226 dB Peak
		203 dB cSEL	199 dB cSEL
Sea Turtles	30 Hz to 2 kHz	230 dB Peak	226 dB Peak
		204 dB cSEL	189 dB cSEL

Notes:

1 (NMFS, 2018).

2 (Navy, 2017).

cSEL = cumulative sound exposure level dB = decibels Hz = hertz kHz = kilohertz

BOEM's impact analysis uses the highest power levels of survey equipment and the most sensitive frequency setting for marine life hearing group to determine impacts. The analysis does not consider the directionality or tow depth of sound sources, and therefore likely overestimates the impacts of the surveys on marine life. Section 3.5.2.1

of BOEM's EA includes additional details on how the analysis to assess the impacts of geophysical surveys was conducted.

According to BOEM's analysis in its EA, for many marine mammal species, the distance from the survey equipment that results in a potential for injury is generally small, ranging from 0-154 feet. The largest possible distance that could result in injury is 825 feet for porpoise species, when a 100 kHz multi-beam echosounder is used. Injury thresholds for sea turtles are higher than those for marine mammals, and based on BOEM's EA analysis, geophysical survey activities would not result in injury to sea turtles from sound. Table 2-3 below provides a summary of the distance, in meters, for potential injury of marine mammals and sea turtles from proposed geophysical survey equipment.

Table 2-3: Summary of PTS Exposure Distances for Protected Marine Mammal Species from Mobile HRG Sources Towed at a Speed of 4.5 knots

HRG SOURCE	DISTURBANCE DISTANCE (m)						
	Highest Source Level (dB re 1 µPa)	Low Frequency (e.g., Baleen Whales)[1]	Mid-Frequency (e.g., Dolphins and Sperm Whales)[1]	High Frequency (e.g., Porpoise)	Phocids (true seals)	Otariids (sea lions and fur seals)	Sea Turtles
Mobile, Impulsive, Intermittent Sources							
Boomers, Bubble Guns (4.3 kHz)	176 dB SEL 207 dB RMS 216 peak	0.3	0	5.0	0.2	0	0
Sparkers (2.7 kHz)	188 dB SEL 214 dB RMS 225 peak	12.7	0.2	47.3	6.4	0.1	0
Chirp Sub-Bottom Profilers (5.7 kHz)	193 dB SEL 209 dB RMS 214 peak	1.2	0.3	35.2	0.9	0	NA

Mobile, Non-Impulsive, Intermittent Sources							
Multi-beam echosounder (100 kHz)	185 dB SEL 224 dB RMS 228 peak	0	0.5	251.4*	0	0	NA
Multi-beam echosounder (>200 kHz)	182 dB SEL 218 dB RMS 223 peak	NA	NA	NA	NA	NA	NA
Side-scan sonar (>200 kHz)	184 dB SEL 220 dB RMS 226 peak	NA	NA	NA	NA	NA	NA

Notes:

1 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).

* This range is conservative as it assumes full power, an omnidirectional source, and does not consider absorption over distance.

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

RMS = root mean square SEL = sound exposure level

BOEM repeated its analysis for disturbance (as opposed to injury) distances from the geophysical survey equipment. Table 2-4 below provides a summary of the maximum disturbance distances, in meters, for marine mammals and sea turtles.

Table 2-4: 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)[1]	Mid-Frequency (e.g., Dolphins and Sperm Whales)[1]	High Frequency (e.g., Porpoise)	Phocids (true seals)	Otariids (sea lions and fur seals)	Sea Turtles
Mobile, Impulsive, Intermittent Sources						
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
Mobile, Non-Impulsive, Intermittent Sources						
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:

[1] 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, 2016) (Crocker and Fratantonio (2016).

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

The range of disturbance distances for all protected species is 131-1,647 feet, with sparkers, a seismic survey method that uses an electric spark in a sonde to generate

high-frequency sound waves, causing the greatest area of disturbance across marine mammal species, according to BOEM's EA (Selley and Sonnenberg, 2015).

To reduce the potential for injury to marine mammals and sea turtles, and minimize any possible disturbance, BOEM requires its lessees to incorporate a set of mitigation measures into any lease exploration work, as described in Appendix D to BOEMs EA, which is included in **Appendix A** of these findings. Selected measures include:

- Requiring that the vessel captain and crew maintain a vigilant watch for all protected marine mammals
- Independent Protected Species Observers (PSOs) or trained crew must monitor a vessel strike avoidance zone of 500 meters (1,640 feet) or greater from any whales or unidentified large marine mammal and 50 meters (164 feet) or greater from any other marine mammal species visible at the surface.
    - Autonomous vessels must be equipped with a thermal and HD cameras facing forward and at an angle to provide a field of view ahead of the vessel. A dedicated operator must be able to monitor the real-time output of the camera.
    - Survey plans must identify vessel strike avoidance measures.
    - All vessel crew members must be briefed in the identification of protected marine mammal species and best practices for avoiding collisions.
    - A minimum separation distance of 500 meters (1,640 feet) from all whales must be maintained around the surface of the vessel at all times.
    - If a large whale is sighted within 200 meters (656 feet) of the forward path of a vessel, the vessel operator must reduce speed and shift the engine to neutral. Engines must not be engaged until the whale has moved outside of the vessel's path and beyond 500 meters (1,640 feet). If stationary, the vessel must not engage engines until the large whale has moved beyond 500 meters.
- If an ESA-listed species of whale is detected within or entering the exclusion zone, any noise-producing equipment operating below 180 kHz must be immediately shut off until the minimum separation distance of 500 meters (1,640 feet) is re-established.
- If the exclusion zone cannot be adequately monitored for whale presence (e.g., at night or during low visibility conditions), the survey must be stopped until such time that the exclusion zone can be reliably monitored.
- At the start of a survey, or after a shutdown, lessees must ensure that a "ramp up" of the electromechanical survey equipment occurs whenever technically feasible.
- If the trained lookout is a vessel crew member and not a PSO, this must be their designated role and primary responsibility while the vessel is underway.
- Vessels underway must not divert their course to approach any listed species

- The lessee must ensure all vessel operators check for daily information regarding protected species sighting locations. These media may include, but are not limited to: Channel 16 broadcasts, and the Whale/Ocean Alert app.

With these protective measures, BOEM believes that any risk of injury to marine mammals is fully prevented and that impacts associated with disturbance will be reduced and prevented. However, it is worth noting that NMFS may require an incidental harassment authorization for these surveys if NMFS believes surveys will result in harassment marine mammals. If one of BOEM's lessees requires an incidental harassment authorization, that authorization would be subject to federal consistency review and would likely come before the Commission as a consistency certification.

The Commission agrees that the measures above will appropriately minimize risks to marine life. However, the measures do not fully maintain marine resources and protect species from impacts related to noise from geophysical surveys. To further minimize the impacts of geophysical surveys, and to ensure consistency with state requirements for surveys in state waters, under **Condition 1(e)** BOEM will require its lessees to use low-energy equipment (i.e., subbottom profilers, echosounders, and side-scan sonars) to conduct geophysical surveys and will encourage its lessees to use operators that conduct their surveys consistent with the provisions of the CSLC's low-energy geophysical survey program. This program has many similarities to BOEM's requirements as outlined in Appendix D of the Draft EA but requires a minimum of two PSOs on survey vessels operating geophysical equipment at frequencies less than 200 kHz. The program also provides transit requirements and expedited survey requirements to minimize impacts to pinniped haul out sites. Finally, this program includes reporting requirements to ensure that information about the surveys, marine mammals sighted during survey operations, and other relevant information is disclosed to the public in a timely fashion.

Additionally, to minimize the risk of cumulative impacts on sensitive species from multiple surveys being conducted at the same time, **Condition 1(a-d)** will require BOEM to encourage coordination and collaboration between lessees on their geophysical survey plans to increase efficiency and minimize impacts to coastal resources. This condition also requires BOEM to ensure that documents and data coming out of the research conducted are publicly available to the maximum extent feasible.

Ship Strike Risk

Collisions with large vessels ("ship strikes") is recognized as the leading cause of death for blue and fin whales, and the second highest source of mortality for humpback whales offshore the U.S. West Coast (Carretta et al., 2021; Rockwood et al., 2017). All of these species occur in the vicinity of the Morro Bay WEA, and thus, have the potential to be injured or killed in a collision with a vessel conducting lease exploration activities. Please see **Exhibit 2-3** for selected whale density maps.

Additionally, leatherback sea turtles may occur in the Morro Bay WEA. Sea turtles are required to surface to breathe air, putting them at risk for ship strikes. The Morro Bay WEA is in leatherback sea turtle critical habitat, which extends from Point Arena to Point Arguello. Species distribution data shows that leatherback sea turtles are present in the Morro Bay WEA, and between the WEA and the coastline, but are found in higher

densities farther north near Monterey Bay and the Gulf of the Farallones. Sightings of leatherback sea turtles are also much more common in Monterey Bay and the Gulf of the Farallones, but this may be due to greater effort going into sightings (e.g. more whale watching tours and vessels). **Exhibit 2-4** shows leatherback critical habitat, geolocation tracks, and sightings off the California in relation to the Morro Bay WEA.

BOEM expects a maximum of 873 survey-related trips, and 30 metocean buoy-related trips. If these trips are divided evenly over their expected timeframes[8], there would be a maximum of 297 trips per year. The Morro Bay WEA has significant existing vessel traffic. In 2017, some portions the Morro Bay WEA had over 300 vessels traveling through them annually, with most of the WEA averaging between 100 and 200 vessels. The majority of this vessel traffic is from cargo ships. The vessel trips from lease exploration activities would be a significant addition to vessel traffic in the Humboldt WEA area.

BOEM is requiring vessel speeds during site characterization activities to be no more than 5 knots (2.57 m/s), but transit speeds will vary. As discussed above, BOEM is requiring several measures, including PSOs and a vessel strike avoidance zone of 500 meters (1,640 feet) to prevent vessel strikes. The full set of measures are described in Appendix D to BOEMs Draft EA.

These measures rely heavily on PSOs to fully minimize the risk of ship strikes to protected marine species. The measures described above are very similar to requirements the Commission has included in previous actions on similar projects, although there are two principal differences: 1) the Commission has only authorized the use of trained crew members as marine mammal observers in very limited situations where adding additional people to the boat was not feasible due to the size of the boat, and 2) the Commission has generally required daily sighting reports and/or a final report summarizing marine wildlife sightings, behavioral changes and any actions taken to avoid marine wildlife. BOEM's requirements, as outlined in Appendix D to its EA has similar reporting requirements, but the timing of reporting is on the 15th of each month for the previous calendar month of surveys. The Commission's requirement for trained and experienced PSOs rather than crew members is due to the significantly increased efficacy of sightings by dedicated PSOs in comparison to trained crew members. Prior research on the effectiveness of PSOs in comparison to trained Navy lookouts have shown that the vast majority of marine mammal observations made by PSOs are missed by Navy lookouts.[9] Additionally, it is critical that PSOs are focused on their observation tasks, rather than including monitoring the vessel strike avoidance zone in addition to several other duties while on board the vessel, which would be the case if a crew member was also acting as a PSO.

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[8] Survey related vessel trips are expected to occur over three years and metocean buoy related vessel trips are expected to occur over five years.

[9] The Commission's adopted findings in support of its decision on the Navy's CD for its training and testing program for the SOCAL Range Complex (CD-0001-18) discuss these past results in additional detail – available here: https://documents.coastal.ca.gov/assets/marine-acoustics/1%20CD-0001-18%20CD%20Navy%20HSTT%20Adopted%20Findings.pdf

To bring the proposed measures into consistency with the Coastal Act's requirement to maintain healthy populations of marine species, under **Condition 1(f)(i)**, BOEM will require lessees to include Marine Wildlife Protection and Monitoring Measures in their survey plans and SAPs. These measures include training all project personnel, including a minimum of one dedicated, qualified marine mammal observer on the vessel to conduct observations, providing a sufficient number of protected species observers to ensure complete coverage of the surrounding marine environments, providing appropriate safety and monitoring equipment, including night-vision equipment if needed, ensuring observers have the authority to stop activities that could harm a marine mammal or sea turtle, immediate reporting of any entanglement immediately to NMFS, and submittal of a final report.

In addition, recent studies have shown that reducing vessel speeds is a critical action to lower the risk of collisions between marine mammals and vessels. Most cases where whales were known to be severely injured or killed occurred at vessel speeds of 14 knots or more (Laist et al. 2006). Reducing vessel speeds to 10 knots has been found to reduce the risk to endangered baleen whales, of both ship collision and mortality, if a collision occurs (Vanderlaan and Taggart, 2007). Due to the risk of vessel strikes, NMFS has imposed mandatory speed reductions on commercial ships on the east coast, to protect the North Atlantic right whale. 73 Fed. Reg. 60173 (Oct. 10, 2008). On the West Coast, endangered blue whales and other species have been struck and killed by vessels in the Santa Barbara Channel, Southern California Bight, and off San Francisco leading NMFS to establish a voluntary speed restriction for mariners. Speed reductions are also taking place in Southern California to reduce air emissions. To bring the proposed measures into consistency with the Coastal Act's requirement to maintain healthy populations of marine species and minimize the risk of injury or death to marine mammals and sea turtles, **Condition 3** requires BOEM to limit vessel speeds, including during transit, to no more than 10 knots.

Increased Entanglement Risk

BOEM's lease sale would authorize the placement of up to 3 buoys and the use and anchoring of vessels in the Morro Bay WEA. Both these activities would incrementally increase the risk of entanglement to marine mammals. However, derelict fishing gear can get caught on mooring lines creating a greater risk of entanglement to marine mammals than mooring lines themselves (Benjamins et al., 2014). In 2020, NOAA confirmed 17 entangled whales off the West Coast or in other countries that were entangled in U.S. commercial fishing gear (National Marine Fisheries Service, 2021). Entanglement can result in asphyxiation, tissue damage, reduced foraging ability, limited mobility, and impacts on breeding and population (Maxwell, et al., 2022). To address this concern, **Condition 7** requires BOEM to require lessees to have an independent fishing liaison responsible for regular communication and coordination with fishermen. The liaison will work with the fishing to coordinate survey work and to develop a process for managing and reporting any conflicts, including installation of any equipment that could become a secondary entanglement hazard. Frequent communication between the fisheries liaison and fishing industry will help ensure that any conflicts with gear or timing are resolved and will help mitigate potential entanglement impacts throughout the course of lease exploration activities.

BOEM plans for lessees to perform maintenance and travel to their metocean buoys once annually. The low number of moorings expected to be added to the Morro Bay WEA during the lease exploration phase is expected to result in a minimal increase to entanglement risk.

Conclusion

Lease exploration activities have the potential to degrade water quality, disturb seafloor habitats, increase underwater sound and thus impact marine mammals and sea turtles, increase the risk of ship strikes during transit to and from the WEA for surveys and incrementally increase the risk of entanglement. Due to the fact that marine mammals, turtles, and other marine life moves between the coastal zone and federal waters, impacts within the WEA will have spillover effects on marine life in the coastal zone. Almost all of these effects are much smaller in scale and intensity than the effects of lease development, described below. The measures that BOEM has developed and **Conditions 1, 2, 3, and 7** will reduce the likelihood and magnitude of these impacts as described in detail above. Therefore, with these conditions included, BOEM's allowable lease exploration activities are consistent with sections 30230 and 30231 of the Coastal Act.

Future Lease Development Impacts

As described in section B of these findings, BOEM's CD covers lease exploration (e.g., site characterization activities and surveys during leasing), however the Commission's analysis also covers reasonably foreseeable activities associated with developing a lease. This section describes potential siting-level effects associated with future offshore wind development within the WEA. This section considers general features of offshore wind development projects, such as anchors, mooring lines, inter-array cables, and moving turbine blades, and how those features are expected to interact with the environment. These potential adverse effects include habitat disturbance, turbine strikes, increased entanglement risk, marine species displacement, avoidance, and attraction, ship strike risk, elevated levels of underwater sound, fish aggregation and artificial reef effect, invasive species weakened upwelling, and electromagnetic fields.

Seafloor Disturbance

As discussed under the lease exploration section above, the Morro Bay WEA consists of sediment with some geological features such as pockmarks, submarine landslides, steep seafloor slopes and areas of deep-sea corals or rocky reefs. See **Exhibit 2-1a** for a map of seafloor features within the WEA, **Exhibit 2-1b** for a map of HAPCs, specifically rocky reef areas within the WEA, and **Exhibit 2-1c** for a map of deep sea corals and sponges within the WEA. Although the mapping of the rocky reef habitat appears to be in a solid block, the presence of rocky reef habitat within that polygon is expected to be patchy, and authoritative, current mapping is needed to understand the extent of the habitat and to ensure protection from future development impacts. The Commission expects BOEM's lessees to provide detailed seafloor habitat mapping of any lease areas overlapping with HAPCs to ensure full seafloor protection of the habitat. If rocky reef habitat is sufficiently dense on the seafloor, it may preclude anchoring of wind turbines and future development in those areas.

Lease development will require far more extensive use of anchors to secure floating turbines and transmission infrastructure than the lease exploration phase. Floating turbines are expected to require a minimum of three anchors per turbine. As mentioned above in section B, the four primary anchor types are drag-embedment, suction caissons, gravity anchor, and anchor piles. Suction caisson and gravity anchors are typically less impactful to benthic ecosystems as they do not drag as much on the seabed. However substantial innovation is ongoing in developing anchors for the offshore wind industry and the anchor types proposed in future consistency certifications may be hybrids of the anchor types discussed here. The specific type of floating platform proposed will also influence the proposed moorings, which may include taut, semi-taut and catenary moorings. If the proposed wind projects use catenary moorings, additional impacts to the seafloor are expected due to dragging and movement of the anchor chains and lower portions of mooring lines on the seafloor. Because the details of future wind development are currently unknown, identifying the impact areas of specific anchor types is not feasible at this time. As described in the previous section, **Condition 2** requires BOEM to ensure that lessees avoid intentional bottom contact within hard substrate, rock outcroppings, seamounts, or deep-sea coral and sponge habitat and include a buffer that fully protects these habitats from bottom contact. Similarly, **Condition 1(f)(iv)** requires lessees to submit anchoring plans to BOEM to ensure that anchors are not placed on sensitive habitats. The Commission expects that similar conditions will apply to lease development and that authoritative habitat mapping will be completed during the lease exploration phase to effectively avoid seafloor impacts to sensitive habitats.

Installation of electrical export cables to bring power from the Morro Bay WEA to shore is also expected to result in disturbance to the seafloor. Historically, the Commission has required a number of measures to minimize impacts associated with offshore cables that would likely be applicable to the offshore wind industry. For example, the Commission has required that offshore cables be sited to avoid hard substrate, other important marine habitat and hazardous areas and to be buried where possible to minimize entanglement of marine species or snags from other ocean use. Where cables are unable to avoid hard substrate habitat, the Commission has required mitigation in the form of a mitigation fee used to remove derelict fishing gear and other marine debris to restore ocean habitat.

The site for future cable landings is not decided at this time, but if cables come to shore at Morro Bay, they will need to be sited to avoid impacts or conflicts with existing cables in the area, as shown in **Exhibit 1-4** and will need to avoid impacts to eelgrass habitat within the Morro Bay. Because of the biological significance of eelgrass and other nearshore coastal habitats, these areas are afforded special protection under the Coastal Act.

Turbine Strikes

Turbine strikes have the potential to be a major environmental impact from wind energy, whether offshore or onshore. Major factors influencing the likelihood of turbine strikes include bird or bat abundance in the area, flight heights, environmental factors such as fog or low light conditions, turbine rotation speeds and wind farm or turbine avoidance

or attraction. For birds that are attracted to offshore wind farms, there is a greater risk of turbine strikes and mortality. The seabird discussions that follow are a starting point, and are not comprehensive for all species or taxa. More information is needed on seabird distribution within the Morro Bay WEA to comprehensively assess impacts. The following analysis focuses on special-status species and species that may occur at higher densities within the Morro Bay WEA. Analyses of future projects will need to provide a more comprehensive assessment of potentially impacted seabirds.

At least 80 species of seabirds occur along the California coast, of which five species (the sooty shearwater, western gull, common murre, California gull, and Cassin's auklet) comprise 70% of all individuals observed during surveys (Dick, 2016). Of the 80 species found off California, 28 breed locally and 52 are migratory. The Morro Bay WEA is located in a transition zone, with many coastal seabird species occurring closer to shore and many open ocean species occurring further to the west. In the state-funded EEMS modeling, Morro Bay was generally found to have fewer bird considerations than the Humboldt WEA. Model outputs showing the difference between the two WEAs may be found in **Exhibit 2-5a**. Table 2-5 below provides a list of select seabird species in or near the Morro Bay WEA. Of the species represented in this table, loons, grebes, sea ducks, and alcids (including murres, puffins and auks), have high displacement vulnerability from the area, and gulls and cormorants have attraction vulnerability (Kelsey et al., 2018). Just under half of the species listed in Table 2-5 may experience displacement or attraction to eventual wind farm development. More information on attraction and displacement is included in the attraction and displacement section below.

Table 2-5. Selected seabird species in and near the Morro Bay WEA

Local residency status (Leirness et al., 2021) for select seabird species in and near the Morro Bay WEA

Species	Local Residency Status
Laysan albatross	Migrant
Black-footed albatross	Migrant
Common murre	Resident
Pigeon guillemot	Resident
Scripps's/Craveri's/ Guadalupe murrelet	Migrant
Marbled murrelet	Migrant
Ancient murrelet	Migrant
Cassin's auklet	Resident
Rhinoceros auklet	Resident
Tufted puffin	Resident
Brandt's cormorant	Resident
Pelagic cormorant	Resident
Double-crested cormorant	Resident
Sooty/short-tailed/flesh-footed shearwater	Migrant
Pink-footed shearwater	Migrant
Buller's shearwater	Migrant
Black-vented shearwater	Migrant
Northern fulmar	Migrant
Common loon	Migrant
Red-throated loon	Migrant
Western/Clark's grebe	Migrant
Western/glaucous-winged gull	Resident
Herring/Iceland gull	Migrant
California gull	Migrant

Heermann's gull	Migrant
Bonaparte's gull	Migrant
Sabine's gull	Migrant
Black-legged kittiwake	Migrant
Caspian tern	Migrant
Royal/Elegant tern	Migrant
Common/Arctic tern	Migrant
Pomarine jaeger	Migrant
Parasitic/long-tailed jaeger	Migrant
South polar skua	Migrant
Brown pelican	Migrant
Cook's petrel	Migrant
Murphy's petrel	Migrant
Leach's storm-petrel	Resident
Fork-tailed storm-petrel	Resident
Ashy storm petrel	Resident
Black storm petrel	Resident

The bird density data for the maps referenced below and provided in **Exhibit 2-6** came from the modeling performed by Leirness et al. (2021), which has been made available on the offshore wind energy gateway.[10] The information below is intended to provide more detail on special status and common bird species in the vicinity of the Morro Bay WEA.

Several bird species that have special status under state law, federal law, or other special status lists, such as the IUCN red list, have the potential to be present in the vicinity of the Morro Bay WEA:

- Marbled murrelet is found near the coast in Northern California and the Pacific Northwest, and nests in old-growth forests. Although the marbled murrelet's

[10] It is important to note that the predicted densities in Exhibit 2-6 are displayed using a logarithmic scale to enhance the differences between different geographic areas, and that the data is meant to inform long-term average density. There is significant interannual variability in seabird density, and modeling results may not reflect the specific seabird density of any specific year. Additionally, these maps compare the average density of seabird species to their maximum density in the California current for each season, so high density for one species may mean far fewer birds than high density for another species.

range includes the Morro Bay WEA, the likelihood of this species being found in the vicinity is low (Leirness et al., 2021). They are more common along the Humboldt coast (**Exhibit 2-6a**).

- Scripps's and Guadalupe murrelets are found in the waters off Mexico and southern California.[11] They nest on offshore islands and are present in the Morro Bay WEA in low densities. Scripps's and Guadalupe murrelets are present at much higher densities around the Channel Islands (**Exhibit 2-6b**).
- Brown pelicans nest in southern California and are typically found in higher densities close to the coastline, however, they do have the potential to be found in the vicinity of the Morro Bay WEA, particularly in the winter (**Exhibit 2-6c**).
- Short-tailed albatross, particularly juveniles, may be found in the vicinity of the Morro Bay WEA. However the likelihood of this species being present is low. Short-tailed albatross breed on islands off Japan, and their primary feeding grounds are in the Aleutian Islands in Alaska. Juvenile short-tailed albatross have been known to use the waters off the West Coast for foraging, and short-tailed albatross sightings along the west coast from 2002-2019 totaled 207, making them very rare (USFWS, 2020).
- The Pink-footed shearwater nests on islands off South America and is present in the Morro Bay WEA in moderate to moderately high densities in the spring, summer and fall (**Exhibit 2-6d**).
- The Ashy storm petrel breeds on islands off the coast of California and Mexico and may be found in moderate densities in the vicinity of the Morro Bay WEA. Hotspots of ashy storm petrel are found farther south near the Channel Islands (**Exhibit 2-6e**).

Seabirds without special status under state and federal endangered species laws are much more common within and in the vicinity of the Morro Bay WEA. Seabirds with moderate to high predicted densities in the Morro Bay WEA include:

- Cassin's auklet, which has moderate to high densities in the WEA in the winter (**Exhibit 2-6f**)
- Rhinoceros auklet, which has moderate densities in the WEA in the winter (**Exhibit 2-6g**)
- Black-legged kittiwake, which has moderate densities throughout the WEA in the winter (**Exhibit 2-6h**)
- Bonaparte's gull, which occurs at moderate to low densities in the WEA, and at higher densities closer to the coast in the winter (**Exhibit 2-6i**)
- California gull, which occurs at moderate densities in the WEA in the winter

[11] Guadalupe murrelet and Scripps's murrelet were previously thought to be one species, which was called Xantus's murrelet. Since they are combined in historical data records, the density mapping shows both species together, along with Craveri's murrelet, which is found farther south and appears physically similar.

(**Exhibit 2-6j**).

- Common and Arctic terns, occur at moderate densities in the WEA in the fall, and at higher densities further south (**Exhibit 2-6k**)
- Herring or Iceland gulls, which have moderate densities in the eastern portion of the WEA in the spring (**Exhibit 2-6l**)
- Sabine's gull, which has moderate density in the WEA in the spring, summer and fall (**Exhibit 2-6m**)
- Western and Glaucous-winged gulls, which have moderate to high densities in the WEA in the spring (**Exhibit 2-6n**)
- Jaeger species (combined), which have moderate densities in the WEA in the spring (**Exhibit 2-6o**)
- Pomarine jaeger, which has high densities in the WEA in the fall (**Exhibit 2-6p**)
- Loon species, which have moderate densities in the southeastern portion of the WEA in the spring (**Exhibit 2-6q**)
- Phalarope species, which have moderate to high densities in the WEA in the fall (**Exhibit 2-6r**)
- Black-footed albatross, which has moderate to high densities in the northern portion of the WEA in the spring (**Exhibit 2-6s**).
- Laysan albatross, which has moderate densities in the northwestern portion of the WEA in the spring, and higher densities farther offshore adjacent to the WEA (**Exhibit 2-6t**)
- Black storm petrel, which has moderate densities in the eastern portion of the WEA in the summer (**Exhibit 2-6u**)
- Northern fulmars, which has moderate to high densities in the Morro Bay WEA in the winter and spring (**Exhibit 2-6v**)
- Shearwater species, including sooty shearwater, short-tailed shearwater, and flesh-footed shearwater have moderate to high densities in the Morro Bay WEA year-round, with highest densities in the summer. The Morro Bay WEA overlaps with an important bird area for sooty shearwaters. (**Exhibit 2-6w and 2-6x**)

Density mapping from 2016 includes predictions of density for all seabirds combined in the vicinity of the Morro Bay WEA (Dick, 2016). Following the maps for individual seabird species **Exhibit 2-6y** includes density mapping for all seabird species in the vicinity of the Morro Bay WEA for each season. Across all seasons, seabirds are more abundant closer to shore than the Morro Bay WEA, and the highest density of birds occurs in the winter.

Kelsey et al. (2018) found that jaegers, skuas, pelicans, terns and gulls have high vulnerability to collision with offshore wind infrastructure due to their flight activity, flight height, and lack of turbine avoidance. These vulnerability estimates were developed using population size, demography, life history, flight heights and avoidance behavior,

but did not include a geographic component, so they should be used together with spatial distribution for these species to determine vulnerability to specific projects.

In California, the Schatz Energy Research Center at Humboldt State University and H.T. Harvey & Associates is currently working on project, funded by the CEC, to develop a 3D model to assess seabird risk along the California Coast. The model combines data and information on spatial distribution of seabirds, flight height and power generation to assess tradeoffs between wind farm performance and bird mortality risk. The initial results of this modeling effort should be available later this year. For birds that are attracted to offshore wind development, design elements of the project may be effective at reducing bird attraction, and thus collision risk. Design elements may include reducing areas for perching, or making perch areas unattractive to birds, and designing lighting systems to avoid attracting birds at night.

Much less is known about bat distribution off the California coast. Hoary bats (*Lasiurus cinerus*) and western red bats (*Lasiurus blossevillii*), which migrate south along the Pacific Coast in fall, are known to use islands offshore California, including the Farallon Islands and Channel Islands as rest stops (Solick and Newman, 2021). Other species that are local to the Morro Bay area, *California myotis* and *Yuma myotis*, have been observed flying and foraging offshore. Bat activity offshore is highest in late summer and fall during their migration season, although most activity likely occurs closer to shore (Solick and Newman, 2021). Migratory and tree-roosting bats may approach and interact with offshore wind turbines. Like with birds, attraction to turbines increases collision risk for bats, and lessons learned from onshore wind projects have shown that bats are at greater risk of strikes during low wind speeds. One way to address this is to curtail turbine operation and increase the cut-in speed at which the blades begin to spin. This has been proven to be effective for bats in low-wind conditions, and may not be necessary at higher wind speeds, when the risk to bats is low. Unfortunately, this avoidance technique has not been shown to be effective for birds.

Currently, there are several data gaps that must be addressed to better assess the risk of turbine strikes and bird and bat mortality due to offshore wind development: flight height of birds and bats in the vicinity of the Morro Bay WEA, the blade sweep and height of specific projects, and the expected horizontal and vertical movement of the floating turbine. For bats specifically, there is a need for much greater understanding of bat distributions off California, their likelihood of flying offshore, and their likelihood of interacting with offshore wind projects. Future projects that come before the Commission for a consistency certification should provide results from detailed bird and bat surveys of their lease areas including identification of the species that are most likely to be at risk of turbine strikes and mitigation and minimization measures to protect seabirds and bats.

Mooring Lines, Inter-Array Cables, and Entanglement Risk

Under current floating offshore wind platform designs, each platform is stabilized by at least three mooring lines anchored to the seabed. As mentioned earlier in section B, in addition to mooring lines, there will also be many inter-array electrical cables running between turbines and to a substation. From there an export cable would bring the electricity to shore. This is a substantial increase in the number of vertical and horizontal

lines and cables in the water, and density of all these lines and cables has the potential to increase entanglement risk for marine mammals. Entanglement risk may include primary entanglement, where animals are entangled in the lines and cables themselves, or secondary entanglement, where other materials such as fishing gear or other marine debris become entangled in lines or cables and these materials then entangle marine animals (Maxwell et al., 2022). Primary and secondary entanglement risk at floating turbines is influenced by a number of factors including:

- The diameter of mooring lines and inter-array cables;
- Whether lines are taut or draped;
- The depth of the draping of mooring lines, if they are draped;
- Animal behavior near turbines;
- Detection of mooring lines and inter-array cables by animals, which will be influenced by configuration and material used for mooring lines and inter-array cables;
- Abundance of lost or derelict fishing gear or other materials in the region; and
- Proximity to fishing grounds (Maxwell et al., 2022 and Benjamins et al. 2014).

Risk of primary entanglement from offshore wind development cables is highest for marine mammals, but the overall risk to this group is expected to be low, because mooring lines and cables are often taut, and they are of a large enough diameter to preclude easy entanglement of a large baleen whale. Inter-array cables are also expected to be of large enough diameter to preclude easy entanglement. The inter-array cables proposed in Vineyard Wind's draft construction and operations plan had a maximum diameter of 6.1-6.5 inches (Vineyard Wind 2020). Most entangled ropes and lines observed on whales have small diameters – typically less than two inches. Mooring lines are also made of more rigid material than fishing lines, making the risk of loop creation and subsequent entanglement relatively low (Benjamins et al., 2014). Finally, marine mammal species are likely to detect large-diameter mooring lines either through echolocation for toothed whales, whiskers for pinnipeds, or hearing since ropes produce noise in proportion to current flow (Maxwell et al., 2022). Line detection may occur at a distance of as little as tens of meters and has been shown to occur for toothed whales for much smaller diameter lines than those anticipated with floating offshore wind development (Maxwell et al., 2022).

Large baleen whales have the highest entanglement risk of all marine mammals due to their large body size and foraging habits. Baleen whales forage by feeding with their mouths open, and therefore may become entangled through the mouth and lines may be difficult to remove without human aid. Large whales have also been anecdotally observed using surfaces to rub against to presumably remove parasites or scratch itches (Benjamins et al., 2014). Catenary moorings, due to their long length and slack tension, pose the greatest risk of entanglement, but entanglement has not been reported for oil platforms with similar configurations. Additionally, no primary entanglement has been reported for floating turbines in Scotland since operation began in October 2017 (Maxwell et al., 2022). These results should not be generalized to

locations where baleen whales occur in high densities.

Due to the novelty of floating offshore wind development and the novelty of extensive floating inter-array cable systems in the marine environment, the Commission expects BOEM's lessees to develop and assess a suite of alternatives for inter-array cable water depths and configurations as part of their COPs and CCs, including alternatives that minimize the potential for interactions with marine wildlife. The Commission also expects BOEM's lessees to develop a similar suite of alternatives for mooring lines. The Commission expects lessees to propose a robust monitoring program to detect any entanglements on inter-array cables, mooring lines, or other equipment, such as aerial and drone surveys, remote sensing technologies (e.g., infrared sensors and radar), passive acoustics, animal tagging, underwater cameras, and the use of underwater vehicles to detect and remove marine debris could help mitigate the effects of entanglement on marine species. Future projects will need to evaluate all available monitoring and mitigation options to prevent and minimize entanglement.

In the state-funded EEMS modeling, the Morro Bay WEA was shown to have greater marine mammal considerations than the Humboldt WEA, primarily due to higher densities of whales in the vicinity. Maps comparing the outputs of the EEMS model for marine mammals in both WEAs are available in **Exhibit 2-5b**. Table 2-6 below provides an overview of whale densities in the Morro Bay WEA. Density maps for these whales may be found in **Exhibit 2-3**. The data for this table comes from Becker et al., 2020.

Table 2-6: Predicted Density Ranges for Whales in the Morro Bay WEA

Species	Density per km^2	Density per mi^2	Estimated number of whales in WEA[a]
Blue Whale	0.002-0.005	0.006-0.012	2-5
Humpback Whale	0.018-0.048	0.047-0.123	18-46
Fin Whale	0.032-0.057	0.082-0.148	31-56
Minke Whale[b]	0.002-0.002	0.005-0.006	2
Sperm Whale[c]	0.001-0.002	0.003-0.005	1-2
Striped Dolphin	0.000-0.001	0.000-0.002	0-1
Long-Beaked Common Dolphin	0.066-0.287	0.170-0.743	64-280
Dall's Porpoise	0.033-0.048	0.085-0.123	32-46
Northern Right Whale Dolphin	0.024-0.058	0.063-0.151	24-57
Baird's Beaked Whale	0.002-0.006	0.005-0.017	2-6
Pacific White-sided dolphin	0.026-0.042	0.066-0.109	25-41
Risso's Dolphin	0.018-0.056	0.047-0.145	18-55
Short-beaked Common dolphin	0.391-0.550	1.013-1.425	381-536

[a] The values in the "Estimated Number of Whales" column are meant to provide context to the range of density predictions, these estimates do not mean that these exact numbers of whales will be present in the WEA at any given time. These numbers were calculated by multiplying the upper and lower densities in km^2 by the area of the WEA.

[b]The variation coefficient for minke whales is higher than for other species in the area, this means that there is more uncertainty about their densities in the area.

[c] Sperm whale data comes from Becker et al., 2016. The 2020 modeling did not perform as well for this species, so the 2016 data was used.

Data for gray whale density is currently unavailable in the offshore wind energy gateway, but maps of potential gray whale presence and migration routes show that gray whales have the potential to be present in the eastern portion of the WEA, but are more likely to be found much closer to shore, along existing migration routes. Southern Resident Killer Whale critical habitat ends further north at Point Sur, but proposed humpback whale critical habitat does overlap with the Morro Bay WEA, as shown in **Exhibit 2-3f**.

Secondary entanglement may be a greater risk for a wider range of marine species. Species with large appendages, such as humpback whales and leatherback sea turtles have a greater propensity for entanglement with ropes, lines, or cables, such as those used in fishing gear (Benjamins et al., 2014). If underwater infrastructure accumulates

lost fishing gear, such as nets, hooks, lines, or plastic pollution, the infrastructure may create entanglement risks for diving seabirds, sea turtles, sharks and rays, and fish. In turn, fish and other animals caught in the abandoned gear may serve as bait for large predators, like pinnipeds or toothed whales, and bring them closer to debris and increase their entanglement risk. As discussed in the commercial and recreational fishing section below, fishing does occur near and in the Morro Bay WEA, and there is a possibility of gear getting lost or snagging on offshore wind infrastructure.

There is lower risk of entanglement associated with the export cable to shore. This cable is expected to be buried, with monitoring that ensures the cable does not surface and create entanglement risk for marine life or gear loss risk for the fishing community. Numerous toothed whales off the Morro Bay coast, including sperm whales, dive to deep waters and the seafloor to hunt, so these whales have a potential to be entangled by any submarine cable that is insufficiently buried or exposed. There would also be risk of entanglement during cable installation, as the cable is spooled out from the cable-laying vessel and traverses the length of the water column before it is buried in seafloor sediments. The Commission expects future projects would include actions to minimize entanglement risk during installation in the project design, or the Commission could impose conditions requiring minimization measures, as it has with other cable-laying projects.

The Commission expects applications for future offshore wind development to include frequent monitoring of underwater infrastructure for snagged fishing gear or other materials and removal if the materials are present within appropriate timeframes. To inform these proposals, Commission staff will work with other federal and state agency partners, non-governmental experts and lessees to review available research and develop strategies and best practices that can be incorporated into project-specific construction and operation plans.

Marine Species Displacement, Avoidance, or Attraction

As mentioned above, installation of offshore wind turbines has the potential to change the pelagic and benthic environment in and around the Morro Bay WEA. Potential impacts like the artificial reef effect may attract some species to the area, such as those found on natural reefs, and cause other species to avoid the area, such as those found in open water pelagic environments. Similarly, some migrating marine mammal species may choose to go around wind developments rather than through them. In contrast, other resident or migrating marine mammals, particularly pinnipeds, may be attracted to floating foundation surfaces to haul out and rest, or may be attracted due to the presence of prey species from artificial reef effect discussed above. Very few floating offshore wind projects have been built at this time, and those that exist have been piloting or testing a small number of turbines. Information on the extent of marine mammal avoidance or attraction to a commercial-scale offshore wind project is not currently available.

Above the water, similar displacement or attraction impacts are expected for bird species. Seabird response to offshore wind farms varies by species and may also vary by the specific portion of the wind farm in question. Recent research on lesser black-backed gulls has shown that birds avoid the inner parts of windfarms, but perch on

structures around the edges (Vanermen et al., 2019). Cormorants and gulls are expected to be attracted to the perch surfaces offered by floating platforms and other infrastructure (Maxwell et al., 2022). These birds may take these surfaces as an opportunity for roosting, preening and socializing. In contrast loons, gannets, fulmars, and guillemots are expected to avoid areas developed for offshore wind (Maxwell et al., 2022). Peregrine falcons are also known to be attracted to offshore infrastructure and may use the floating foundations and other structures associated with offshore wind for roosting and foraging (Johnson et al., 2011). Loons, grebes, sea ducks, and alcids also have high habitat displacement vulnerability due to their avoidance behavior around wind farms (Kelsey et al., 2018); however, the research indicating their vulnerability did not include a geographic component, so this information should be combined with local abundances to get a full picture of seabird avoidance. As mentioned above, design features may be built into offshore wind developments that may reduce the project's attractiveness to birds, such as lighting design, minimizing perch areas, and installing features that deter perching for seabirds.

Although much the research and impact assessment above is not specific to California, however, recent research synthesis and species and habitat modeling efforts can provide some insight into which species might be the most vulnerable to habitat displacement or avoidance. The state, through the Ocean Protection Council has funded two modeling studies to examine geographic areas that would potentially experience greater impacts from development: the first is a study led by the Conservation Biology Institute (CBI) to perform least-conflict modeling for California offshore wind energy planning. The second is a study led by Point Blue Conservation Science to assess and analyze the existing body of information on the marine environment, use key data sets to examine existing WEAs and identify additional candidate areas for potential offshore wind development.

The CBI modeling was used as a screening tool to identify relevant marine mammal and seabird density maps for these findings. Results from the CBI study have shown that species that are abundant in the Morro Bay WEA include short-beaked and long-beaked common dolphins, northern right whale dolphin, Dall's porpoise, Risso's dolphin, humpback whales, fin whales, gulls, terns, phalaropes, and shearwater species. Most of these species migrate through or feed in the Morro Bay WEA. The WEA contains rocky reef habitat and is near underwater canyons and the Davidson seamount, which are known to provide foraging habitat for toothed whales and seabirds. Baleen whales generally migrate through the areas, but may foraged there if conditions are favorable. There are currently no known breeding areas within the Morro Bay WEA for marine mammals and seabirds.

To accurately assess future impacts related to habitat displacement, avoidance or attraction that could occur with installation and operation of offshore wind facilities, comprehensive monitoring of baseline and post-project conditions as well as implementation of adaptive design measures will be critical. Because habitat displacement and avoidance could occur on a scale that significantly exceeds a specific lease area, limiting baseline data collection and post-project monitoring activities to an individual lease area is not likely to be sufficient to assess this type of an impact. Regional-scale monitoring and coordinated project-specific monitoring across multiple

lease areas will be necessary to understand how future offshore wind development affects pelagic and benthic environments offshore of California. Furthermore, additional work is needed to identify measures that can be incorporated into the design of individual turbines or fields of turbines that reduce the attractiveness for seabird roosting, whale interactions that could lead to entanglement or other marine species behaviors that could lead to adverse impact. These considerations will be important during regulatory review of specific offshore wind projects.

Ship Strike Risk

In addition to the lease exploration phase, the lease development phase of the project will bring additional vessel traffic to the Morro Bay WEA and thus increase the potential for ship strikes. Because specific projects and operations and maintenance plans are not before the Commission, it is not possible to quantify the amount of vessel traffic that would be expected for construction, operations, maintenance, and decommissioning of an offshore wind farm. However, the Commission expects that lessees will incorporate measures to prevent and reduce ship strike risk, including, but not limited to, reducing vessel transit speed, and using protected species observers and changing vessel course when protected species are observed. As described in the previous section on lease exploration activities, **Conditions 1(f)(i) and 3** incorporate these and other measures into all lease-related activities, and it is the Commission's expectation that these measures will also be required for all future construction and operation activities.

Elevated Levels of Underwater Sound

Development of offshore wind in the Morro Bay WEA has the potential to create elevated levels of underwater sound and impact the behavior of marine life. Installation of floating offshore wind may require pile driving for anchor piles, which are one of several types of anchors. Many other anchor types do not require pile driving and are expected to have minimal noise impacts. Pile driving has the potential to generate high-intensity sound, but existing quieting technologies, such as bubble curtains, can be effective at reducing this sound at its source. BOEM may also require lessees to monitor for marine mammals and other sensitive species and stop pile driving when they are within a specified distance of the site. In addition, consistent with past actions involving pile driving, the Commission may require acoustic modeling and monitoring to further reduce the risk of harm to marine species.[12] The pile driving associated with anchors for floating turbines is expected to generate less sound and have fewer impacts than pile driving of monopile foundations for turbines, like those found on the east coast.

As a new technology, potential effects associated with underwater sound are unknown. Sound during project operations is produced by the rotation of the wind turbine blades and is transmitted to the water by the turbine and its floating foundation and support structures. The US Offshore Wind and the Environment Synthesis of Environmental Effects Research (SEER), which is a partnership of the US Department of Energy, Pacific Northwest National Laboratory, and National Renewable Energy Laboratory,

[12] See, for example, CDP 9-17-0531 authorizing replacement of fender piles supporting Casitas Pier in Carpinteria, CA.

asserts that operations of installed turbines produce relatively low levels of sound that do not significantly exceed natural sound levels (SEER 2021). This assertion is based upon studies conducted on monopile turbines and will need to be tested with the technologies that will be used in the Morro Bay WEA.

In addition to operation of turbines, vessel noise and decommissioning activities have the potential to adversely affect marine species. The SEER notes that:

> *Vessel support during operations and maintenance is another source of sound to marine life in the area. Vessel noise can mask the communication signals of marine mammals and certain fish species, and such noise may also induce physiological stress and impair foraging and predator responses in both fish and invertebrates.*

Estimates of vessel trips needed for operations and maintenance is not currently available, and therefore a quantitative assessment of operations and maintenance noise impacts is possible at this time but will be an important component of project-specific reviews. Underwater sound is also expected to be produced in the project decommissioning phase from dismantling or removing various wind farm components, including the turbines, mooring cables, anchors, inter-array cables, substations, and any buried export cables, as well as from vessels support decommissioning activities.

As mentioned above in the lease exploration section, marine mammals and sea turtles are sensitive to underwater sound (see Table 2-2 for injury and disturbance sound thresholds). **Exhibit 2-7** shows where offshore wind-related sounds fall in relation to the hearing ranges of different marine species. For example, offshore wind operational sounds fall within the range of hearing for sea turtles, fishes, whales, seals and sea lions, and dolphins and porpoises. Operational sounds range from around 10 Hz to 1 kHz, and overlaps with frequencies created by earthquakes, wind driven noise on the water, vessels, and pile driving.

A range of fish and invertebrate species are impacted by sound, including by particle motion, sound pressure, and substrate vibration. Particle motion in particular is the main acoustic stimulus for fish and invertebrates and is an important metric to measure to understand noise impacts (SEER et al., 2021). Research has presented possible masking and behavioral changes due to particle motion caused during offshore wind turbine operations, but the research is not conclusive on whether the sound and masking produces negative effects in fish (Siddagangaiah et al., 2021). Fish may adapt to sound created by offshore wind farms (SEER et al., 2021): a study in Taiwan found that offshore wind farm operations increased fish chorusing up to 5-10 decibels in intensity and up to 3 hours in duration (Siddagangaiah et al., 2021).

In the future when lessees pursue specific development proposals, the Commission expects them to provide a robust analysis of the potential impacts that underwater sound caused during construction, operations, and decommissioning will have on marine mammals, fish, invertebrates, sea turtles and other sensitive wildlife. The Commission also expects lessees to design avoidance and mitigation measures into their construction plans, such as planning construction for seasons where whales are less likely to be found in the Morro Bay WEA, and using bubble curtains where

appropriate. The Commission will also be able to impose any necessary conditions through the federal consistency review process at that time to address particular impacts.

Fish Aggregation, Artificial Reef Effect

Installation of floating offshore wind projects in the WEA, like other artificial structures in marine environments, may act as a fish aggregation device or an artificial reef, particularly in the upper portions of the water column where phytoplankton are present. Artificial structures in the water column have been shown to provide foraging habitat, food sources, refuge from predators, and breeding habitat, thus altering the composition and abundance of wild fish assemblages and affecting fish aggregation behavior (DeAlteris et al., 2004).[13] Whether eventual floating offshore wind development is likely to actually contribute to the production of fish populations or simply aggregate fish in the same manner as fish attraction devices (Buckley, 1989; Dempster and Taquet, 2004; Relini et al., 2000) is difficult to determine in advance due to the lack of directly comparable facilities within the same region that can be used for reference. Further, it is unclear at this time how this issue could affect a potential project's consistency with Sections 30230 and 30231 of the Coastal Act.

Because research available is ambiguous regarding the effect that eventual development is likely to have on fish and macroinvertebrate populations in the Morro Bay WEA and surrounding area, pre- and post-project monitoring will be critical in determining impacts. Under **Condition 1**, BOEM will work with Coastal Commission staff to ensure that lessees' survey and site assessment plans are coordinated, consistent, and provide the data and information necessary for analysis of future consistency certifications.

Invasive Species

The floating foundations, mooring lines, and anchors that may act as artificial reefs or fish aggregation devices also provide three-dimensional habitat for colonization by fouling organisms and associated biota (McKindsey et al., 2006; Costa-Pierce and Bridger, 2002). A variety of studies indicate that the dominant organisms on submerged artificial structures include algae and attached filter-feeding invertebrates such as sea squirts, bryozoans and mussels (Hughes et al., 2005; Braithwaite et al., 2007*).* Based on overseas research, the assemblages that develop on artificial structures can be quite different from those in adjacent rocky areas (Glasby, 1999; Connell, 2000). Fouling organisms can overgrow native species such as tunicates, sponges, macroalgae, hydroids, and anemones. Maintenance activities for in-water structures and vessels that involve periodic removal of fouling organisms without proper collection and disposal protocols may result in increased dispersal and propagation opportunities for these species. Such opportunities for dispersion and spread pose a particular risk with some algal species that may break apart into many pieces when disturbed, each of which may be capable of surviving, growing, and reproducing on its own.

Eventual development of the Morro Bay WEA will include substantial quantities of

[13] CC-0003-21

mooring line, anchor chain, buoys and other infrastructure to secure the turbines and to provide electric transmission between turbines and to shore. These structures provide space for invasive fouling organisms to attach to, and it is not unlikely that non-native fouling organisms could occur at the project site, brought in by hull fouling from vessel traffic or dispersed from nearby sites. The Coastal Commission expects that lessees will identify and incorporate invasive species prevention and minimization measures as they develop their COP. Here again, baseline and post-project monitoring will be an important mechanism for quantifying this impact and assessing the success of measures to prevent and minimize adverse effect associated with invasive species.

Weakened Upwelling

Development of the Morro Bay WEA may impact upwelling, an important ocean process in the California current ecosystem. Upwelling drives the productivity of the marine ecosystem off the California coast; it occurs when northwesterly winds blow along the shoreline. Due to the earth's rotation, these winds cause coastal waters to be transported in an offshore direction. This movement of surface water causes cooler, nutrient rich water to rise over the narrow continental shelf to the surface. These nutrient rich waters drive phytoplankton growth, which is the base of the food chain in the California Current ecosystem (Southwest Fisheries Science Center, 2020).

The strength of upwelling varies seasonally, with stronger winds and upwelling in the spring and summer, and weaker upwelling in the fall and winter. Upwelling can also be influenced by bathymetry, coastline topography, and long-term climate patterns such as the Pacific Decadal Oscillation and the El Niño Southern Oscillation. During El Niño years or "warm" phases, upwelling is weakened, and during La Niña or "cool" phases, upwelling is strengthened.

As mentioned above, upwelling processes are driven by wind. Offshore wind development in the Morro Bay WEA is expected to reduce wind speeds and strength and may affect local upwelling strength near the WEA. A modeling study by Integral Consulting, available in **Appendix A**, found that full build-out of wind turbines in the Morro Bay and Diablo Canyon call areas[14] would create a 5% reduction in wind speeds on the lee side of the wind farms, which would lead to an approximately 10-15% decrease in upwelled volume transport and resulting nutrient supply to the coastal zone in the vicinity of the Morro Bay and Diablo Canyon call areas.

These estimates are conservative because the Diablo Canyon call area is not moving forward in BOEM's WEA designation process at this time, so impacts to upwelling are expected to be less than the model predicted. Although this modeling predicts changes to upwelling, it does not predict or confirm impacts to marine life or ecosystems. Further research is needed to understand the implications of reduced upwelling on marine ecosystems. Finally, as more offshore wind development occurs on the West Coast, the potential adverse effects on upwelling are likely to increase. The Integral upwelling study hypothesized that larger potential adverse effects on upwelling were observed in

[14] Identifying a call area is an earlier part of BOEM's process to designate a WEA. The Morro Bay Call Area was around 23 square miles larger than the Morro Bay WEA. The Diablo Canyon call area is south of the Morro Bay WEA, and is not moving forward in BOEM's WEA designation process at this time.

the vicinity of the Morro Bay and Diablo Canyon call areas in comparison to the Humboldt WEA because the size of the Morro Bay and Diablo Canyon call areas was much larger.

In the North Sea of Europe, a modeling study on the decrease of wind speeds on the downwind side of offshore wind farms found that the lower wind speeds affected horizontal currents and stratification of the water column. These changes in currents and stratification also resulted in shifting water temperatures and changed salinity distribution (Christiansen et al., 2022). There are many differences between Europe's North Sea and the California current, but this study points to the need for ongoing research and modeling as offshore wind is developed on the West Coast. The Commission expects that BOEM's lessees will submit modeling studies with their COPs assessing potential impacts to upwelling, both of their individual project and cumulatively with other projects and the buildout of BOEM's WEAs.

Electromagnetic Fields

The inter-array cables and export cables transmitting electricity to the offshore substation and to shore will produce electromagnetic fields via the flow of electricity in the cable. Research has shown that some fish species are magneto-sensitive and use geomagnetic field information for orientation (Maxwell et al., 2022). Long-lived and slow reproducing shark, ray and skate species are of particular concern. Electromagnetic deterrents have been successfully used to repel sharks from fisheries activities to prevent bycatch, but other studies have shown mixed results on changes to shark behavior from EMF (Maxwell et al., 2022). Crustaceans are also believed to have a magnetic sense, but research into the impacts of anthropogenic EMF on these species has shown mixed results (Hutchison et al., 2020). A BOEM-funded study on in-situ electrical cables, pipes, and benthic habitat found that rock crabs were more frequently observed near the electrical cable in comparison to other habitats, and were present at higher densities than in the natural habitat (Love et al., 2016). However, in a field study where Dungeness crab (*Metacarcinus magester*) and red rock crab (*Cancer productus*) were tested in whether they would cross an electrical cable to access a baited trap found no evidence of effect on the behavior of either species of crab (Love et al, 2017). Magnetic sense is also believed to play a role in salmon migration. A study of salmon smolts swimming parallel to a high-voltage direct current (HVDC) transmission cable moved faster, and while there appeared to be no barrier to movement, misdirection increased their journey to the sea (Hutchison et al., 2020). Currently field studies examining the impacts of EMF on marine species have focused on buried export cables, so there is limited understanding of EMF impacts from cables suspended in the water column (Maxwell et al., 2022).

Understanding impacts associated with EMF is another topic that will require additional research and assessment. Coastal Commission staff will work with BOEM to ensure that lessees' COPs incorporate instrumentation and appropriate strategies for data collection on many potential impacts relating to offshore wind development, including but not limited to EMF. Collaboration and coordination between lessees and state and federal agencies on how to assess and minimize impacts from EMF will ensure that marine resources are protected, and optimum populations of marine organisms are

maintained.

Monitoring and Adaptive Management

As described in section B., comprehensive monitoring plans and adaptive management strategies for offshore wind projects will be key to ensuring that coastal resources are protected and restored. Significant research has been and continues to be conducted on this topic. In a letter to the Commission, dated March 2, 2022, several environmental non-governmental organizations provided research-based recommendations for potential future monitoring and adaptive management plans related to the protection of marine species and habitats. These recommendations provide a good starting point for discussions on what elements should be addressed in future monitoring and adaptive management plans that will be a critical component of future COP review. These recommendations include:

- Underwater noise: Collection of baseline data and survey, construction and operation noise data on the underwater soundscape to better understand the impacts of additional noise from construction and operations, and to inform turbine micro-siting.
- Secondary Entanglement: Continuous monitoring of mooring lines and inter-array cables for strains resulting from ensnarement or entanglement of an animal or marine debris. Also, design features to minimize the potential for and maximize the detection of entanglement, and protocols to address entanglements that do occur.
- Benthic habitat: Detailed benthic survey of sensitive benthic habitat, including HAPCs, to inform buoy placement and siting of future turbines and other development to avoid and minimize impacts to biogenic and sensitive habitat.
- Bird and Bat Impacts: Inclusion of design features to reduce effects from lighting. Also, development of a comprehensive collision avoidance strategy that includes monitoring of collisions and inclusion of collision minimization measures.

Conclusion

The leasing of the Morro Bay WEA has a high likelihood of impacting marine habitats, species and ocean processes. There are substantial information gaps about the extent to which the impacts of offshore wind development would occur. At this leasing stage, the impacts from lease assessment activities will be minor to moderate and can be addressed through reducing vessel speeds, having trained observers on board ships, and taking other measures that are required as part of the project or in the Commission’s conditions. At future lease development stages, impacts to marine resources are expected to be more significant. Although it is foreseeable that some of these impacts will occur, it is only possible at this time to describe potential impacts at a high level, and more detailed analysis and mitigation will occur through future environmental review and federal consistency review. However, in order to ensure that there will be adequate data on which to analyze future impacts of lease development, and thus to avoid or mitigate those impacts through appropriate design and adaptive management, it will be important to set up a process for obtaining adequate baseline

monitoring, data collection, and assessment of impacts. It is also necessary to ensure there will be adequate coordination between BOEM, lessees, and the Commission to develop the information needed for later BOEM and Commission review of specific projects. **Condition 1** addresses the need for such coordination and development of information. Thus, as conditioned, the proposed activities are consistent with Coastal Act policies related to marine life.

F. Commercial and Recreational Fishing

Coastal Act Section 30230 states:

> *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.*

Coastal Act Section 30234 states:

> *Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Existing commercial fishing and recreational boating harbor space shall not be reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.*

Coastal Act Section 30234.5 states:

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

Consistent with previous sections of this report, impacts to commercial and recreational fishing activities will be considered in two settings. First, this section will cover impacts from proposed leasing activities as described in BOEM's submitted CD and EA. Second, this section will consider reasonably foreseeable potential future impacts to fisheries from future development in the WEAs offshore of Morro Bay. Information used in this analysis incorporates data and information from existing academic studies (including those synthesized in the Offshore Wind Energy Gateway and EEMS modeling tool),[15] BOEM and state-funded studies, information from East Coast offshore wind development documents, data compiled by CDFW, management information from the Pacific Fishery Management Council, and other information from NOAA Fisheries.

Fisheries Management in California

To fully consider both impacts of leasing activities and the future impacts of offshore

[15] CA Offshore Wind Energy Gateway and EEMS Online

wind projects on commercial and recreational fishing, it is important to understand the context and complexity of how California's fisheries (and fishery participants) are managed.

Management of a fishery depends largely on where it occurs. From 0-3 nautical miles from shore, fisheries are generally regulated by the state (CDFW). In federal waters from 3-200 nautical miles from shore, fisheries are overseen by the federal government (NMFS). However, some species that move along the entire West Coast, like sardines, are managed at the federal level even though they are caught primarily in state waters. In certain cases, fisheries are also subject to international regulations and management agreements (such as Pacific halibut, tunas, and salmon) which are then reflected in state and federal laws. The following agencies and organizations are involved in the regulatory and management regime of fisheries of the West Coast:

- Pacific Fishery Management Council (PFMC): The PFMC manages fisheries for approximately 119 species of salmon, groundfish, coastal pelagic species (CPS; sardines, anchovies, and mackerel), and highly migratory species (HMS; tunas, sharks, and swordfish) on the West Coast of the United States. They are one of eight regional fishery management councils established by Congress in 1976 through the Magnusson-Stevens Fishery Conservation and Management Act.
- Pacific States Marine Fisheries Commission (PSMFC): The PSMFC was established in 1947 by consent of Congress and is an interstate compact agency that helps resource agencies and the fishing industry sustainably manage resources in a five-state region (California, Oregon, Washington, Idaho, and Alaska, each represented by three Commissioners). Primarily, PSMFC's goal is to promote and support policies and actions to conserve, develop, and manage fishery resources in the aforementioned states by coordinating research activities, monitoring fishing activities, and facilitating a wide variety of projects.
- State Fish and Wildlife Commissions/Agencies: The states of Washington, Oregon, and California are key contributors and partners to the management of commercial and recreational fishing activities on the West Coast. In California, CDFW is the primary state agency that oversees the management and sustainability of California fisheries and is also a Trustee Agency for fish and wildlife resources and holds those resources in trust by statute for all the people of the state [Fish and Game Code §§ 711.7(a) & 1802; Public Resources Code, § 21070; CEQA Guidelines § 15386(a)]. CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. While CDFW can promulgate regulations, the principal regulatory body for the state is the California Fish and Game Commission.
- NOAA's NMFS: NMFS is the federal agency responsible for the management of fisheries in federal waters. The two main functions of the NMFS are regulatory and scientific research. NMFS Fisheries Science Centers conduct a variety of research, observations, and monitoring of living marine resources and their environment, and collaborate closely with regional offices.

The interplay between these different agencies is ultimately reflected in the web of regulations governing fishing activities. There are rules and regulations on nearly all aspects of fishing: what type of gear can be used, where certain species can be harvested, what size they have to be, and at what time of year they may be harvested. Additionally, there are rules for fishing observation, requirements to carry vessel monitoring systems in some (but not all) fisheries, requirements for reporting catch, and much more. All of these elements influence fishing activity before a boat ever embarks on a trip to harvest catch. Adding to these human factors are environmental conditions like sea state, weather, and water temperature that also impact where and when fish are harvested. Thus, as described, fishing and fisheries management is a very complex industry. Not surprisingly, understanding impacts to this complex industry and how it could be impacted by offshore wind leasing, and later development activities, is a challenging endeavor. This is illustrated by the PFMC in its letter to BOEM on the (Morro Bay) Draft EA:

> *Providing ex-vessel revenues is useful in determining the potential economic loss to commercial harvesters but fails to capture the true economic impact. Members of the dependent fishing community – buyers and processors, fuel docks, marine mechanics, restaurants, etc. could all be negatively impacted. As part of the planning and site characterization evaluation, potential impacts to commercial and recreational fisheries as well as associated industries should be evaluated, using economic input-output models or other methods that reflect the total contribution of fishing to the state/local/regional economy. In addition, it should be recognized that some fisheries, like the groundfish bottom trawl sector, have room for growth; and others, highly migratory species for example, may experience range shifts due to climate change. Wind energy development could lower the potential for growth and expansion, or affect where it occurs.*

In short, the information and analysis presented here and in CD-0001-22 should be viewed as a starting point. The data discussed in this document reflect information about fisheries more broadly but cannot fully capture the nuance of fisheries operations for individual operators. Doing this will require a robust social and economic analysis to understand what the full suite of impacts are and what measures can be implemented to avoid, minimize, and where necessary, mitigate impacts to the commercial and recreational fishing industry of California.

Fisheries Surveys (NMFS)

Fisheries surveys are conducted (primarily by federal agencies, but also through state and third-party collaboration) to assess the overall health and status of fish stocks throughout the West Coast Region. These surveys rely on a continuous series of data that is derived from discrete sampling stations throughout the Pacific Coast, including in the Morro Bay WEA (**Exhibit 1-1**). Surveys also provide critical contributions to the observed changes resulting from global climate change (Gallo, 2022). In a comment letter to the Draft EA, and in informal consultation with Commission staff, NMFS has identified that the interruption and loss of these survey locations could have significant ramifications on the fishing industry. If full assessments of stocks are not able to take place, it is highly likely that more conservative estimates will be used in the setting of

quotas or total allowable catch across multiple fisheries. A lessening of allowable catch would have direct impacts on fishing businesses that rely on well-managed stocks and accurate quota amounts to conduct their activities. Knowing these potential ramifications, NMFS has recommended continued consultation on the issue to help inform appropriate mitigative strategies[16] on the West Coast that may include appropriate spacing of future infrastructure within wind farms to allow for survey continuance (see below for discussion of **Condition 4**).

Central Coast Fisheries Overview

The fisheries of Central California represent a broad and diverse portfolio of species and activities. In general, as described in BOEM's Draft EA, the highest value of landings in Central California ports is sablefish, Dungeness crab, and rockfishes. Some ports also have very high volumes and values of CPS such as market squid and anchovy as well as chinook salmon. Historically, groundfish trawling also contributed to the overall value and volume of the fisheries portfolio, although landings have been low due to a variety of factors that is further described below. Like other regions of California, the fisheries operate year-round and are harvested through a variety of methods including trawling, pot gear, and longline. Fisheries offshore of Central California also include hagfish, spot and ridgeback prawn, pink shrimp, California Halibut, numerous species of rockfish, HMS such as albacore tuna and swordfish, and other CPS. Fisheries operate across water depths from nearshore to far into the Exclusive Economic Zone (EEZ).[17]

Fishing activity in the Central Coast, as many other places, is defined by significant variation from year to year, especially in episodic fisheries like CPS. On average, however, as stated in the Draft EA, BOEM estimates that the Morro Bay Port Complex (MBPC) contributes approximately $10 million to the overall state fisheries economy annually. Notably, the MBPC does not include the ports of Monterey or Moss Landing, which are typically considered a part of the Central Coast. If those two ports are included, as in the CDFW regional analysis (**Appendix C**), the figure is approximately $215,718,199 between 2010-2020 (or $19.6 million annually for the region). In general, the fishing activity of the Central Coast is more diffuse than other regions. This means there is less difference in the value between fisheries (i.e.; two fisheries do not represent the vast majority of all landings, but rather, many fisheries contribute more equally to the overall regional value). However, like other regions in the state, many harvesters participate in multiple fisheries throughout the year to ensure a successful business and to allow for adaptive fishing that provides a consistent protein product to buyers and the public.

Within the Morro Bay WEA, a subset of the fisheries listed above are active. These

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[16] NOAA Fisheries and BOEM Federal Survey Mitigation Implementation Strategy - Northeast U.S. Region - DRAFT March 2022

[17] As prescribed by the 1982 United Nations Convention on the Law of the Sea, the EEZ is an area of the sea in which a sovereign state has special rights regarding the exploration and use of marine resources, including energy production from water and wind. It stretches from the baseline out to 200 nautical miles (nm) from the coast of the state in question.

fisheries are largely determined by the physical conditions and habitat present. As described in section B, the WEA is a 376 square mile area approximately 20 miles offshore of Cambria (San Luis Obispo County), measuring approximately 27 miles north to south and 27 miles east to west. Water depths across the WEA range from approximately 865 to 1,300 meters (2,838–4,265 feet). Fisheries that are specifically present in the WEA or species that have the potential of being harvested in the area include groundfish (primarily sablefish and thornyheads), salmon, HMS (such as tuna and swordfish), and hagfish.

CDFW also tracks fishing data that describes fishery activity in the WEA. At the time of landing, fishermen report their harvest to CDFW based on a system of offshore fishing blocks (**Exhibit 3-1**). These data are limited in some ways. Because block sizes are variable (some are very large), they are sometimes mislabeled on reporting forms, and they often do not reflect when species are harvested from multiple blocks or throughout a multi-day trip, since only one block is recorded for each landing ticket by the receiver purchasing the fish from the fishermen. Generally, the accuracy of the block data decreases the farther offshore fishing activity occurs. Although it has limitations, if taken into consideration over a large area, and with other data sets, CDFW's block data can still provide useful information. For example, using this information, we can learn that approximately half (56%) of the vessels fishing off of the Central Coast fished in the WEA at some point between 1980-2020. We can also learn that about half (48%) of the vessels that fished in the WEA were homeported outside of Central California (**Appendix C**).

CDFW used its block data to identify fisheries that could be affected by proposed and future development within the WEA. **Exhibit 3-2** shows a probable, yet conservative representation of the WEA impact area, including areas that are highly likely to be impacted by future project development. This potential impact area identified by CDFW extends significantly beyond the borders of the WEA because the anticipated impacts associated with offshore wind development will also extend beyond these boundaries. In addition to the smaller blocks in the immediate vicinity of the WEA, CDFW included the larger underlying 4-digit block (i.e., block 1036) because many fishermen use this larger block instead of the smaller blocks to record where a catch came from. Additionally, an offshore wind farm cannot exist without a connection to shore, and offshore wind development could present an impediment to fishing on the other side of it, and thus fishing blocks between the WEA and shore need to be included. Finally, development within the WEA could push fishermen outside the WEA and into surrounding blocks and could affect how fishermen transit through the WEA to reach waters farther offshore. This area will be referred to as the "greater WEA" so as to make the distinction that the information from CDFW extends beyond the boundaries of the potential lease area. The following subsections will describe each fishery that is present in the Central Coast and greater WEA.

Groundfish

Groundfish are a complex of more than 90 federally managed species that includes all rockfishes (about 60 species), thornyheads, lingcod, dover sole and other flatfishes

(other than halibut), pacific whiting,[18] and some skates and sharks. They can be caught using trawl gear, hook-and-line, or pot gear, and are fished year-round. They can occur across various substrate types, and, commercially, can be caught at a large depth range, from about 20-750 fathoms (120-4,500 feet). Recreational fishing, especially for rockfish, can occur at depths less than 120 feet, including off of jetties and piers. Fishing for groundfish, primarily via trap/pot (**Exhibit 3-3**) is one of the primary fisheries that occurs within the Morro Bay WEA boundary.

For historic context of the groundfish fishery in Morro Bay, around the year 2000, the groundfish fishery collapsed and nine species were declared overfished. Several years later, groundfish permits were purchased by The Nature Conservancy (TNC) that established more than 3.8 million acres of protected seafloor habitat, primarily from bottom trawling activity. Over the next 15 years, TNC placed these permits in trust and established community quota funds. Over the past few years, permits have been returned to fishermen's access, allowing the activity to potentially occur again. The industry reports that this fishery, while absent for years within the Morro Bay WEA, has high potential for economic viability and community resilience.[19] Fishing industry representatives also have conveyed that prominent buyers (such as those that purchase seafood for major grocery chains), are on the precipice of investing in the groundfish bottom trawl fishery in the Central Coast region, but the uncertainty of OSW development is a contributing factor in the future success of this market. When BOEM was considering the final shape of the WEA, especially in regards to the east extension that was not included in the current composition of the WEA, the grounds of the historic trawl fishery was an important consideration. A September 2021 comment from the PFMC states:

> *The East Extension overlaps with valuable deepwater groundfish fishing grounds. This area was historically important for trawl harvest of dover sole and sablefish and is currently an important area for fixed gear sablefish harvest. Currently there is no large-scale market for groundfish trawl vessels; however, this could change in the future. Historic production from trawl vessels in the East Extension should be considered as a placeholder for future fisheries impacts. According to one commercial fisherman, during 1990-2006, 75 percent of the Morro Bay fleet's landings were from groundfish, one of the top three fisheries for that area.*

As supported by the CDFW trawl log figure in **Appendix C**, trawl activity has been recorded east of the current WEA, and thus the productivity of that area and importance to the historic groundfish fishery will be an important consideration when siting infrastructure associated with potential OSW projects.

According to data from 2010-2020 provided by CDFW for the greater WEA, groundfish (excluding sablefish and rockfish), represent approximately 3,046,273 pounds landed at

[18] Pacific whiting are primarily caught by mid-water trawl gear. Although the species range extends as far south as Baja California, fishing effort primarily occurs north of the OR/CA border.

[19] California Groundfish Project (nature.org)).

an ex-vessel value (price paid to fishermen for their catch) of $5,595,278. If combined with rockfish and sablefish from 2010-2020, this number increases to approximately 9,191,971 pounds with an ex-vessel value of nearly $20,917,955. By volume, it is the second highest landed species complex in the greater WEA behind market squid.

Sablefish

A part of the groundfish fishery, sablefish (*Anoplopoma fimbria*), also known as black cod (although not a member of the cod family (Gadidae)), is fished year-round off the coast of California, with generally lower catch limits during the winter spawning months. It is managed federally by the PFMC under the Pacific groundfish management plan and in state waters by CDFW. It is primarily caught using fixed gear (baited longlines and baited traps) but is occasionally caught with bottom trawls. Fishermen using fixed gear and trawl equipment are managed under limited entry permits, individual fishing quotas (IFQ) and/or daily trip limits. Fishing for sablefish can occur at a range of 100-600 fathoms (600-3,600 feet) which overlaps with the depth range of the WEA, and **Exhibit 3-4** shows observed fishing effort for the catch share pot fishery within the WEA, with hook and line occurring (**Exhibit 3-5**) in and around its boundaries.

The following sablefish values were reported via CDFW landings data for 2019 alone: Moss Landing (260,563 pounds at $672,679 ex-vessel), Monterey (197 pounds at $477 ex-vessel), and Morro Bay (317,465 pounds at $666,775 ex-vessel). For the greater WEA, CDFW data (**Appendix C**) indicates that 2010-2020 landings of sablefish represented 5,041,431 pounds at an ex-vessel value of $11,873,233.

Rockfish

Also part of the groundfish fishery, rockfish is a general descriptor for a subgroup of approximately 60 species of fish managed under the federal groundfish fishery management plan. Nineteen of these rockfish species are also managed under a “Nearshore Fishery Management Plan” that is overseen by CDFW (California Department of Fish and Game, 2002). There are too many different types of rockfish to adequately describe their unique life cycles and habitats, but they are an important commercial and recreational catch species in the state of California (Northwest Fisheries Science Center et al., 2019).

In the late 1990s/early 2000s, several species of rockfish were assessed and declared overfished, which substantially limited or eliminated the commercial harvest of certain species (such as canary rockfish *(Sebastes pinniger)*, boccacio (*Sebastes paucispinis*), yelloweye (*Sebastes ruberrimus*), etc.). The rebuilding plans for many of these species also included Rockfish Conservation Areas (RCAs) that prevent harvesters (commercial and recreational and/or certain gear types) from targeting species in areas where they are known to concentrate. RCAs are depth-based closed areas. RCA boundaries are lines that connect a series of latitude and longitude coordinates and are intended to approximate particular depth contours. RCA boundaries are different depending on what types of fishing gear are being used, and they differ between northern and southern areas of the coast. RCA boundaries can also change seasonally and may be changed during the year through in-season actions. The RCA boundaries are set primarily to minimize incidental catch of overfished rockfish, by eliminating fishing in areas at locations and at times when those overfished species are likely to co-occur

with more healthy target stocks of groundfish. Most rockfish stocks have been rebuilt and fishing occurs under quota management.

According to CDFW data, rockfish landings from 2010-2020 were 1,104,267 pounds valued at $3,449,444 ex-vessel (**Appendix C**)**.** 2019 (annual) landings values for individual rockfish species and by port can be accessed here.

Salmon

Salmon are an anadromous species, living most of their lives in open ocean (federal) waters, but returning to spawn in their natal inland streams. They have a habitat range of 10-1,500 fathoms (60-9,000 feet) and can be found over a broad range of the ocean, although most documented fishing shows activity relatively close to shore (**Exhibit 3-6**)**.** As such, they are managed by the PFMC, which works closely with the state agencies and/or Tribes in implementing commercial, subsistence, and recreational management measures to ensure fishery viability. According to the Fisheries of the United States Report for 2019, California salmon landings totaled 2.9 million pounds and were valued at $16.5 million—an increase of 1.9 million pounds (180%) and $8.8 million (120%) compared with 2018. Chinook (*Oncorhynchus tshawytscha*) salmon were the principal species landed in the state (NMFS, 2019). The average ex-vessel price per pound paid to fishermen in 2019 was $5.59 compared with $7.26 in 2018. As a comparison of overall scale, it is noteworthy that 99% of salmon landings occur in Alaska, with the remaining 1% coming from Washington, Oregon and California.

Salmon are landed from Point Conception north to the Oregon-California border, and all salmon caught offshore of California must be landed in California ports. Salmon fishing is historically, and culturally, very important, but has been significantly reduced compared to historical levels due, in part, to dramatic decreases in population. California chinook salmon are also highly sensitive to a variety of climate induced changes (Crozier et al, 2019). Size limits and seasons vary based on the specific management area and are subject to change based on yearly management reviews. Commercial fishing for salmon in the Monterey management zone currently takes place at specific, multi-day intervals between May and August. Salmon are predominantly caught by trolling which is a method of fishing where one or more baited (with lures or fish) lines are drawn through the water column behind a vessel. Trolling is not considered a type of bottom contact fishing.

According to CDFW landings data from 2019, Moss Landing reported 183,599 pounds landed at $1,190,155 ex-vessel; Monterey reported 91,906 pounds landed at $566,312 ex-vessel; Morro Bay reported 212,449 pounds landed at $1,521,064 ex-vessel; and Avila/Port San Luis reported 126,738 pounds landed at $906,158 ex-vessel. From 2010-2020 in the greater WEA, 417,075 pounds of salmon were landed at an ex-vessel value of $3,150,414.

Coastal Pelagic Species

Coastal Pelagic Species (CPS) on the West Coast include Pacific sardine (*Sardinops sagax*), Pacific mackerel (*Scomber japonicus*), jack mackerel (*Trachurus symmetricus*), northern anchovy (*Engraulis mordax*), market squid (*Doryteuthis (Loligo) opalescens*), and krill (*Euphausia pacifica*). CPS live in the water column, as opposed to living near

the sea floor, at depths from the surface to 3,280 feet (1,000 meter) deep, typically above the continental shelf. NOAA Fisheries and the PFMC oversee the management of CPS in U.S. federal waters off the West Coast. CDFW co-manages the market squid fishery off California with NOAA Fisheries and the Council (market squid is described separately in this section). The primary commercial fishery for CPS is off the coast of California (south of 39 degrees North latitude), however, fishermen in Oregon and Washington also harvest small amounts of CPS.

CPS are commonly caught incidentally with other CPS but are also caught incidentally in some non-CPS fisheries (e.g., Pacific sardine are caught in the Pacific whiting fishery). CPS are primarily caught using "round haul" gear such as purse seine nets, drum seines, lampara nets, and dip nets.

The major West Coast processors and buyers of CPS finfish are generally located in six ports in three main fishing areas: Southern California (San Pedro/Terminal Island and Ventura), Central California (Monterey and Moss Landing), Pacific Northwest/Columbia River area (Astoria Oregon and Westport Washington). Fishing takes place near these ports with minimal fishing taking place between San Francisco and the Columbia River/Astoria Oregon. Central Coast ports have reported landings of numerous CPS, predominantly northern anchovy. Anchovy are typically found within 30 kilometers (19 miles) of shore and between the surface and about 1,250 feet (**Exhibit 3-7**). Harvest of the species is primarily for bait and/or feed. Fishing activity for the species is primarily nearshore, and is caught mostly by round haul (purse seine) gear.

In 2019, CDFW landings report Moss Landing (14,445,261 pounds at $757,758 ex-vessel), Monterey (5,823,653 pounds at $291,183 ex-vessel. Pacific sardine were also landed in Moss Landing (334,112 pounds at $35,160 ex-vessel). Overall, between 2010-2020 in the greater WEA, CPS landings totaled approximately 237,979 pounds with an ex-vessel value of $16,714 (**Appendix C**).

Squid

The market squid (Doryteuthis opalescens) fishery is one of the most important in the State of California in terms of landings and revenue. The fishery generates millions of dollars to the state annually from domestic and foreign sales. In 2019, California led U.S. landings of market squid with 27.1 million pounds, comprising 23% of the national total (NMFS, 2019).

Market squid are a relatively short-lived species (approximately 6-9 months lifespan) and generally spawn in 15-180 feet of water depth over sandy bottoms. Fishing for market squid takes place during the spawning events when the species congregates. Landing receipt data from CDFW shows that there is significant variability where squid are caught in California’s waters but generally concentrates to areas south of the San Francisco Bay (CDFW, 2022). The greatest concentration of fisheries landings are generally associated with areas south of Point Conception, although fishing activity does consistently take place at moderate nearshore intensity off the Central Coast (**Exhibit 3-8**). According to 2019 landings data from CDFW, Moss Landing reported 3,060,869 pounds of market squid landed at $1,528,421 ex-vessel; Monterey reported 2,006,294 pounds landed at $988,533 ex-vessel; Morro Bay reported 79,017 pounds landed at $39,503 ex-vessel. Avila/Port San Luis did not report any landings. Between

2010-2020 in the greater WEA, market squid landings were approximately 13,766,964 pounds at an ex-vessel value of $4,682,616.

Highly Migratory Species

Highly migratory species (HMS) are managed by NOAA fisheries and PFMC as well as through international management such as the Inter-American Tropical Tuna Commission. Overall, the HMS fishery management plan covers eleven stocks considered the target/managed fishery and eight other non-target species (also known as ecosystem component species). The target HMS managed species include swordfish (*Xiphias gladius*), common thresher shark (*Alopias vulpinus*), shortfin mako, blue shark, yellowfin tuna (*Thunnus. albacares*), skipjack (*Katsuwonus pelamis*), bigeye tuna (*T. obesus*), striped marlin (*Tetrapturus spp.*), dorado (or dolphinfish; *Coryphaena* spp.), bluefin tuna (*T. Thynnus*), and North Pacific albacore (*T. alalunga*). Non-target species include bigeye thresher shark, pelagic thresher shark, common mola, wahoo, escolar, lancetfishes, louvar, and pelagic stingray. These species are generally considered pelagic, meaning they live in the water column (and not close to the seafloor). Abundance of species in an area is highly variable. HMS species often follow thermoclines, which are in a constant state of movement throughout the year.

Highly migratory species are harvested through use of several different gear types. Recreational anglers, including those fishing on Commercial Passenger Fishing Vessels (CPFVs), most commonly use hook and line gear, although some anglers successfully capture HMS using spearfishing gear. Commercial HMS fishing is accomplished through purse seining, large mesh drift gillnet, deep-set buoy gear, longline, trolling, and harpoon. Importantly, drift gillnets are currently being phased out of use in CA waters due to high levels of seabird and marine mammal mortality, with a compliance date of January 2023. Due to the duality of fishing in state and federal waters, this gear type will likely decrease in use in federal waters as well. As of 2020, there were 14-18 active drift gillnet fishery participants (of an original 150). This fishery experiences a seasonal and area closures primarily for the protection of sea turtles.[20]

Longline gear, which is also used to harvest certain HMS, has been banned for close to two decades in state waters. However, as data for new gear types is not yet available, drift gillnet fishing effort has been included in **Exhibit 3-9** to show were fishing activity, mostly for thresher shark and swordfish, is occurring and likely to occur with other gear types. Using this proxy, it can be assumed that a moderate level of fishing activity for thresher and/or swordfish is taking place within the WEA. Generally, HMS (albacore trolling) fishing effort is occurring north of the Morro Bay WEA (**Exhibit 3-10**). The HMS fishery experiences a high level of observer coverage, and as such, data derived from the fishery is considered to be very accurate.

[20] CA Thresher Shark/Swordfish Drift Gillnet Fishery (>/=14 in mesh) - MMPA List of Fisheries | NOAA Fisheries. The Pacific Leatherback Conservation Area, which is closed to Drift Gillnet fishery participants during their season, is located just above the Morro Bay WEA. Installation of buoys will make those areas of the WEA closed to the fishery participants.

Central Coast ports land a variety of HMS. CDFW landings data from 2019 indicate that for albacore tuna, Moss Landing reported 7,944 pounds at $12,841, Morro Bay landed 18,576 pounds at $38,105 ex-vessel, Avila/Port San Luis landed 1,202 pounds at $2,404 ex-vessel. For bluefin tuna, Moss Landing reported 159 pounds at $795 e-vessel, Monterey reported 51 pounds at $354, Morro Bay reported 901 pounds at an ex-vessel value of $2,119. For thresher shark, Moss Landing reported 2,949 pounds $2,769 ex-vessel, and Morro Bay reported 2,490 pounds at $3,307. For shortfin mako, Moss Landing reported 7,059 pounds at $6,118 ex-vessel, Monterey reported 11,260 pounds at $11,260 ex-vessel, and Morro Bay reported 1,993 pounds at $2,464. For swordfish, Moss Landing reported 64,311 pounds at $190,112 ex-vessel, and Monterey reported 18,178 pounds at $54,816 ex-vessel. Moss landing also recorded bigeye tuna landings at 822 pounds $2,686 ex-vessel. CDFW data for the greater WEA indicates that approximately 594,906 pounds of HMS were commercially landed between 2010-2020, valued at approximately $1,386,758 ex-vessel.

Dungeness Crab

The Dungeness crab fishery is one of California's oldest and most prolific commercial fisheries and has been regulated by the state since 1895. However, it is currently managed in a tri-state partnership under the Pacific States Marine Fishery Commission. Dungeness crab is primarily a nearshore fishery: the species lives at variable depths from the intertidal zone to 750 feet (230 meters) but is most abundant above 295 feet (90 meters) depth (see **Exhibit 3-11**) and are found predominantly from the Aleutian Islands to Santa Barbara but can occasionally be found as far south as Baja California Sur, Mexico. Fishing for the species is typically allowed from December 1-July 15, but can vary based on several factors including meat quality delays, domoic acid and human health concerns, and/or the presence of large whales and sea turtles (e.g., humpback and blue whales, leatherback sea turtles). Crab are caught in circular pot gear that can weigh up to 150 pounds. The pot, which sits on the seafloor, has a single line that leads to the surface, marking the location of the gear.

According to 2019 landings data from CDFW, Dungeness crab are landed across most ports in the Central Coast. The landings values include: Moss Landing (50,655 pounds at $180,431 ex-vessel), Monterey (21,317 pounds at $85,691 ex-vessel), Morro Bay (87,852 pounds at $411,309 ex-vessel), and Avila/Port San Luis (35,026 pounds at $160,762 ex-vessel). Unlike other ports in the state, the Dungeness crab does not represent the highest value species in any port discussed in this section (per 2019 data). For the greater WEA area between 2010-2020, approximately 2,385,214 pounds of Dungeness crab were landed at an ex-vessel value of $10,525,146.

Halibut

There are two species of halibut that are caught offshore of California: Pacific halibut (*Hippoglossus stenolepis*) and California halibut *(Paralichthys californicus)*. Halibut are caught by commercial, recreational and tribal fishermen.

Pacific Halibut

Pacific Halibut are a large flatfish that can be found from the Bering Sea to California. They can grow up to 9 feet long and can reach a maximum of 500 pounds. They reside

along the continental shelf and can be found along a broad range of depths from inshore out to 1,475 feet (450 meters). They are a popular species caught by both commercial and recreational fishermen. Pacific Halibut are managed jointly between state and federal management bodies as well as the International Pacific Halibut Commission. Pacific Halibut are caught by hook and line (often assisted with a harpoon, gaff and net).

California Halibut

California Halibut are primarily found closer to shore from the surf zone out to 330 feet (100 meters). They can live for up to 30 years and may reach lengths of up to 5 feet. California halibut is a year-round fishery that uses trawls (~50%), hook and line (~25%) or trammel/bottom set nets (~25%). The trawl fishery is currently open from June 16-March 14. The commercial hook-and-line fishery and the recreational fishery can occur statewide (outside of designated protected areas). The gill net fishery is restricted to southern California (south of Point Arguello). The trawl fishery can occur statewide outside of state waters (except trawling inside state waters is permitted in one southern California area). Halibut fisheries regularly occur out of numerous ports from Bodega Bay to San Diego, and periodically extend north to the port of Eureka. In 2019, halibut fishing occurred statewide out of all primary port complexes. CDFW trawl log maps show fishing activity occurring primarily nearshore and with highest effort levels off Santa Barbara (**Exhibit 3-12**).

In 2019, CDFW estimated the following landings and ex-vessel values for CA halibut at ports in Central California: Moss Landing (20,219 pounds valued at $108,825), Monterey (9,224 pounds valued at $49,881), Morro Bay (9,728 pounds valued at $54,518), and Avila/Port San Luis (16,592 pounds valued at $95,416). No Pacific halibut landings were reported. Between 2010-2020, CDFW data indicates that the landings of CA halibut were approximately 143,278 pounds at an ex-vessel value of $845,989.

Pink Shrimp

Pink shrimp (*Pandalus jordani*) are known to inhabit waters from Southeast Alaska to San Diego, CA. They live in relatively deep waters from about 150 to 1,200 feet (45 to 365 meters), aggregating near the bottom during the day in well-defined areas of muddy habitats and ascending into the water column at night to feed-primarily on zooplankton, copepods and krill. Pink shrimp are a relatively short-lived species, with lifespan of around four years. In addition to being a commercially important species, they are prey for a number of other fishes such as Pacific hake, sablefish, spiny dogfish, and other types of skates and rockfish.

Pink shrimp are principally state managed through a northern and southern region divided by Point Conception which is closed from November to April to protect egg-bearing females. The majority of historic landings have been concentrated in Northern California, However, 2019 landings data from CDFW report landings only in Morro Bay (71,572 pounds at $78,051 ex-vessel).

Spot Prawn

Spot prawn (*Pandalus platyceros*) range from Alaska to San Diego, California, in depths

from 150 to 1,600 feet (46 to 488 meters). They are found in high abundance in California waters off the Farallon Islands, Monterey, the Channel Islands and most offshore banks. With a lifespan of about six years, the spot prawn is the largest prawn in the North Pacific reaching a total length of 10 to 12 inches and a weight up to 0.25 pounds. There is a small, limited entry commercial trap fishery for spot prawn. Given the depth where spot prawn live and a bag limit of 35 prawns, little recreational fishing occurs. The spot prawn trap fleet operates along the entire coastline of California, from Oregon south to the Mexico border. Fewer than six trap vessels typically fish north of Point Arguello, and landings in this region are significantly lower than those of the southern California fishery. In California, most fishing occurs in depths from approximately 400 to 1,000 feet (120 to 305 meters). North of Point Arguello, the commercial season is open from August through April. South of Point Arguello, the commercial season is open from February through October. The recreational fishery is open year-round.

For the Central Coast, CDFW landings reported in 2019: Moss Landing (244 pounds at $4,327), Monterey (19,492 pounds at $318,158), Morro Bay (6,851 pounds at $108,505), Avila/Port San Luis (3,044 pounds at $48,589). In total, shrimp and prawn landings for the greater WEA between 2010-2020 totaled 1,073,918 pounds at $2,594,301 ex-vessel.

Hagfish

Hagfish is an open access fishery that uses weighted five-gallon buckets to capture the species. No monitoring or reporting in the fishery takes place beyond fish tickets submitted at time of landing. Fishermen typically target hagfish over soft bottom in depths from 180 to 1,200 ft (55 to 366 meters) but mostly fish in depths ranging from 180 to 600 ft (55 to 183 meters). The species can be found as deep as 2,970 feet (900 meters). Hagfish are landed statewide and there are a greater number of landings off Central California due to a larger number of participants, but pounds of fish per landing are smaller by comparison. Fewer, but larger landings occur off the North Coast. In 2019, Moss landing reported 67,972 pounds at $67,011 ex-vessel, Monterey reported 4,785 pounds at $4,785, Morro Bay reported 109,975 pounds at $119,186, and Avila/Port San Luis reported 280,529 pounds valued at $310,298.

Recreational Fishing

Recreational fishing is inherently more difficult to describe than commercial fishing because landings and fishing activity are not tracked in the same manner. Recreational ocean fishing can typically be grouped into two categories: those fishing independently on small boats or from docks/the beach or fishing from Commercial Passenger Fishing Vessels (CPFV). CPFV are for-hire enterprises that take recreational fishers out to fish, but still operate under the quota and recreational regulations associated with their target fishery. Fishing effort in this sector is generally managed through surveys or on the dock fish counts. According to the 2019 Fisheries of the U.S. report, the most popular species

targeted by fishers on the West Coast were rockfishes[21], albacore tuna, lingcod, halibut and salmon.

Pacific coast-wide in 2019, marine recreational anglers took an estimated 3.8 million trips and caught a total of more than 11 million fish. Almost 90 percent of these trips were made in California, followed by approximately 6 percent in Oregon, and 4 percent in Washington. The most commonly caught (as opposed to targeted) non-bait species (in numbers of fish) across all trips were Pacific (chub) mackerel, kelp bass, black rockfish, California scorpionfish, and vermilion rockfish. The largest harvests by weight across all trips were albacore, lingcod, black rockfish, Chinook salmon, vermilion rockfish, and coho salmon. Approximately 71% of trips occurred in state waters, 17% in federal waters, and 12% in inland waters. Of those trips that fished primarily in federally managed waters, the non-bait species most commonly caught (in numbers of fish) were California scorpionfish, ocean whitefish, vermilion rockfish, squarespot rockfish, and bocaccio. Other popular recreational catch, particularly on CPFV vessels, are salmon and halibut (NMFS, 2019).

Recreational fishing typically uses smaller scale fishing methods, such as hook and line, trolling, hand nets, or occasionally harpoon. With limited exceptions, recreational fishing is generally a nearshore activity due to the limited trip lengths, smaller size of vessels, weather conditions, and cost. One recreational fishery that does operate farther offshore in the Central Coast region is the HMS fishery, although there is limited overlap with the boundary of the WEA. As can be seen in **Exhibit 3-13,** which shows CPFV activity (recreational for hire fishing), fishing intensity is higher closer to shore, but still present in the WEA.

Social and Cultural importance of Fisheries

Aside from the economic importance of fisheries described above, fishing activity is also interwoven into the societal and cultural fabric of communities up and down the coast. Modern fishing has been a part of the Central Coast community economy since modern cities were founded but has been an integral part of the indigenous coastal communities since time immemorial. Monterey, in particular, invokes a historical connection to Cannery Row, and the abundance of sardines and other CPS that supported much of the region's early economy. Liu et al (2019) describe how current Central Coast fishing communities provide a vital link to the past, especially in Morro Bay, which once supported a prominent abalone fishery that is quintessentially tied to the seafood identity of coastal California. Fishing communities and the infrastructure associated with them provide jobs and amenities to the surrounding community, as well as promote a broader connection with the public to the ocean. For Tribes and other entities that rely on fisheries for subsistence, access to even a small quantity of fish is important for food security and to the continuance of cultural traditions. Thus, even those fisheries that make up a smaller component of the overall economic value in the Central Coast may still be critical to the existence and identity of an area, even when value or poundage of

[21] Fishing for certain types of rockfish on the Central Coast is currently depth limited but is proposed to be moved outside of the 50 fathom depth contour for recreational fishing of certain species in order to reduce nearshore fishing impacts to copper and quillback rockfish.

landings itself conveys a less substantial role.

Lease Exploration Impacts

During the leasing period, a lessee may conduct lease exploration activities within the WEA including shallow hazards assessments, geological, geotechnical, archaeological, and biological surveys, and installation, operation, and decommissioning of data collection buoys. These activities have the potential to interfere with commercial and recreational fishing in and offshore of Cambria primarily through impacts to important fishery species and space-use conflicts within staging locations and offshore.

Data collection buoys may exclude fishing operations that frequent deeper water, in particular mobile gear fisheries. Mobile fishing is typically defined as any operation with active gear such as nets or dredges that are set out and hauled back with winches or drums while the vessel and gear are underway, typically on a cycle measured in minutes or hours. Using this type of gear significantly hinders a fisher's ability to maneuver their vessel during operations, including around structures that are affixed to the seafloor, such as buoys. Fishermen could also suffer decreased efficiency (such as spending more time on fishing by setting and hauling gear) when trying to avoid buoys during their operations. Decreased efficiency can result in increased time at sea, fuel expenses, and additional wear on equipment. The spatial extent of de facto exclusion from fishing grounds may be estimated (as a proxy) using US Coast Guard (USCG) safety zone considerations for OCS facilities where 500-meter (1,640 feet) safety zones were established to promote the safety of life and property.[22] Using this approach estimates a 0.785 km^2 (0.303 mi^2) circular exclusion zone per buoy. Although the exclusion area itself is not very large, avoiding this area could mean that fishermen have to modify fishing activity or transits to continue fishing and navigating safely. If fishermen fail to avoid buoys, subsequent entanglement may result in damage to or loss of fishing gear for which they could be held financially liable. Mobile gear types appear to have limited operations in the Morro Bay WEA, however, other fisheries operating within the WEA may also be affected by buoy placement, but the impact is expected to be minimal: deployment and retrieval of other gears may have more maneuverability compared to mobile bottom gear such as trawls.

As described above in more detail in section E, sampling or site assessment activities may result in adverse impacts to fish and other marine species that could lead to an indirect impact on commercial or recreational fishing. Geophysical surveys that use acoustic methods may negatively impact fish in the larval stage as well as have negative impacts on the ability of fish to hear within the water column. To address this concern, BOEM has clarified that high-energy acoustic surveys are not assessed in the EA and will not be authorized as part of a lease, and as such, impacts to fish species are not expected to be significant. Furthermore, **Condition 1(c-e)** requires geophysical surveys to be conducted using low-energy equipment, including subbottom profilers, echosounders, and side-scan sonars, and requires BOEM to encourage lessees to collaborate on their survey plans to increase efficiency and minimize impacts to coastal

[22] 33 CFR §147.1109

resources associated with the surveys. In addition, survey vessels could disturb important seafloor habitats or accidentally release oil or other hazardous materials into the ocean. As described in more detail in section E, **Conditions 1(f) and 2** require BOEM to ensure lessees avoid hard substrate habitat and submit a variety of plans, including an Anchoring Plan, a project-specific Spill Prevention and Response Plan and a Critical Operations and Curtailment Plan to ensure that vessels operate safely and avoid impacts to the marine environment. In addition to data collection buoys, site characterization and assessment activities may result in conflicts to the marine operations and fishing vessels located near offshore of the Central Coast and in the WEA. Proposed lease exploration activities involve survey vessels mobilizing and transiting from port (it is unknown which port at the present time) to the WEA. 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 five-year period for the deployment, maintenance, and decommissioning of up to three metocean buoys. The addition of more vessels into the area may reduce efficiency of fishing operations due to time delays associated with congestion. In addition, vessels associated with the leasing activities may accidentally damage fishing gear (e.g., by cutting trap floats) or release marine debris which could cause entanglement or interfere with other fishing operations. Nearshore fishing activities may be further impacted due to the presence of survey vessels conducting site analysis or fish surveys[23] (for example) along potential cable routes. It should be noted, however, that both lease exploration activities and placement of buoys are a temporary impact, which will conclude after approximately 5 years and result in the removal of any installed metocean buoys and their associated gear that may have been anchored to the ocean floor, per BOEM regulations.

Typical mitigation measures to reduce the previously described space-use conflicts focus on avoidance and procedures to increase navigation safety. For example, vessel operators are required to comply with regulations regarding pollution/discharge at sea such as those under the Federal Water Pollution Act which regulates the release of oil at sea, and those under the Clean Water Act, which regulates the discharge of pollution at sea, and the Marine Pollution Convention (Annex V) which regulates discharge of trash at sea. These requirements reduce the likelihood of discharges into the marine environment and ensure that if any accidental releases of trash and debris do occur, the operator is responsible for reporting spills as appropriate, recording authorized discharges, and held accountable through violations and fines if found not in compliance.

Furthermore, at the end of the approximately 5-year lease exploration term, data collection instrumentation will be decommissioned, and large marine objects removed so any existing de facto exclusion zones will be eliminated. To enhance navigational safety, lessees will develop survey plans and SAPs that will include site-specific

[23] Although specific fish surveys have not been proposed, NOAA (NMFS) has indicated that it may be necessary to obtain an Exempted Fishing Permit or Letter of Authorization for the take species. CDFW also has indicated that it may be necessary to obtain a scientific collection permit (dependent on survey activities and locations).

measures to mitigate navigational concerns. Such measures may include a local notice to mariners, designation of vessel traffic corridors, lighting specifications, incident contingency plans, or other appropriate measures. According to BOEM, survey development is an ongoing process, and each survey plan will be carefully evaluated, not only for scientific rigor, but also incorporation of best management practices to ensure measures are taken to minimize impacts to fish species, mammals, and to promote save navigation.

In authorizing similar marine survey or infrastructure projects, the Commission has typically required a series of mitigation measures to reduce or eliminate impacts to fishermen and fisheries resources. Many of these measures are similar if not identical to those required by BOEM.[24] For example, communication with the maritime industry, updating nautical charts and providing notice to mariners are commonly incorporated measures. However, the Commission has also typically included a few additional measures that are not currently included in BOEM's proposed activities. These include specific prohibitions on contact with hard substrate, a submission of several emergency response plans such as spill, anchoring, and critical operations and curtailment (**Conditions 1(f) and 2**).

To ensure these measures are implemented, **Condition 1(a-b)** states that BOEM will encourage continuous and open communication and dialogue between BOEM, the lessees, the Coastal Commission, and other relevant state agency staff during review of survey plans and site assessment plans; BOEM will also coordinate with the Coastal Commission and other relevant state agencies to provide access to the lessees' survey plan submissions. Additionally, **Condition 7** will require continued close coordination with members of the fishing industry, primarily through a fishing liaison, to ensure that timing of surveys is considered (i.e.; in relation to fishing seasons) as well as ensuring proper channels of communication are in place to minimize potential on-water conflict. With these measures included and as described above, the proposed lease activities will be implemented in a manner that recognizes and protects the economic importance of marine resources and commercial/recreational fishing and are therefore consistent with Sections 30230, 30234, and 30234.5 of the Coastal Act.

Future Lease Development Impacts

As described in section B, the purpose of this section is to identify and assess reasonably foreseeable impacts associated with potential future development of offshore wind leases. At this stage, there is not enough information to conduct the type of comprehensive and cumulative socioeconomic analysis for potentially impacted fisheries that will be necessary to evaluate specific projects. However, there is sufficient information to conduct a siting-level analysis that incorporates information on the size of the wind area and the maximum potential build-out capacity, development and infrastructure likely needed to support offshore wind development, the types of fisheries

[24] BOEM guidance for providing information on fisheries social and economic conditions for renewable energy development on the Atlantic OCS is available here: https://www.boem.gov/sites/default/files/documents/about-boem/Social%20%26amp%3B%20Econ%20Fishing%20Guidelines.pdf

present that have a potential to be impacted, and different strategies that have or could be employed to ensure that impacted fishing communities remain protected, viable and resilient.

As described earlier in this section, the waters offshore California support numerous types of fishing, and there is a high cultural and economic significance associated with these activities. In its EA, BOEM identified the fishing grounds for sablefish, thorny heads, chinook salmon, and swordfish as overlapping with the WEA. These fisheries are an important part of the overall landings value in the Central Coast region, and BOEM's finding is consistent with CDFW data presented in the first section. Other fisheries present within or near the WEA include coastal pelagic species, shrimp and prawn, market squid, and Dungeness crab. Market squid, the highest value fishery in the region, is generally fished nearer to shore (**Exhibit 3-8**) and does not have an identified overlap with the WEA, although could be impacted by cable routes and other lease development activities that would occur closer to the coast. Impacts to fishing from potential wind development are complex and will vary on a fishery by fishery, and even individual basis. However, there are common potential impacts that have already been identified and articulated by the industry.[25] These include:

I. Exclusion. The ocean is a shared space. Fishing and other uses must coexist and work through complex management and regulatory requirements. It is anticipated that offshore wind development areas will become exclusionary zones and will restrict already limited ocean space.

II. Displacement. Related to Exclusion, fishers that are excluded from the WEA may be forced to relocate into other, already limited fishing grounds, placing additional environmental pressure on the remaining habitat, and potentially increasing conflicts between user groups.

III. Increased costs and time at sea to avoid wind development. Placement of wind facilities can delay direct access to fishing grounds and force fishers to fish or drift far outside of lease boundaries due to movement of gear and vessels on the open ocean.

IV. Loss of future fishing grounds. Fishing grounds are highly variable. Continuous and often rapid changes in ocean conditions cause changes to fish populations which in turn result in changes to fishing behavior year over year. Large-scale wind development would eliminate a huge portion of potentially viable fishing area, limiting fishermen's ability to adapt to changes in fishing grounds.

V. Loss or disruption of harbor space and fishing infrastructure at ports due to increased presence of wind related facilities.

Each of these impacts will be explored further below.

[25] These concerns were brought forth by the fishing community during interagency outreach meetings, as well as derived from a list of concerns submitted by numerous fishing organizations in a public comment letter. The impacts have been summarized in this document, but the full list of concerns/potential impacts can and should be considered in the scope of future project development.

(1) Exclusion

There are currently a multitude of protected and/or conservation areas in both state and federal waters that specifically impact when and where fishing can take place. These areas, which include Essential Fish Habitat (EFH), HAPCs, Marine Protected Areas (MPAs) and National Marine Sanctuaries, also affected the siting of the WEA itself. EFH designates areas important for fish spawning, breeding, feeding or growth, and can include full or partial fishing closures, especially for groundfish. EFH areas near the WEA include Monterey Bay/Canyon, West of Sobrantes Point, Point Sur Deep, Big Sur Coast/Point San Luis, La Cruz Canyon, West of Piedras Blancas State Marine Conservation Area, East San Lucia Bank, and Point Conception (**Exhibit 3-14**). Northwest of the Morro Bay WEA is the Davidson Seamount, an area which fishing below 500 fathoms is prohibited.

A HAPC is a discrete subset of EFH, which designates areas that provide extremely important ecological functions or are especially vulnerable to degradation. On the western portion of the WEA, there is a large overlap with HAPC (most likely hard bottom habitat), shown in **Exhibit 2-1b**. MPAs designate important marine habitat areas and may include fishing closures. There are 29 state protected areas in this region between Pigeon Point and Point Conception that cover approximately 204 square miles (three are north of Monterey County): approximately half allow some amount of commercial and recreational fishing (CDFW, 2019b). The Monterrey Bay National Marine Sanctuary is adjacent to a northeast portion of the WEA in federal waters, and the proposed Chumash Heritage National Marine Sanctuary (which is still in process of pursuing designation) shares its southern border.

The protected area exclusions described above are just one example of fishing exclusion. Certain types of fishing areas are also limited by seasonal closures, depth limitations, gear restrictions, and quota limits, which affect the amount of allowable catch. These limitations result in much smaller areas in which fishermen are able to continue to harvest catch. Although not yet completed, this is expected to be illustrated through a story map created by Central Coast fishermen that is similar to the North Coast Fisheries Mapping Project.[26]

On top of the exclusions described above, offshore wind development within the WEA would likely result in an additional up to 376 square miles closed to fishing for at least the next three decades and likely longer. Based on a review of current fisheries data, several different fisheries could be affected by exclusion from the WEA. These include salmon, hagfish, groundfish, and HMS (including recreational). While fishing for salmon could potentially occur in the WEA, based on the expansive range of the species, most documented fishing activities for the species occur in closer proximity to the coast. The dominant form of groundfishing in the WEA is pot (typically for sablefish) which would be impacted by leasing and future development projects. Trolling gear and some gear used with HMS and fishing techniques are slightly more flexible, it is not certain that salmon trolling or all HMS fishing would be wholly excluded from the WEA. With respect

[26] (North Coast Fisheries Mapping Project (arcgis.com)

to HMS, it is anticipated that this fishery (both commercial and recreational) may be impacted by the execution of leasing activities and wind development because it will inhibit direct access to some fishing grounds such as those used by the swordfish fishery. Additionally, given the variability of the temperature margins that HMS species follow, it is possible that the species distribution could overlap at higher (or lower) levels with a physical location of future development. Like salmon, hagfish activity is also generally reported closer to shore, although the depth range of the species overlaps with the WEA. With respect to shrimp fishing, the pink shrimp and spot prawn fishery range is shallower than the current boundary of the WEA, and are not likely to experience significant impacts from the leasing activities (**Exhibit 3-15**). CPS also occur closer to shore and are not likely to experience significant overlap with survey activities.

(2) Displacement

Displacement occurs when fishermen can no longer access historic grounds and instead seek fishing opportunities elsewhere, which can overlap and lead to conflicts with other fisheries. The impacts associated with displacement can be difficult to quantify in areas such as the Central Coast where fishing activity that takes place in and around the WEA may not be landed at one of the Central Coast ports (i.e., Moss Landing, Monterey, Morro Bay or Port San Luis/Avil), but in more distant ports, such as Santa Cruz, San Francisco or farther south in Santa Barbara or LA/LB. Or, even if fish are caught and landed in the Central Coast, it is often the case that a significant portion of the fishing vessels are homeported outside the region, making it difficult to track impacts associated with displacement.

For offshore fisheries such as groundfish, salmon, and HMS, development within the WEA could result in the need to relocate to other fishing grounds that are less valuable, farther away or already in use by other fishermen, if adequate fishing grounds are available under current environmental and regulatory conditions. Displacing fishermen into fishing grounds that are farther away could result in increased costs related to time and fuel, and safety risks resulting from fishing farther away from port, or close to wind facilities.

Nearshore fisheries, such as CA halibut, market squid, CPS and Dungeness crab, that are caught in waters primarily inshore of the WEA, are not expected to experience direct impacts from offshore wind turbines in the WEA but may be displaced by related development. Offshore wind development will require power cables and other infrastructure to bring the power onshore. Construction and operation of these cables can adversely affect fishermen through temporary displacement or interference during construction, and as an ongoing hazard especially for fishermen using bottom contact gear. For example, fishermen using trawls or other gear that has bottom contact run an increased risk of snagging on the cable and losing or damaging gear. For some previous fiber optic cable projects, fishermen and cable companies have agreed to a “no fishing” buffer around the fiber optics cables in order to minimize potential interaction and snags. In addition, nearshore fisheries are likely to be competing for space with other fisheries that have been displaced. For example, the nearshore area directly offshore of the Central Coast supports high, episodic squid fishing activity, and this is certainly a concern for this and other nearshore fisheries.

For the recreational sector, the presence of fishing within the WEA is somewhat limited. It is possible, however, that development within the WEA could inhibit access to fishing grounds for highly migratory species, such as albacore tuna or swordfish, or other species that may occur farther offshore such as rockfish. There is significant variation with the location of fishing for HMS activity due to the variability of temporal habitat. However, the general trends of the fishery appear to be to the north (in their highest density) of the WEA, which suggests that the recreational (as well as commercial HMS fishery) is not likely to be significantly displaced from its fishing grounds (**Exhibit 3-13**). As future conditions shift, conflicts could occur.

(3) Increased costs and time at sea

The potential development of wind facilities offshore of the Central Coast could result in increased time (and therefore cost) of being at sea for many fishermen. Displaced fishermen may need to travel farther away to achieve the same catch. This could mean much longer trips in and out of ports, which increases fuel costs, vessel wear and tear, and potentially the number of overall trips a vessel could take due to time on the water. The simplest way to describe this is through an example. As shown in **Exhibit 3-10** the albacore tuna fishery is active primarily on the north side of the WEA. Currently, fishing that takes place from the ports south of the WEA would access fishing grounds through a direct route.

According to the data generated by Coastal Commission staff (and inspired by the North Coast fishermen's mapping study) (**Exhibit 3-16**) it currently takes approximately 7 hours to access the center of the WEA. If fishermen are no longer able to take a direct route through the WEA, but instead have to go around, that can add at least one or more hours to the trip depending on the wind facility layout. That additional transit time adds fuel costs, and reduces the amount of time the fishermen spend actually fishing (depending on the fishery). More time to access fishing grounds can ultimately result in an overall reduction of trips that a vessel is able to take. Less trips generally equate to less overall harvest, or in the case of recreational/CPFV fishing, less business. Vessels also report that in circumstances where the vessels remain at sea overnight, a vessel can drift as far as 10 nautical miles. This would mean that fishermen in this situation would need to leave a 2-hour buffer from a wind farm to ensure that they were not placing their vessels or persons at risk of collision.

Finally, many fishermen have brought up the fact that fishing around wind development will require additional space beyond the boundary of the WEA. Certain types of fishing gear, such as a sablefish pot, drift horizontally in the water column before it reaches the bottom. The horizontal distance travelled varies with ocean conditions, but can drift up to a mile from where it was set. If fishing in or around a wind facility, this would add a mile buffer around the entire perimeter of the lease area that would also be considered unfishable (subject to an individual fishermen's assumption of risk).

(4) Loss of future fishing grounds.

Fishing is a highly variable vocation, and as such, the construction and operation of a stationary offshore wind facility and its associated infrastructure have a high probability of impacting the ability of fisheries to adapt to the changing spatial-temporal conditions that define fishing. This makes predicting the exact potential for loss of future fisheries

as a result of wind development extraordinarily difficult. Fishing activity, especially for HMS fisheries which vary seasonally in relation to water temperature, are already difficult to predict year to year with precision. When coupled with broad scale predictions and uncertainty related to climate change, including expectations that species will shift north with warming water trends, it's nearly impossible to say with precision what fisheries will look like in the future. However, given the realities of a warming ocean and climate change, it is highly likely that future fishing grounds will be different than they are today.

A potential loss of future fishing grounds could apply to multiple fisheries, whether or not they have occurred in the WEA in the past. This includes the HMS fishery, ocean salmon, groundfish, and hagfish (an open access fishery). Specifically described with the groundfish trawl industry was the recent return of permits to the industry in 2019, which allow the activity to resume after nearly two decades of cessation.[27] While activity of this type is not currently occurring in great volume, the construction of offshore wind facilities would substantially lessen the area where it could.

Currently under development is a comparable study to the North Coast Fishermen's Mapping Project,[28] which mapped potential future fishing grounds in the North Coast (see **CD-0001-22 exhibits**), which is expected to show fishing potential on the Central Coast, which may (or may not) overlap with the Morro Bay WEA. Regardless, a loss of area to use for future fishing operations makes it more difficult to adapt fishing operations over time, and as such, business planning for successful years of operations takes on a higher level of uncertainty. This uncertainty can also expand to related fishing businesses such as processors and wholesale retailers. As aptly explained in a public comment letter on the Morro Bay Draft EA from Alliance of Communities for Sustainable Fisheries:

> *...ex-vessel values translate into waterfront economic activities. As stated in a 2017 report prepared for the Morro Bay Commercial Fishermen's Organization (MBCFO), ex-vessel values from commercial fishing are: "...directly responsible for approximately 200 jobs for skippers, deckhands, dock workers and local seafood processors, and represents a success story in attracting and retaining businesses and supporting local business ownership and employment. The commercial fishing industry and the activity driven by the working waterfront make up the backbone of Morro Bay's Robust and Diverse economy."*

This sentiment echoes concerns raised by fishermen and processors on the North Coast: that even a small loss of fishing grounds and activity can have much more

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[27] Another example of future fisheries that may be limited by development is Box Crab (Coates, 2018). The species is currently authorized for limited/exploratory harvest under an experimental fishing permit overseen by State fish and wildlife regulators. Three EFPs were authorized for fishing in state waters north of Pt. Conception (and 5 south of Pt. Conception).

[28] North Coast Fisheries Mapping Project (arcgis.com): A similar exercise is occurring for Central Coast fisheries.: A similar exercise is occurring for Central Coast fisheries.

expansive impacts to associated businesses.

(5) Loss or disruption of harbor space and fishing infrastructure at ports due to increased presence of wind related activities and facilities.

Offshore wind development in the Morro Bay WEA may require substantial port and harbor space to support assembly and staging of turbines and other equipment. There are a few existing and ongoing studies examining feasibility of various ports the state, to serve as a support base for the offshore wind industry. However, ports such as Los Angeles/Long Beach, Port Hueneme, Diablo Canyon, Morro Bay, and even ports farther north such as Oakland could serve to support OSW in a future development capacity. As these studies and decisions are ongoing, the scope and scale of upgrades needed to support offshore wind infrastructure on the north and Central Coasts, and thus any coastal resource impacts that would result from those upgrades, is uncertain. However, examples from the east coast can provide some information that can assist in describing potential impacts.

As noted above, staging for offshore wind and the associated pier/berth facilities can take up a significant amount of space. In the Port of New Bedford, which is an urban port in Southeastern, MA being developed as a staging area for (currently) two offshore wind projects, a 29-acre site is being developed on an existing waterfront site. Features of the New Bedford OSW marine terminal include:

- Co-location with more than 200 maritime businesses
- 29-acre facility, including 21-acres of heavy-lift capacity: uniform loading up to 4,100 pounds/square foot and crane loads of up to 20,485 pounds/square foot
- 1,200 feet of bulkhead, including 800 feet of deep draft berthing and 400 feet of barge berthing space
- Within the most protected port in the U.S., with the U.S. Army Corps Hurricane Barrier that guards against storms up to Category 3 hurricanes
- No height restrictions on site, and no overhead restrictions from the Terminal to open water
- Easy roadway connections to interstate highway system via I-95 or I-495 (via connections through New Bedford Route 18 and MA Route 140 and/or Route I-195)
- No Harbor Maintenance Tax

In terms of fishing, New Bedford is considered one of the most economically valuable fishing ports in the country supporting more than 100 (homeported) vessels and landing more than a million pounds of seafood a day (Commercial Fishing, 2018). It is home to vessels, processors, wholesalers and restaurants that all rely on the industry. The incorporation of the offshore wind site in New Bedford is on an existing developed parcel, and part of the design includes expanded seafood offloading facilities. An important distinction between the two coasts is that the wind turbines on the West Coast have the potential to be much larger than those used on the east coast, and thus, the space needed to stage them (and the vessels needed to transport them) will likely have

to be larger.

For the fishing industry, expanded development within the many of the aforementioned ports could result in additional concerns related to traffic, loss of port and harbor space and facilities. For example, large vessels, such as those needed to transport turbine structures could prevent other vessels from transiting in designated channels and delay in and outbound transits when they are operating. It could also force vessels to operate outside of main channels, which may harm sensitive natural resources such eelgrass. However, as noted in the industry letter received on February 9th, 2022, there can also be some benefits of co-location such as decreased fuel prices and even general harbor space improvements/repairs. Keeping this siting information in mind, it will be important to consider the location of offshore wind staging within the harbor, overall spatial requirements, and the additional impact minimization measures that can be incorporated into the design that could lessen impacts to the fishing industry and thus be consistent with Coastal Act Section 30234.

Coastal Act Analysis and Approaches to Avoidance, Minimization and Mitigation

As described in detail in the previous sections, activities related to offshore wind leasing and foreseeable future development within the Morro Bay WEA will result in impacts to the fishermen and fisheries of California's Central Coast. Several fisheries: pot: (sablefish) drift gillnet (thresher shark/swordfish), and trolling (albacore tuna) currently overlap with portions of the WEA and would likely be excluded from these areas if offshore wind development is authorized. To varying degrees, all Central Coast fisheries would likely be affected by temporary or permanent displacement, increased cost and time at sea, traffic, loss or disruption of harbor space and fishing infrastructure within the port and potential loss of future fishing grounds. As described above, some of these effects would be felt directly and immediately with lease exploration activities. Other effects would be felt later in time—likely in the context of lease development activities—but are still reasonably foreseeable and need to be analyzed and addressed, at least at a broad scale, at this point in time. In addition, the leasing action itself will have immediate effects on fishing because it creates uncertainty for fishermen about where they will be able to fish in the future, which affects their ability to conduct longer term financial planning, such as deciding whether to take on debt to purchase new equipment. Communications with the fishing industry during outreach activities and through comments on the BOEM Draft EA reiterate this concern.

Although the exact impacts of future wind development are not known at this time, there are immediate and reasonably foreseeable future effects that need to be addressed in order to protect the economic and commercial importance of fishing activities, as required by Coastal Act Sections 30234.5 and 30230. The Central Coast landings averaged $19.6 million annually (2010-2020 average), accounting for approximately 12% of commercial landings statewide[29]. This value does not fully address the economic value of fishing crews, fish processors, gear manufacturers, ship supply and

[29] The Fisheries of the U.S. report, page 38, states $164,327,000 of annual landings in 2019 for the state of California.

repair businesses, seafood retailers and restaurants in the Central Coast and beyond. As such, the high-value fishing grounds in the Central Coast and the species that are fished there can be considered areas and species of special economic significance that garner specific protection under Section 30230. For example, the pot fishery for sablefish, which contributes a significant portion of the overall catch landed in the Central Coast, is likely to experience direct impacts (i.e.; economic loss) given the overlap in fishing activity with the WEA boundaries.

The Coastal Act requires the protection of commercial and recreational fishing activities, and there are a variety of actions that could be taken to ensure that California's Central Coast fishermen are protected and recognized. These could include disallowing offshore wind development in portions of the WEA that correspond to the highest value fishing grounds for the affected fisheries, creating buffers within the boundaries of the WEA to allow for fishing activity to safely operate around the perimeter, developing a program that helps affected fisheries adjust to changes in fishing grounds, gear transitional programs, or developing a comprehensive mitigation package that adequately compensates fishermen for the loss of these fishing grounds, and many options in between.

It is possible, if not likely, that the ultimate solution will include elements of all these options. At this time, it is not necessary to decide exactly how all of these impacts need to be addressed. It is critical, however, that discussions about how to address impacts to specific fisheries, and to the Central Coast fishing industry as a whole, include affected fishermen and representatives of the fishing industry. It is also necessary at this point in time to have BOEM, in concert with the Coastal Commission, other state and federal agencies, Tribes, and fishing interests, begin setting forth a framework for how the entire wind development process- from leasing decisions through actual wind development-will address the effects that the process will have on fishing activities. If this framework is not set up until later stages of the offshore wind development process, such as during BOEM review of a COP, it will force the fishing industry to operate for the next several years with significant uncertainty about potential future development. In addition, if BOEM waited until lessees submitted COPs to analyze and address impacts to fishing, it would likely be too late to gather the necessary information about the scale and location of fishing activities as well as potential avoidance, minimization and mitigation measures that are needed to adequately evaluate and address impacts. This could significantly delay future project approvals.

In recognition of the importance of direct engagement, and in an effort to begin the discussion with fishermen about how best to address the impacts described above, representatives from State agencies, including Commission staff, and BOEM held a series of meetings with representatives of the fishing community in Crescent City, Eureka, Fort Bragg, Santa Barbara, and Morro Bay.[30] At this stage of the offshore wind process, the goal of the outreach was to meaningfully engage the fishing community about the state and federal processes for OSW development, hear their concerns, answer questions, and determine what the most appropriate avenue for addressing

[30] Meeting Summaries are available here: Upcoming Projects (ca.gov)

impacts and mitigation would be moving forward. At these meetings, there were several concerns that were echoed coastwide, that have largely been reflected in the impact analysis above. Fishermen had many questions about the scale and type of development that might take place in the coming years, concerns that the exclusions, displacement and spatial conflicts would severely limit their ability be profitable and to ensure the longevity of the industry, and an interest in an approach to mitigation that is fair, equitable, and focuses on resilience of the fisheries and of the fishing industry. These sentiments have also been reflected in follow up conversations with key representatives from the fishing community. Most of the fishermen who attended outreach meetings expressed their desire to continue fishing for years to come and to be able to pass down their knowledge and vocation to the next generation.

To achieve these goals, as well as the special protection required by the Coastal Act, all parties – fishermen, offshore wind developers and state and federal agencies – will need to work collaboratively towards a common strategy to avoid, minimize and mitigate impacts to the fishing industry in a consistent and equitable manner. As the Central Coast is not the only offshore region that is being considered for offshore wind development (see CD-0001-22), it is important that the overall strategy be consistent statewide to ensure fairness. BOEM has acknowledged the need for a comprehensive and fair way to address the impacts that offshore wind has on fishing interests and recently conducted a request for information and public comment period on the strategies to addressing impacts to the fishing industry from offshore wind energy development.[31] BOEM is also working with NMFS to effectively manage potential impacts to fisheries surveys that are a critical component of the fisheries regulatory framework.

Similar to the fishing agreements required by CDPs authorizing fiber optic cable installation and operation, the strategy will need to include communication protocols, best practices for surveys and data collection, specific measures for avoiding and minimizing impacts for various stages of offshore wind development, and a framework for compensatory mitigation to address unavoidable impacts. These goals and strategy components are consistent with verbal and written correspondence the Commission has received from fishermen from across the state. For example, a February 9, 2022 letter from sixteen (statewide) fishing and maritime organizations discusses the need for fishing agreements (page 3):

> *The principals of impact avoidance, minimization, and non-monetary mitigations should be considered for all aspects of an OSW project prior to compensation-mitigation discussions. Make no mistake: fishermen would rather have their areas of opportunity preserved than have financial compensation for the loss.*

Once the strategy is developed, it will need to be applied through fishing agreements between an entity representing fishermen and the developers. These agreements will

[31] Request for Information on Reducing or Avoiding Impacts of Offshore Wind Energy on Fisheries | Bureau of Ocean Energy Management (boem.gov)

need to lay out how mitigation funds will be spent, how decisions will be made, and the process for amending the agreement as needed. It is the Commission's expectation that signed fishing agreements, consistent with the statewide strategy described above, will be completed and submitted as part of any application for a CDP or a consistency certification for an offshore wind project. To ensure progress toward development of the statewide strategy, **Condition 7** requires BOEM to work with Commission staff and other state agency staff to facilitate a working group consisting of fishing representatives, offshore wind industry representatives and federal and state agency staff to develop the components of the strategy including a fishing agreement template. **Condition 7** also requires that the strategy include specific consideration for those fisheries that are disproportionately and/or directly affected by offshore wind development. Finally, to ensure that potential impacts to commercial and recreational fishing during the lease exploration phase are minimized, **Condition 7** requires BOEM to require lessees to have an independent fisheries liaison that is responsible for coordination and communication with affected fishermen and harbor districts. The liaison will work with fishermen to coordinate timing of survey work, which has been a documented source of conflict on the east coast, to and develop a process for reporting and remediating conflicts.

In addition to development of the strategy described above, based on a review of projects developed on the east coast, it can be assumed that at a minimum, the design of future wind farms should incorporate measures that ensure safe navigation through the lease areas, including possible identification of transit corridors. This is needed to ensure continued, safe access to fishing grounds surrounding a potential wind farm, to alleviate lengthy transit times, and to ensure that the economic interests of the fishing industry are protected so that the industry can continue to effectively harvest from the region. BOEM has conveyed that these concerns will likely be addressed through the subsequent stages of its leasing process in which the USCG will be conducting a Navigational Safety Risk Assessment. This process has the goal of promoting navigational safety but is not a unilateral decision. Rather, the USCG makes recommendations based on the best available information to apply transit lanes and/or other safety measures to BOEM that the Bureau may then apply to its lessees. Commercial fishing traffic patterns are a component of this analysis and have been integrated into prior risk assessments, such as those that have been completed on the east coast (U.S. Coast Guard, 2018). **Condition 4** ensures that BOEM will work with stakeholders, including the USCG, NOAA, state agencies and the fishing and maritime industries to ensure navigation through the lease areas.

Conclusion

Leasing activities and foreseeable future offshore wind development within the Morro Bay WEA will result in project-specific and cumulative adverse impacts to multiple fisheries of economic and social importance to the state of California. Fisheries and fishing communities are likely to be directly impacted by lease exploration activities, including by having increased vessel traffic in the ports near the area, exclusion areas around metocean buoys, and the economic uncertainties caused by BOEM's leasing process. In addition, the exact scale and location of future wind development is

unknown at this time, but it is reasonably foreseeable that there will be future development of at least some OSW projects. Such projects would affect fishing directly due to the presence of wind turbines and related infrastructure (exclusion and displacement) as well as indirectly through increased vessel traffic, potential harbor development and decreases in trip efficiency. Although some of these activities will occur outside of the coastal zone, much of the development activity—such as harbor development and use, as well as cable-laying—will occur within the coastal zone. Also, both the activities in and outside of the coastal zone will have coastal effects, as they will both affect the coastal fishing community, the volume and value of fish landed at ports and harbors, and the coastal economy. As such, it is imperative that BOEM, lessees and developers work with the fishing community to minimize these effects in the planning and development of potential projects to ensure that the seafood industry in the Central Coast remains viable and robust. To achieve this, **Condition 7** requires that BOEM require lessees to have an independent fisheries liaison to coordinate with fishermen and that BOEM work with state agencies to facilitate a process to develop a statewide strategy for avoiding, minimizing and mitigating impacts to the fishing industry from offshore wind development. With the measures incorporated by BOEM into its leasing program and the conditions imposed by the Commission, BOEM's proposed activities are consistent with the Coastal Act's mandate to protect commercial and recreational fishing.

G. Oil Spills

Section 30232 of the Coastal Act states:

> *Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.*

Lease Exploration

The issuance of leases and subsequent site assessment and characterization activities have the potential to result in oil spills within or outside of the coastal zone, either of which could affect coastal resources. According to the CD, a spill of petroleum product could occur as the result of hull damage from collisions with a metocean 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). As described in previous sections of these findings, vessel traffic is expected to approximately triple as a result of lease exploration activities, increasing the risk of an oil spill incident.

The CD provides general information on potential impacts from an oil spill, concluding that an oil spill would dissipate very rapidly and would then evaporate and biodegrade within a day or two, limiting the potential impacts to a localized area for a short duration. Regarding the potential for a diesel spill to enter ocean waters and affect coastal resources, the CD states:

> *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 the Proposed Action. 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.*

The first test of Coastal Act Section 30232 requires evidence of oil spill prevention technologies, programs, and procedures to "protect against the spillage of crude oil, gas, petroleum products, or hazardous substances..." According to the CD:

> *Vessels are expected to comply with USCG requirements relating to prevention and control of oil spills, and most equipment on the…buoys would 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.*

The Commission's oil spill program coordinator reviewed the above referenced USCG regulations and determined that many of them do not appear applicable to the types of vessels expected to undertake site assessment and characterization activities. For example, 33 CFR Part 151 includes requirements for shipboard oil pollution emergency plans, but those requirements appear to only apply to oil tankers and other ships 400 gross tons or above (see 33 CFR §§ 151.09(c), 151.26 - 151.28). 33 CFR Part 154 deals specifically with facilities transferring oil or hazardous materials in bulk and does not appear to apply to the project. The implementation of vessel response plans called for in 33 CFR Part 155 apply to tank and non-tank vessels 400 gross tons or above and would also not appear to apply to the types of vessels undertaking site assessment and characterization activities (see 33 CFR § 155.5015(a)(4)). It should be noted that much of the information and standards required under the cited USCG regulations are important and do help meet the Commission's requirements for spill prevention and safety measures. For example, 33 CFR Part 151 generally prohibits the intentional discharge of oil or oily mixtures into the sea. However, some of the requirements, such as for spill prevention measures, do not appear applicable to this project and are therefore inadequate to assure compliance with the first test of Section 30232.

The second test of Section 30232 requires that effective containment and cleanup facilities and procedures be provided for accidental spills that do occur. To meet this test the Commission typically requires submittal of a project-specific Spill Prevention and Response Plan (SPRP) that demonstrates adequate oil spill response equipment, trained personnel, and waste disposal capability to contain and clean up the volume calculated for the worst-case spill.

To ensure that effective oil spill prevention and response measures are in place for the expected site assessment and characterization activities, **Condition 1(f)(ii)** requires BOEM to require the lessee to submit a site-specific SPRP a minimum of 30 days before the commencement of any in-water survey activities or as part of any survey or SAP. The primary focus of the SPRP condition is on increasing the scope and level of detail regarding response efforts that would be taken in the event of a worst-case oil spill. The SPRP must include a description of preventative measures and programs the lessee will implement to avoid spills, including pollution prevention best practices that are proposed to be implemented during lease exploration activities. The SPRP must also identify the worst-case spill scenario, the response strategies that would be employed, and demonstrate that adequate containment and cleanup equipment will be available in the event of a worst-case spill. Appropriate spill notification procedures, including an up-to-date list of contacts to call in the event of a worst-case spill, as well as information demonstrating training of personnel on the components of the plan will be required. Contracts with off-site spill response companies should be in-place to provide additional containment and clean-up resources as needed. In addition to a site-specific oil spill plan, **Condition 1(f)(iii)** requires BOEM to require lessees to include a Critical Operations and Curtailment Plan (COCP) as part of any survey SAP. This plan describes limiting conditions of sea state, wind, or any other weather conditions that would hinder safe operation of vessels and equipment or a potential spill cleanup.

Lease Development

Oil spill risks during lease development are expected to be similar to the risks outlined above during lease exploration activities. However, the risks will likely be greater, as there will be an increased number of larger vessels on the water for longer periods of time. Additionally, offshore wind turbines require oil-based lubricants and other chemicals, such as coolants, to function. Accidental spills of these chemicals may occur during regular maintenance, or due to foreseeable but unlikely events, such as a major storm that damages the turbines. Similar to the requirements described above for lease exploration activities, the Commission expects lessees to submit a project-specific SPRP and COCP covering construction and operations of any proposed development as part of a consistency certification.

As conditioned, the Commission concludes that the project is consistent with Coastal Act Section 30232.

H. COASTAL HAZARDS

Section 30253 states, in relevant part:

> *New development shall do all of the following: (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard. (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area …*

The Commission's review of coastal hazards in this case focuses on spillover effects of lease exploration and lease development to ensure that they minimize the risk to life and property. The potential coastal hazards associated with lease exploration are likely to be minimal and limited to foreseeable non-routine and low-probability events. Future lease development qualifies as new development under section 30253 and the Commission expects that lessees' development proposals will be designed and engineered to assure structural stability and integrity in extreme ocean conditions.

Lease Exploration

Lease exploration activities include an intensification of the use of vessels on the water and the potential deployment of a few buoys, both of which constitute new development. Although neither the absolute number of new vessels or buoys will be particularly large, reasonably foreseeable non-routine and low-probability events and hazards could occur during lease exploration, including collisions between the site assessment structures or associated vessels and other marine vessels, spills from collisions or fuel spills resulting from generator refueling, and recovery of lost survey equipment. These collisions may result in spills of vessel fuel and refueling of generators on metocean buoys may also result in accidental spills. Oil spill impacts are discussed section G of this report and will not be discussed further here.

Collisions

Lease exploration activities have the potential to significantly increase the non-fishing related vessel traffic in the Morro Bay WEA. As discussed in section E, non-fishing vessel traffic is expected to increase during lease exploration activities. Currently, there is a mix of vessel traffic that includes shipping, commercial fishing, and recreation. When actively engaged in fishing activities, vessels are less able to maneuver due to the presence of gear in the water and the acts of harvesting catch and bringing it safely aboard. Shipping vessels may also be constrained in movement and impacted by activities of survey vessels operating near their transit routes (**Exhibit 4-1**). Survey vessels with gear deployed (e.g., core sampling, pulling of gear through the water, ROV deployment) will also be restricted in their ability to maneuver. Although unlikely, it is possible that there may be vessel collisions during lease exploration activities. Thus, it will be critical to ensure that the fishing industry and lessees' contractors are regularly communicating so as to avoid impacts. Under **Condition 7** BOEM will require lessees to fund an independent fisheries liaison that is responsible for the coordination and communication of site activities with the affected commercial and recreational fishing communities and harbor districts. Communication about surveying activities and

engagement will enable lessees to time their surveys to avoid high-fishing times, such as season openings, and will help prevent accidents. BOEM is actively engaged in outreach to the shipping community to ascertain its concerns, which will also be considered in the USCG's navigational risk assessment in the future.

The ports on the Central Coast experience less in/outbound shipping and commerce traffic in comparison to larger ports such as San Francisco or Los Angeles, but does fall in the north/south transit routes between these large ports (**Exhibit 4-1**). To ensure that mariners are notified of lease exploration activities, under **Condition 7**, the fisheries liaison referenced above will also be responsible for providing local notices to mariners to ensure that non-fishing vessel traffic is also aware of lease exploration activities. Finally, **Condition 3** ensures BOEM will require its lessees to limit transit speeds to 10 knots or less during lease characterization studies, surveys, and metocean buoy installation, maintenance or decommissioning activities, which will also help to reduce the likelihood of collisions.

Lost Survey Equipment

In its EA, BOEM identifies the foreseeable but unlikely event that equipment could be lost during lease exploration activities. This equipment may include towed HRG survey equipment, cone penetration test components, grab samplers, buoys, lines and cables. It's also possible that a metocean buoy would disconnect from the clump anchor. If equipment is lost, recovery operations may be undertaken using ROVs and grapnel lines, depending on water depth and equipment lost. Where lost survey equipment is not able to be retrieved because it is completely or partially embedded in the seafloor, the lost equipment may become a hazard for bottom tending fishing gear. In these cases, lost equipment may be cut off 3-6.5 feet below the seafloor. BOEM has committed to working with the lessee to develop an emergency response plan addressing lost equipment and recovery.

Taken together, all of the measures described above will adequately reduce the risk of harm to life and property, consistent with Section 30253.

Lease Development

Lease development will involve the installation of floating offshore wind turbines in the Morro Bay WEA. In addition to the hazards described above, the main hazard associated with installing and operating turbines is emergency preparedness and the potential that turbines could be damaged or break free from moorings during normal or storm-related conditions on the ocean. In addition to storms, environmental hazards within the Morro Bay WEA such as earthquakes, tsunamis pose additional risks of damage to or from offshore wind turbines. Finally, the development of offshore wind infrastructure creates navigational hazards for other ocean users.

Storms and Emergency Preparedness

Extreme ocean conditions and storms have the potential to damage offshore wind turbines, moorings and electrical equipment. The average wave height in the Morro Bay WEA is 6.5-8.2 feet (see **Exhibit 4-2**). The high winds and waves that occur during storms have the potential to put enormous stress on offshore wind turbines and

infrastructure. In extreme cases, this may result in an offshore wind turbine breaking away from its moorings or anchors and creating a hazard on the ocean's surface or sinking into the ocean, and potentially damaging seafloor habitat, as discussed in section E of these findings. In less extreme cases, this may result in portions of the offshore wind turbine (such as one of the blades) coming off the main structure and sinking.

To address these concerns, lessees will need to demonstrate that the proposed project components can withstand normal and expected extreme ocean conditions associated with offshore storms. Additionally, each lessee will be expected to include a hazard mitigation plan as part of its COP describing how its facilities will be safely operated and maintained during normal and extreme storm-related conditions and then what steps the operator will take to remove any hazardous equipment if necessary. Finally, BOEM requires its lessees to provide a bond prior to lease issuance to guarantee compliance with all terms and conditions of the lease. As described in 30 CFR Section 585.516, BOEM then requires a series of financial assurances or bonds when SAPs and COPs are approved and equipment is installed in the lease area. Together these bonds provide financial assurances that funds are available to locate and remove orphaned or damaged infrastructure during each phase of the development process, should a lessee be unable to meet its obligations for maintenance or removal of equipment. Furthermore, the Commission expects that each COP submittal will include a Hazards Mitigation Plan that describes how the facility is designed to withstand hazards but also describes communication and recovery protocols in the event of a system or facility failure.

As mentioned in section F of these findings, development of the Morro Bay WEA has the potential to impact navigation by excluding vessels from the area. As storms or dangerous sea states begin, there may be a need for cargo, tugs, fishing or other vessels to get back to port quickly. The WEA's location between major ports may cause longer transit times if mariners are forced to transit around the wind facility and thus increase the difficulty associated with getting out of dangerous conditions. To address the need for transit through the Morro Bay WEA, under **Condition 4**, BOEM, in collaboration with the USCG, NOAA/NMFS, appropriate state and federal agencies, and stakeholders, will undertake a process to determine how to ensure safe navigation through the lease areas. This may include designation of transit corridors through the lease areas.

Earthquake Risk

Unlike the Humboldt WEA, the Morro Bay WEA is not located in vicinity of an offshore subduction zones, although like most of onshore and offshore California, it does have overlap with smaller mapped faults (**Exhibit 4-3**) and carries a general risk of earthquake activity occurring. Although turbines themselves will be floating and should not be directly affected by earth movement, any anchoring systems, mooring lines and other fixed development in the Morro Bay WEA should be engineered to withstand significant seafloor shaking. The Commission expects that individual turbine anchors and turbine arrays will be sited to avoid faults within the WEA and will incorporate a sufficient buffer to minimize impacts from a seismic event. Shore-side infrastructure

relating to offshore wind development, including harbor facilities and potentially onshore connection points for electric transmission, would likely be at risk for damage during an earthquake. The Commission expects that development proposals for transmission and development would be designed and built using adequate siting and design standards to minimize or avoid risk of damage from earthquakes. The hazard mitigation plan described above should also incorporate seismic risks and conditions.

Tsunami Risk

Tsunamis are caused by earthquakes or other geologic activity, such as landslides, that displace large volumes of water. Large tsunamis have not been common on the Central Coast of California. Much of the region in San Luis Obispo County (for example) is protected because they elevation is generally 50 feet or more above mean sea level, however, certain creeks, beaches, and harbor entrances do fall within the hazard zone. The location of the Morro Bay WEA in deep offshore waters makes it resilient to impacts from tsunamis. Tsunamis only become hazardous when they approach land; in deep water at sea, the top of the wave rarely reaches more than 3 feet higher than the ocean swell (*Tsunamis*, 2018). The mooring and anchoring systems of offshore wind turbines are expected to withstand substantial variability in extreme offshore conditions, including tsunamis. Shore-side infrastructure relating to offshore wind development, including onshore connection points for electric transmission, would likely be at risk for damage during a tsunami. The Commission expects that development proposals for transmission and port development would be sited outside of tsunami flood zones, to the extent feasible, and designed to withstand or minimize risk from tsunami flooding if within a flood zone. The hazard mitigation plan described above should also incorporate tsunami risk and conditions.

Navigational Hazards

The installation of offshore wind turbines, floating inter-array cables, anchors, and mooring lines may create navigational hazards to vessels fishing or transiting through the Morro Bay WEA. Depending on vessel draft, inter-array cables could catch on vessels, and the presence of floating equipment may result in collisions if vessels are unaware of the offshore wind development. The Coastal Commission expects that future wind development will include geo-locating equipment on the turbines, and for wind facilities to be included in aids to navigation to ensure that vessels know the location of the wind development to avoid navigational hazards. Furthermore, lessees will need to demonstrate that future wind turbine spacing will be sufficient for the Coast Guard to conduct search and rescue operations in the WEA, in the event of an emergency.

Lease exploration activities may increase collision and collision hazards and hazards associated with lost survey equipment. With implementation of BOEM's protective measures and **Conditions 3, 4, and 7**, the proposed development activity will minimize risks to life and property and is therefore consistent with Section 30253 of the Coastal Act. Installation of wind turbines at a future time will create new structures that will need to be structurally stable in stormy ocean conditions. Offshore floating wind turbines have only been deployed in a few locations in the world at this point, and designs and technologies are still being developed. Future proposals for specific projects will need to

be analyzed to ensure safety and stability.

I. Scenic and Visual Resources

Coastal Act Section 30251 states:

> *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 land forms, 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 Commission's review of activities in federal waters is focused solely on analysis of spillover effects on coastal resources within the Coastal Zone, such as how development activity would affect views from the coast over the ocean. The proposed project is located approximately 20 miles offshore, west of the Coastal Zone. Views are a critical component of public access and enjoyment of the coast. Current views of the ocean off the Morro Bay and Big Sur coast include natural features, such as offshore rocks, water, and wildlife and do not include substantial infrastructure or development. Pursuant to Section 30251, new development, such as eventual lease development, should protect visual qualities along the ocean and scenic coastal areas and should be visually compatible with the character of surrounding areas. Coastal Act and LCP policies generally focus on protecting views along the coastline. For example, the San Luis Obispo Coastal Plan Policies LCP states that "permitted development shall be sited so as to protect views to and along the ocean and scenic coastal areas." The Coastal Act calls out areas identified in the California Coastline Preservation and Recreation Plan for visual protection.

Most of the coastline east of the Morro Bay WEA is available for access and recreation through public beaches and parks. California State Parks in the area include Julia Pfeiffer Burns State Park, Limekiln State Park, Point Piedras Blancas, Hearst San Simeon State Historic Monument (Hearst Castle), Hearst San Simeon State Park, and Montaña de Oro State Park. Please see **Exhibit 5-1** for maps of state park locations along the coast and near or in Morro Bay. Due to this project's offshore location, the lease exploration and lease development activities would not obstruct views of the coastline from inland locations. However, both lease exploration and lease development will change scenic vistas of the ocean itself from shore, including from scenic vistas at state parks.

Visual Effects of Lease Exploration

Lease exploration would occur at least 20 miles offshore, which would reduce visual impacts, and the activities undertaken to conduct the site assessment and studies would have little potential to affect scenic vistas from highly scenic areas or coastal

scenic areas. Survey activities are expected to increase vessel traffic in the WEA, but the vessel traffic associated with survey activities would be indistinguishable from other vessel traffic in the area and would cause minimal changes to scenic vistas. Site assessment and studies could result in the placement of spar buoys equipped with light detection and ranging (LiDAR). The buoys would be expected to be installed by roughly 80-foot vessels, and once installed, approximately 40 feet of the buoy would be visible above the water line, which would create very minimal changes to scenic vistas on the coast. Buoy lighting would be indistinguishable from lighting associated with vessel traffic. There would be a maximum of three buoys being deployed at once for up to five years anticipated by BOEM. These would cause minimal effects, and lease exploration activities are consistent with the requirement to protect scenic views and visual qualities.

Visual Effects of Lease Development

Lease development would include the installation of offshore wind turbines on the lease area. The specific locations of each turbine and the area of the Morro Bay WEA to be developed are currently unknown. However, a hypothetical project can be used to understand general future impacts of lease development. BOEM performed visual simulations for the Morro Bay WEA using a hypothetical project. The visual simulations and related meteorological report are available in **Exhibit 5-2** and **Appendix A**, respectively (BOEM 2019 and ESS Group, Inc., 2019). These simulations assumed a 1,000 MW project using 15 MW turbines. This hypothetical project was selected to represent a commercially scaled and technically feasible project that would eventually be developed in the Morro Bay WEA. The visual simulation modeled 67 turbines; each turbine has a hub height of 486 feet, a rotor diameter of 807 feet, and a maximum height at the blade tip of 889 feet. Nighttime simulations were based on the Federal Aviation Administration's guidance, which specifies two red lights per turbine nacelle and three lights mounted at a midpoint on each turbine's tower. Simulations of the Morro Bay call area were modeled with a view from Piedras Blancas at 31 feet above sea level. At the Piedras Blancas viewpoint, the turbines would be visible near the horizon line in the daytime, even in cloudy conditions. Cloudy conditions reduce the visibility from shore and enable the turbines to blend in with the white or light gray colors of the sky; clear conditions would make the turbines more visible. Although they are visible, the turbines do not dominate the views offshore due to their distance from shore. At night, the lighting on the turbines is also visible. All images produced as part of the visual simulation are available in **Exhibit 5-2**. The visual simulations were drafted prior to the finalization of the Morro Bay WEA shape. There may be slight variability in what the simulations show and where proposed locations for turbines would be, though the simulations still provide a visual basis of what the WEA would look like with turbines installed.

Since scenic vistas of the ocean in the Morro Bay area are currently free from visible offshore development, lease development would affect visual and scenic resources off the coast, particularly public viewpoints and scenic vistas at state parks. The turbines are not expected to be visible all the time from all viewpoints. They would be more visible at ocean viewpoints with higher elevations. BOEM's visual simulation did not provide results from areas of higher elevations, and this data gap would need to be

addressed by lessees with comprehensive visual simulations provided at the COP phase. At sea level, because average daytime visibility on the Morro Bay coast is 16 nm, with the turbines being at least 20 nm from shore, they would not always be visible from the beach. Visibility to 20 nm would be expected to occur 249 days annually, and visibility to 30 nm would be expected to occur 114 days annually. At higher elevations, the average number of days the turbines would be visible would be greater, although it is not clear by how much. The average nighttime visibility at sea level is 25 nm from shore, however, with lighting the turbines would be visible at night. Additional details of how meteorological conditions affect visibility from shore are available in the meteorological report in **Appendix A**.

Completely eliminating the effects of lease development on scenic and visual resources is infeasible because visual impacts change due to weather, elevation of specific viewpoints, and the specific proposals included in future projects. However, visual impacts may be minimized through micrositing (e.g., moving specific turbines), and factoring visual impacts into design choices, such as paint color. Even with these measures, there is still a likely potential for visual impacts, and there will be a need for other visual mitigation. Organizations such as Hearst Corporation, California Department of Parks and Recreation (State Parks), and local nonprofits have provided comments expressing their concerns about visual impacts to local parks, recreational opportunities, and historic properties.

Hearst Castle, located to the North of the WEA, is considered a state historic monument and a national historic landmark. According to BOEM's EA, Hearst Castle is visited by more than 70,000 people annually. Hearst Corporation's 2019 and 2020 public comment letters expressed concerns about coastal viewshed impacts stating that "No project should be advanced that is visible from any point and any elevation along the shore, at any time of day or night." Other historic landmarks with sensitive visual resources include Piedras Blancas Light Station, and Morro Rock. BOEM's EA identifies Morro Rock as a location requiring more research to better understand the potential impact of offshore wind development on this area, including viewshed impacts. Finally, community organizations such as Beautify Cambria are concerned that the installation of offshore wind turbines with required night lighting would affect the ability of Cambria to be certified as an International Dark Sky Community due to light from the turbines reducing the visibility of constellations and the night sky.

State Parks requests that future improved visual impact simulations include a broad range of elevations, including at higher elevations at priority locations such as Julia Pfeiffer Burns State Park (912 ft elevation), Limekiln State Park (595 ft elevation), Point Piedras Blancas at Hearst San Simeon State Park (31 ft elevation), and Montana de Oro State Park (1,334 ft elevation), and Hearst Castle (1,600 ft elevation). State parks district staff also request a new visual simulation from the top of Point Sur State Historic Park at the lighthouse (361 ft elevation).

Sufficient impact analysis, including an analysis of an alternative number of turbines, and visual mitigation measures should be coordinated with State Parks, including the consideration of additional visual simulations at varying elevation levels. Future projects may propose larger turbines than the current visual simulations covered, and lessees

will have to perform visual simulations with the largest size of turbines they are proposing.

To ensure effective impacts assessment during the COP phase, BOEM plans to require that lessees prepare a set of project-specific visual simulations from highly scenic viewpoints as part of their COP submission. Lessees should consult with Commission staff and State Parks on the selection of viewpoints, to ensure a good representation of potential visual effects from a specific project. Lessees are also encouraged to consult with local Tribes and well as local communities to select viewpoints and to discuss potential minimization and mitigation measures. Additionally, under **Condition 1**, BOEM will work with Coastal Commission staff to ensure that lessees' SAPs and survey plans are coordinated, consistent and provide the data necessary for analysis of future consistency certifications. This condition will ensure that Coastal Commission staff receive the information necessary to fully assess impacts to scenic and visual resources at the COP phase. Lease exploration activities will not have visual impacts that are inconsistent with Section 30251. Future lease development activity will have visual impacts on scenic views of the ocean from the shore, but the extent of impacts will not be known until specific proposals are developed. **Condition 1** will help ensure that such impacts can be assessed and addressed at the next phase.

J. PUBLIC ACCESS AND RECREATION

Coastal Act Section 30210 states:

> *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

Coastal Act Section 30220 states:

> *Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*

Coastal Act Section 30224 states:

> *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.*

Public access to the coast and coastal waters for recreation is a key component of the Coastal Act. Due to the Morro Bay WEA's location approximately 20 miles from shore, the recreational activities taking place in or beyond the WEA are limited. Some examples of recreational activities in or near the Morro Bay WEA include fishing for

albacore (HMS) or other sportfishing, and recreational boating. Morro Bay is the only all-weather small craft commercial and recreational harbor between Santa Barbara and Monterey. Whale and bird-watching is also a popular recreational activity, with companies providing those services operating out of several Central Coast ports such as Monterey, Morro Bay, and Avila. Impacts of lease exploration and lease development to offshore recreational fishing is covered in section F of these findings and will not be discussed further here. Although it is not believed that most whale watching vessels venture as far out as the Morro Bay WEA due to the time it takes to reach the area, these businesses may experience secondary impacts from impacts to their "target" viewing species through increased vessel activity and future infrastructure development. Impacts to marine resources is covered in section E. The Central Coast ports have many boat ramps, marinas and other opportunities for the public to access water oriented recreational activities. Due to the unknown location of staging and future development activities, it is not possible to describe each location's features in detail. For example, however, Morro Bay contains dozens of beaches, public access points, nature trails, state and local parks, and scenic vistas that the public are able to utilize. According to BOEMs Draft EA:

> *The Total Ocean Economy in 2018 was 3.0 percent of the total economy when measured by GDP, bringing in $447.9 million, with an average of $49,500 GDP per employee. Of the total ocean economy for San Luis Obispo County as measured by GDP, tourism and recreation made up 91.1 percent, or $407.8 million, with an average of $47,400 GDP per employee. Tourism and recreation are defined as eating and drinking establishments, hotels, marinas, campsites and RV parks, scenic water tours, boat dealers and charters, manufacture of sporting goods, amusement and recreation services, recreational fishing, zoos, and aquariums (NOAA, ENOW).*

The coast between Limekiln State Park and Montaña de Oro State park provides exceptional opportunities for public access to parks, viewpoints, and beaches. Maps of coastal access points and parks along the Central Coast can be found on the Coastal Commission's website.[32]

Lease Exploration

Lease exploration activities have the potential to minimally impact public access and recreation. Although the number of vessel trips in the Morro Bay WEA will increase to perform surveys and research, the total number of vessels expected to be used for this work is low and is not expected to significantly impact competition for berths in Morro Bay. Additionally, survey and research activity will not preclude recreational boating activities in the Morro Bay WEA or surrounding areas. As discussed in the scenic and visual resources section, lease exploration activities are visually indistinguishable from other vessel traffic and buoys in the area and would not change the visual character of

[32] Map of public access points: YourCoast (ca.gov)

beach recreation experiences.

Lease Development

Lease development has the potential to impact recreational boating both in the ocean and in Central Coast ports. Offshore wind turbines may change the recreational value of boating in the vicinity of the Morro Bay WEA, leading boaters to go elsewhere. However, due to the WEA's distance from shore and nearby ports, there may not be a lot of recreational boating happening in the Morro Bay WEA, and effects on recreational boating are expected to be minor. Furthermore, it is possible that development of a large scale floating offshore wind facility could attract public interest and create a new recreational boating destination. Regardless, **Condition 4**, which requires BOEM to engage with the state, USCG, NOAA, fishing community, and other entities to ensure safe navigation through the lease areas, will assist recreational boaters with safe passage through the WEA.

Lease development has the potential to lead to port facilities development at numerous locations on the Central Coast, which would impact water-oriented recreation within those areas. The location of staging activities and which staging activities are being considered for each port, would strongly impact the type and amount of port development proposed. For example, if lease development is staged out of the Port of Los Angeles or Long Beach, fewer port upgrades will be required than if lease development is staged out of the Port of Morro Bay or Port Hueneme. Development or redevelopment of any port facilities or marine terminal has the potential to impact the quantity and type of vessel traffic moving through the bay or harbor and may impact recreational uses within those areas, including non-motorized recreational boating (e.g., kayaking) and recreational fishing. Some staging locations may be situated near water trails for kayaks and other non-motorized watercraft. If these locations are used for offshore wind-related purposes, it is foreseeable that large, motorized vessel traffic in the vicinity of the water trails would increase, and operations to tow assembled turbines to and from the WEA may make the area less suitable for recreation. Any proposed port redevelopment would come before the Commission, or local government with a certified LCP, as a separate CDP. The discussion here is provided to fully describe the potential impacts of developing the Morro Bay WEA.

Lease development will also increase the need for maintenance vessels and workers on the Central Coast. The increase in vessels and workers may create indirect effects on recreational opportunities, such as creating increased competition for boat slips or increased competition for parking at beach access points. In CD-0001-22, an environmental group recommended that future development in Humboldt Bay also consider enhancing public access through developing trails from residential areas to the waterfront, creating a new waterfront park, and ensuring safe bike and pedestrian connections in that area, which is applicable to the Central Coast as well. Although much needs to be determined before development or redevelopment occurs, any future port development will need to demonstrate that coastal access continues to be maximized and ensure that water oriented recreational activities will be able to safely continue in those locations.

K. Tribal and Cultural Resources

Coastal Act Section 30244 states:

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

Coastal Act Section 30244 states that reasonable mitigation measures shall be required where development would adversely impact archaeological resources. Other Coastal Act provisions protect marine and biological resources, scenic views, habitat areas, and other resources that may be considered sacred or important to Tribes and that may constitute tribal cultural resources. Overall, protected resources may include sacred lands, traditional cultural places and resources, archaeological sites, and submerged historical resources such as shipwrecks. As described in the Commission's Tribal Consultation Policy, adopted on August 8, 2018, tribal cultural resources are not confined to the boundaries of archaeological sites, but instead can encompass landscapes that are significant to Native American tribal groups because of habitation or use for cultural practices. As described in section D of this report, BOEM has invited Tribes to participate in California Offshore Wind Task Force, and the CEC has led the effort to engage with both federally-recognized and non-federally recognized Tribes in planning for offshore wind. As described in section D, Commission staff initiated formal tribal consultation with Tribes, consistent with the Commission's 2018 Tribal Consultation Policy. The findings below summarize the cultural history of the Morro Bay area, submerged historical and archaeological resources and outcomes of the Commission's tribal consultation. Offshore wind lease exploration and lease development has the potential to affect both Native American cultural practices and specific archaeological sites. BOEM's requirements for lessees as part of the EA are reasonable mitigation measures and will minimize lease exploration effects on submerged cultural resources. However potential impacts to submerged historical and archeological sites are more likely in later phases of lease development when specific export cable routes, cable landings, port development, and transmission are being considered.

Cultural History of the Morro Bay Area

Archaeological evidence of occupation by Native peoples along the Central Coast area is abundant and lengthy, dating to at least 10,000 years ago. Similarly, many California Native American Tribes assert residence in California since time immemorial (Margolin, 1993: 1). Archaeologists researching Native archaeology along the Central Coast divide the regional archaeological record into six periods, each with its distinct types of artifacts and adaptations. They are:

1. Paleoindian, before 10,000 B.P. (B.P. refers to years before present [A.D. 1950])
2. Millingstone, 10,000–5500 B.P.
3. Early, 5500–3000 B.P.
4. Middle, 3000–1000 B.P.

5. Middle/Late Transition, 1000–700 B.P.
6. Late, 700 B.P. to European contact (Joslin, 2011)

There is a distinct possibility of earlier archaeological evidence existing in submerged lands under the ocean and offshore San Luis Obispo and southern Monterey counties from earlier land occupations or from ocean migratory routes that followed more archaic coastlines as early as 10,000 years ago (Moratto, 1984: 34). However, there has been emerging evidence that suggests the populating of North America occurred well before 15,000 years ago and as early as 25,000 years ago. Native American cultures thrived along the Central Coast and prior to subsequent Spanish, Mexican, and American takeovers of Native American lands.

There are three distinct tribal cultures associated with the Central Coast area: Esselen, Salinan, and Chumash. However, it is the Salinan and Chumash Tribes that are most immediately affiliated with the coastline and ocean whose cultures may incur impacts from offshore wind development. The Salinan historically inhabited the coastline from Lopez Point to Morro Bay, whereas the Esselen coastline extended from Point Lopez north to Point Sur (Hester, 1978a: Figure 1; Hester, 1978b: Figure 1). The Chumash historically inhabited the coastline from Morro Bay to La Costa Beach. Salinan and Chumash are peoples of the ocean, shoreline, bays and rivers, and their respective cultures reflect a rich heritage of knowledge and utilization of the resources that such ecosystems provide. In addition to rivers and coastal villages, the Esselen had settlements within the coastal mountain ranges that parallel the rocky coast (Hester, 1978b: 496–497).

Salinan and Chumash peoples inhabiting the coastal environments relied on the ocean, shorelines, bays, and riverine estuary resources for daily subsistence. Plants, animals, fish, and minerals gathered, hunted or collected, in addition to food sources, were also used to fashion the tools, shelter, clothing, regalia and trade items (Arnold and Bernard, 2005; Greenwood, 1978: 522; Harrington, 1942: 7–9, 12, 27; Kroeber, 1976: 551, 564; Mason, 1912: 123, 125, 130–131, 142, 153). Both the Salinan and Chumash used boats in coastal waters, including the Chumash's tomol, or plank canoe, one of the most technically complex watercraft in the new world (Arnold and Bernard 2005; Heizer and Massey, 1942: 293). Various fish were harvested from various water bodies including salmon, bullheads, swordfish, tuna, abalones, clams, and crabs. The littoral zone provided shellfish, seaweed, driftwood and other plant and animal resources. Among the Esselen, on the other hand, fishing typically occurred when plentiful terrestrial game was unavailable (Hester, 1978b: 497). Shells were gathered along the beach and used in the making of regalia, with the clam-shell disk bead used as currency.

Early European maritime exploration occurred along the Central Coast, first when Juan Rodríguez Cabrillo sailed up the California coast in 1542 and most notoriously when Bruno de Hezeta sailed into Morro Bay in 1587, battled with Central Coast natives, and claimed the land for the King and Queen of Spain (Taylor, 1853: 11). Later maritime exploration by the Spanish and more intensely by Spanish Missionaries and Ranchers, and American explorers, traders, and settlers ensued. Prior to the transfer of California from the Mexican government to the American government the three local missions, Mission San Antonio de Padua, Mission San Luis Obispo de Tolosa, and Mission San

Miguel Arcangel, and their associated infrastructure greatly altered native ways of life. (Greenwood, 1978: 521; Mason, 1912: 112–116).

Following the transfer of California from the Mexican government to the American government several small American settlements including Morro Bay, San Simeon, and Cambria developed along the coast. These towns acted as ports and hubs and facilitated the development of several industries, namely relating to shipping, ranching, lumber, and whaling (Baker, 2003: 22–24; Cayucos Historical Society n.d.; Montoya, 2018: 84; Pavlik, 1990). The influx of settlers and entrepreneurs led to conflict with the Salinan and Chumash tribes. As a result of foreign disease, murder, and encroachment, the indigenous peoples and their ways of life were drastically diminished, and the resultant destruction of the Central Coast natural environment occurred. Today, the Central Coast region draws in many tourists drawn to its small towns. The area features picturesque beaches and a thriving viticulture, wine, and farm-to-table culinary scene.

Two modern-day California Native American tribes are known to represent the Salinan today. They are the Salinan Tribe of Monterey and San Luis Obispo counties and the Xolon Salinan Tribe. The Salinan Tribe of Monterey and San Luis Obispo counties has its headquarters in Atascadero, California, south of Salinan territory. The Xolon Salinan Tribe is organized as a non-profit entity dedicated towards cultural preservation, education and federal recognition. The Xolon Salinan Tribe is headquartered in Spreckels, California, northwest of Salinan territory.

Currently the Chumash people of the study area are represented by seven Tribes. The Barbareño/Ventureño Band of Mission Indians, the Chumash Council of Bakersfield, the Coastal Band of the Chumash Nation, the Northern Chumash Tribal Council, the San Luis Obispo County Chumash Council, the Santa Ynez Band of Chumash Indians, and the Yak Titᵘ Titᵘ Yak Tiłhini – Northern Chumash Tribe. The Barbareño/Ventureño Band of Mission Indians is headquartered in Ojai, California in the Southeast of Chumash territory. The Chumash Council of Bakersfield is headquartered in Bakersfield, California, north of Chumash Territory. The Coastal Band of the Chumash Nation is headquartered in Santa Barbara, CA, near the center of Chumash territory. The Northern Chumash Tribal Council is headquartered in Los Osos, California, in the Northeast of Chumash territory. The Santa Ynez Band of Chumash are a federally recognized tribe occupying the Santa Ynez Rancheria in Santa Barbara County. The San Luis Obispo County Chumash Council and Yak Titᵘ Titᵘ Yak Tiłhini – Northern Chumash Tribe are centered on the Pismo Beach vicinity, in Grover Beach and Arroyo Grande, respectively.

Two modern-day California Native American tribes are known to represent the Esselen today. They are the Esselen Tribe of Monterey County and Ohlone/Costanoan-Esselen Nation (also representing Ohlone/Costanoan people). The Esselen Tribe of Monterey County has its headquarters in Carmel Valley, Monterey County, approximately in the center of Esselen territory. The Esselen Tribe of Monterey County is organized as a non-profit entity dedicated to the protection and preservation of all Native peoples of Monterey County, not solely the Esselen (Esselen Tribe of Monterey County, 2018). The Ohlone/Costanoan-Esselen Nation, headquartered in the city of Monterey, was historically known as the Monterey Band of Monterey County (Ohlone/Costanoan-

Esselen Nation, n.d.).

Submerged Cultural Resources and Shipwrecks

Due to historic changes in sea level, lands under the current ocean waters were previously exposed. Mapping shows where such paleo-lands were exposed within the timeframes for which the Central Coast was occupied by Native Americans. While it is very unlikely that submerged lands under the Morro Bay WEA were exposed during times when the coast was first occupied, certainly submerged lands eastward of the WEA perhaps up to 19,700 years ago, including lands under state waters, were exposed during earlier occupations (ICF International et al., 2013). Comparing current onshore archaeological and ethnographic resource locations and related geography with offshore bathymetry in previously exposed and likely occupied lands, provides predictions for where submerged cultural resources may be located. A map predicting where submerged cultural resources may be located is available in **Exhibit 6-1**.

Historic shipwrecks are also found along the San Luis Obispo County coastline. BOEM's EA has identified six shipwrecks directly east of the WEA in state waters, and none within the Morro Bay WEA itself. All of the shipwrecks in state waters dated to the mid-20th century. The most significant of these shipwrecks is the *SS Montebello*, an oil tanker that was torpedoed and sunk during World War II by a Japanese submarine. The EA states:

> *Montebello was en route to Vancouver, BC, carrying over 3 million gallons of crude oil when the vessel was lost on December 23, 1941. The vessel was listed on the National Register of Historic Places in 2016 and is located approximately 18 miles east of the Morro Bay WEA.*

The Morro Bay WEA has not been surveyed extensively for shipwrecks or other submerged cultural resources, and therefore BOEM is requiring the results of a historic property identification survey to be submitted with a SAP and a COP.

Ongoing State Studies: Cultural Resources Inventory

In preparing for potential offshore wind energy development and related environmental reviews, the CEC is planning a Central Coast Offshore Wind Energy Cultural Inventory. The CEC is compiling the inventory on a geographic information system (GIS) platform and is meant to provide state and federal agencies and the central-coast affiliated Tribes described above, with access to cultural resources data per data sharing agreements for use in evaluating offshore wind energy development and potential related cultural resources impacts. These data will be important in informing future development and review of offshore wind projects. The inventory is still in progress and will be reviewed by Chumash and Salinan Tribes.

So far, the Central Coast Cultural Resources Inventory has records for 89 cultural resources that have been mapped. Gathering information on ethnographic resources is in the early stages; however, several important ethnographic resources, such as Morro Rock and the other volcanic mountains and hills known as the Nine Sisters, are known to be important to California Native American Tribes. The CEC is preparing tables of

culturally important plants and animals to the Esselen, Salinan, and Chumash Tribes. These tables are not yet complete and have not gone through a full review from the Tribes. Once these tables and the inventory are complete, they will provide a valuable resource, in addition to tribal consultation, for understanding the impacts of offshore wind on Tribes and culturally important species.

As mentioned above, this information gathering process is still in-progress and is not finalized. The final approved inventory will be a valuable resource in addition to tribal consultation to understand the impacts of future offshore wind development projects.

Coastal Commission Tribal Consultation

As mentioned above, the process of early tribal engagement and consultation was described in section D of this report. The following information focuses specifically on the Coastal Commission's government to government consultations and the outcomes of those consultations. During the CD review process, Coastal Commission staff reached out to numerous tribal representatives for the purpose of consultation and coordination on the proposed CD. After initially contacting tribal members through email, staff held three consultation meetings via zoom with representatives of the Xolon-Salinan Tribe, the Northern Chumash Tribal Council, and Yak Titᵸu Titᵸu Yak Tiłhini – Northern Chumash Tribe. Each Tribe had the opportunity to review and revise the section below describing the Tribe's consultation with Commission staff for accuracy and completeness.

Xolon-Salinan Tribe

During staff discussions with the Xolon-Salinan Tribe, tribal representatives expressed concern about the potential impacts of offshore wind development in the Morro Bay WEA on whales, birds, and fish. Tribal representatives expressed concern about operational sound of the turbines and their effects on marine life and concerns about turbine strikes on birds. Tribal representatives also expressed concern about potential impacts to sacred sites, specifically Santa Lucia Peak, due to viewshed changes. Tribal representatives identified the need for future visual simulations to provide general information on at what elevation the turbines will be generally visible from the shore. Finally, tribal representatives indicated that their tribe believes that many sources and types of renewable energy are needed to respond to climate change, and that responsibly developed offshore wind could be a part of the renewable energy portfolio.

Northern Chumash Tribal Council

During staff discussions with the Northern Chumash Tribal Council, tribal representatives indicated that the Tribe is in support of wind energy but wants a site-specific environmental review of the Morro Bay WEA. The Tribe emphasized that this is their position on the leasing and future development Morro Bay WEA only, and should not be applied to any other offshore wind projects.

The Northern Chumash Tribal Council is the nominator for the proposed Chumash Heritage National Marine Sanctuary (Sanctuary), which is currently undergoing the designation process with NOAA. The Northern Chumash Tribal Council is aware that there are likely to be export cables from future wind development crossing the

boundaries of the proposed Sanctuary, and requests that the cables be installed, operated and decommissioned in a way that is compatible with the Sanctuary and emphasized the need for responsible development (i.e., no garbage dumping, slower vessel transit speeds, and investments in local infrastructure) to reduce impacts to local communities. Tribal representatives also expressed the need to negotiate with BOEM's lessees about mitigation for cable surveys ahead of time and provide cultural sensitivity training, particularly regarding the procedure for handling unanticipated discovery of archaeological resources. Tribal representatives described the need to be specific about direct and indirect impacts to tribes, particularly when developing mitigation plans for cable installation and offshore wind development.

Tribal representatives expressed deep concern about the potential onshore port facilities to support development of the Morro Bay WEA. The Northern Chumash Tribal Council has sacred sites at both Morro Bay and Diablo Canyon, and stated that both locations are inappropriate for development of a deep-water port. Tribal representatives indicated that they would be in opposition to any proposed port development in either location. Tribal representatives also expressed similar concerns about cable landings in either Morro Bay or Diablo Canyon and the need to ensure that sacred sites would be avoided and protected from transmission installations.

Tribal representatives expressed concern around BOEM's communications, including the naming of the WEA as the "Morro Bay WEA." Morro Bay is an area of biological and cultural significance to the Northern Chumash Tribal Council, and the WEA's name gives the impression that is it close to or within Morro Bay, when it is actually offshore and farther to the north. Tribal representatives provided several recommended alternative names for the WEA, including the "Big Sur Wind Farm," "Central Coast Wind Farm," and "West Coast Wind Farm." Tribal representatives felt that these recommended names more accurately reflect the WEAs location.

Finally, the Tribe requested meaningful engagement with lessees and tribal members, in a way that goes beyond an advisory role. Engagement may include participating in scientific research, consulting on environmental activities, and equal job opportunities, training, and economic opportunities. Tribal representatives expressed the need for equity to be built in to these projects, because indigenous people are faced with solving problems they did not create and have been historically left out of the benefits of the blue economy. Tribal representatives expressed concern about how practices such as providing fishing subsidies to individual fishermen and referring to different parts of the local community as "competing interests" has created division in the community. The Northern Chumash Tribal Council expressed opposition to fishing subsidies for individuals, because fish are a resource that belongs to everyone. Instead, they suggest focusing financial resources towards conservation and blue economy efforts such as co-locating aquaculture with the wind farms, supporting green carbon projects, ensuring net zero carbon emissions from future offshore wind projects, and and/or donating towards climate change research.

<u>Yak Titʸu Titʸu Yak Tiłhini – Northern Chumash Tribe</u>

During staff discussions with the Yak Titʸu Titʸu Yak Tiłhini Northern Chumash Tribe of San Luis Obispo County and Region (Tribe), tribal councilmembers indicated that the

Tribe is concerned with the speed of the proposed Morro Bay WEA process and wants more information and data on potential impacts to the ocean, sky, and land and all who live there. Questions pertaining to construction, maintenance, export cable routes, substations, port infrastructure, distribution lines, access to their homeland and emergency preparedness were identified as some of the issues that the Tribe wants BOEM to address before the lease sale. The Tribe discussed the two offshore wind projects proposed near Vandenberg Space Force Base in state waters. The Tribe commented the proposed Vandenberg leases, in part, have the purpose to research ocean, sky and land impacts and questioned why data from the proposed Vandenberg leases wasn't being gathered and analyzed before moving forward with leasing the Morro Bay WEA.

As a California Native American Heritage Commission acknowledged Tribe, tribal representatives are concerned they will not receive the same consideration as federally recognized Tribes in the region and would like to ensure mitigation for their community. Commission staff and tribal representatives discussed the need to ensure that **Condition 6** is implemented with all impacted Tribes, not only federally-recognized tribes.

Tribal representatives discussed the Tribe's intimate relationship within their ancestral homelands including the Pecho Coast also known as Diablo Lands. The Tribe is directly linked to the village sites on these lands and throughout the region. The Diablo Canyon Power Plant sits on one of the parcels on the Pecho Coast. The Diablo Canyon Power Plant parcel, nearby parcels and areas throughout the San Luis Obispo County region contains culturally sensitive sites, ancestral villages, cultural landscapes, pristine environment and habitat. The Tribal representatives expressed considerable concern to developing a port to support offshore wind on Diablo Lands, or on the San Luis Obispo County coast as the size, scale and location of such a port is still unknown. Additionally, the Tribe expressed the need to protect access to beaches, habitats, and traditional foods such as seaweed and clams. The Tribe expressed concern for access to cultural material for regalia, ceremonies, basketry and the passing down of traditional ecological knowledge. The Tribe expects that development of a port at Diablo Lands, or on the coast of San Luis Obispo County would disturb pristine cultural landscapes, archaeological sites, contaminate traditional foods, and restrict their access to important cultural sites and landscapes. The Tribe expressed that these type of disturbances and restrictions would greatly impact the health and wellbeing of the community.

The Tribe questioned how much wind-generated power would cost the ratepayers of California and how that cost would be determined.

The Tribe restated that they would like more information, so they and all stakeholders can understand and assess the impacts of future windfarms off the coast of San Luis Obispo County.

Written Comments from the Santa Ynez Band of Chumash Indians

As part of the outreach described in section D, the Santa Ynez Band of Chumash Indians (Santa Ynez Chumash) responded by providing the Commission with an early copy of their comments on BOEM's Draft EA. Significant portions of the comment letter

are confidential, and a brief summary of concerns identified by the Santa Ynez Chumash are included below. Santa Ynez Chumash representatives had an opportunity to review this section for accuracy and completeness, and to ensure that only public information would be included. As mentioned above, this comment letter was prepared to respond to BOEM's draft EA, many of the comments addressed concerns about the NEPA process, including, but not limited to:

- Concerns about separating the leasing environmental review from the COP environmental review, and a request to prepare an EIS instead to cover the impacts of leasing and future development.
- Concerns about how BOEM would handle archaeological discoveries and implementation of the National Historic Preservation Act in the context of NEPA review and requirements for lessees.

The letter also included a discussion of offshore wind impacts of concern including impacts to viewshed, marine life, water quality and coastal development. In their letter, the Santa Ynez Chumash identified certain sacred sites that have great importance to the tribe and indicated that any obstruction of their views through the installation of wind turbines would impede use of the site by tribal practitioners.

The Santa Ynez Chumash expressed concern about several different types of impacts to marine wildlife including noise, changes to upwelling and ocean processes, disturbance to seafloor habitats, disturbance to coastal shorelines, spills degrading water quality, contamination of fish stocks, wildlife entanglement, electromagnetic fields, and greenhouse gas emissions from constructing, maintaining and decommissioning the future projects.

Finally, the Santa Ynez Chumash asserted that the full implications of offshore wind development are much larger than the floating turbines or BOEM's lease area itself, and expressed particular concern about future port development to support the offshore wind industry and future export cable routes and landings.

Lease Exploration Activities

Section 30244 of the Coastal Act provides that where development could affect archaeological or paleontological resources, reasonable mitigation measures shall be required. The first component of an analysis under this section is to determine what, if any, archaeological (including tribal and cultural resources) or paleontological resources exist in the project vicinity that could be adversely impacted. Lease exploration activities within the Morro Bay WEA are not expected to disturb archaeological sites, because the Morro Bay WEA water depths are so deep that the area was not previously exposed as coastline and would not have submerged sites. However, future cable route surveying activities or recovery of lost survey equipment along cable routes has the potential to impact submerged archaeological and cultural resources in water depths less than approximately 393 feet. Impacts to archaeological resources from seafloor disturbance would be avoided or mitigated by BOEM's requirement to only conduct bottom-disturbing geotechnical activities in locations where a geophysical survey has already been conducted by a qualified marine archaeologist. Additionally, to address unanticipated discovery of archaeological resources during seafloor disturbing activities,

BOEM requires that lessees comply with the procedures in 30 CFR Section 585.802:

A. Immediately halting all seafloor disturbing activities within the area of discovery,

B. Notifying BOEM within 72 hours of the discovery, and keeping the location of the discovery confidential, and

C. Not taking any action that may adversely affect the resources until BOEM has made an evaluation in consultation with the culturally associated tribe(s) and instructed the lessee on how to proceed.

BOEM's requirements to address unanticipated discovery will mitigate impacts to submerged cultural or archaeological resources that are discovered in the process of lease exploration activities. Additionally, **Condition 6** requires BOEM to require its lessees to make reasonable efforts to demonstrate engagement with federally recognized and California Native American Tribes that could be affected by future offshore wind development on all elements of the lessees' project development process, including, but not limited to, a Workforce Plan, Survey and SAPs, and a COP. The Commission expects this engagement will include developing a protocol for communication directly with Tribes in the event of an unanticipated discovery of a potential tribal resource as well as a post-discovery process for evaluation of a discovery. Tribes have expertise in how to preserve and handle cultural resources, and the Commission expects that lessees will work with tribes before seafloor disturbing activities to develop procedures for avoiding known archaeological sites and for handing unanticipated discoveries appropriately. However, as discussed in the tribal consultation section above, the Xolon-Salinan Tribe, the Northern Chumash Tribal Council, and Yak Tityu Tityu Yak Tiłhini – Northern Chumash Tribe have concerns about potential impacts of lease exploration to the marine ecosystem, including birds, fish, and marine mammals. These Tribes have indicated that these species are of cultural importance to them. As discussed in section E of these findings, fish and marine mammals may be impacted by underwater sound, increased entanglement risk, and ship strike risk. The measures BOEM already plans to require of lessees, and **Conditions 1 and 3**, will minimize or mitigate these impacts to the greatest extent feasible, thereby achieving Coastal Act consistency.

Lease Development Activities

Lease development activities in the Morro Bay WEA have the potential to impact cultural landscapes, culturally important species and practices, and archaeological sites. Potential impacts to cultural landscapes from the turbines themselves occur due to changes in viewshed. Additional impacts to cultural landscapes have the potential to occur through transmission upgrades and port development. As mentioned earlier in these findings, port development to support offshore wind in the Morro Bay WEA is not well-defined at this time. The uncertainty in port development and potential locations being considered were of significant concern to the Northern Chumash Tribal Council, the Yak Tityu Tityu Yak Tiłhini – Northern Chumash Tribe, and the Santa Ynez Chumash.

Viewshed

As described in the scenic and visual resources section, development of the Morro Bay WEA will result in visible offshore wind development from the coast. The Xolon-Salinan Tribe has identified the need to have additional visual simulations done from viewpoints that are higher in elevation. The Xolon-Salinan Tribe specifically requests an understanding of the elevation at which these turbines would typically be visible. The Xolon-Salinan Tribe has also indicated that changes to viewshed from sacred sites, such as Santa Lucia Peak, would negatively impact their practices. On a similar note, the Santa Ynez Chumash indicated that any changes in viewshed to their sacred sites would impede use by tribal religious practitioners. As part of Tribal engagement activities required by BOEM, and by the Commission under **Condition 6**, the Commission expects that BOEM's lessees will consult with Tribes to develop appropriate visual simulations that show the impact of lease development on tribal cultural landscapes and to develop appropriate avoidance and minimization measures as part of a proposed project. As discussed in section I, although viewshed impacts can be minimized, it is infeasible to eliminate it entirely, and the Commission expects that BOEM's lessees will work with Tribes to develop appropriate mitigation for visual impacts to tribal cultural landscapes. These impacts will be fully analyzed for consistency with the Coastal Act when Lessees submit a consistency certification for a specific proposed project to the Commission, as required by BOEM's regulations.

Culturally Important Marine Species and Coastal Habitats

Through consultation meetings, the Yak Tityu Tityu Yak Tiłhini – Northern Chumash Tribe and the Xolon-Salinan Tribe identified a number of marine species that are culturally important to them. This includes seaweeds, clams, and seabirds. Some of these species are important for traditional foodways, regalia, basketry, and passing on traditional ecological knowledge. All of the Tribes consulted discussed the importance of marine species to their tribes and indicated the need for these species to be protected if offshore wind development proceeds. Some of the culturally important species discussed have habitat in nearshore environments, and the Tribes expressed concern about potential degradation of nearshore environments from development of cable landings or port development or expansion on the Central Coast. Additionally, changes to marine habitats from the installation of offshore wind turbines, their mooring lines, and anchors may impact the populations of culturally important offshore species, as described in section E. The Commission expects that BOEM's lessees will engage with Tribes in their research plans to better understand and minimize impacts to these culturally important species. In addition, as described above, Commission staff will work with Tribes to incorporate tribal experts into future scientific research reviews to inform future design and monitoring of offshore wind development. This will provide Tribes with a seat at the table to inform project design and develop necessary research to assess future impacts. Finally, the Commission expects that any future cable landings or port development proposals will involve tribes as part of project planning to prevent and avoid impacts to culturally important species and coastal habitats.

Archaeological Sites

Lease development has the potential to impact historic shipwrecks and unknown

submerged archaeological sites. Future development to install export cables from the lease area to shore has the potential to impact submerged archaeological sites, as the cable route will cross areas of seafloor that were previously exposed and inhabited by Native Americans. Additionally, through Tribal consultation, the Commission has learned of specific places, including places within Morro Bay and the Diablo Lands, on the coast that are inappropriate for cable landings or future port development due to their cultural significance and high potential for archaeological sites. The Commission expects that BOEM's lessees and future permit applications regarding cable landings or port development will engage Tribes on their project proposals and ensure that proposed project locations are not disturbing historic properties, archaeological sites, and historic resources of importance to Tribes. The Commission further expects BOEM's lessees to work with the Tribes to work out procedures for handling archaeological resources that may be found in the course of cable laying or other construction.

Responsible Development

Throughout all of the tribal consultation meetings, the Commission heard an ongoing theme of the need for responsible development of offshore wind from initial data collection through decommissioning and removal, and the need to engage Tribes at every stage of project development. The Northern Chumash Tribal Council has indicated an interest in participating in research on offshore wind impacts. The Commission agrees that bringing tribal expertise and perspective into pre- and post-project development review will improve the overall process. As described above in section B, Commission staff is working with BOEM and other federal and state agency staff to develop a structure and process for coordinated research review to inform future project development and regulatory review. We will also work with interested Tribal experts to determine how best to incorporate them into this process.

In the past, Tribes have borne the cost of energy generation projects without receiving the benefits that those projects could bring. As offshore wind is developed, it is critical that Tribes benefit from these projects, because they will be impacted in ways that cannot be fully eliminated.

L. ENVIRONMENTAL JUSTICE

Coastal Act Section 30604(h) states:

> *When acting on a coastal development permit, the issuing agency, or the Commission on appeal, may consider environmental justice, or the equitable distribution of environmental benefits throughout the state.*

Section 30604(h) provides for the Commission to evaluate environmental justice considerations when making permit decisions. As defined in Section 30107.3(a) of the Coastal Act, "environmental justice" means "the fair treatment and meaningful involvement of people of all races, cultures, incomes and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws,

regulations, and policies."[33] Section 30107.3(b)(4) states that environmental justice includes, "[a]t a minimum, the meaningful consideration of recommendations from populations and communities most impacted by pollution into environmental and land use decisions."

In March 2019, the Commission adopted an environmental justice policy ("EJ Policy") to guide and inform its implementation of Section 30604(h) in a manner that is fully consistent with the standards in, and furthers the goals of, Chapter 3 of the Coastal Act and certified local coastal programs. The EJ Policy further articulates environmental justice as the following:

> *The term 'environmental justice' is currently understood to include both substantive and procedural rights, meaning that in addition to the equitable distribution of environmental benefits, underserved communities also deserve equitable access to the process where significant environmental and land use decisions are made.*

Ensuring access to the Commission's proceedings means making sure that those who are affected by proposed development have a meaningful and equitable opportunity to voice concerns in an open and transparent public process. Substantively, the EJ Policy describes how the Commission will work to ensure equitable access to the coast, support measures that protect existing affordable housing, and ensure that environmental justice communities are not disproportionately affected by climate change, water contamination, overuse or diminished environmental services.

Section 30604(h) is not an enforceable policy that is incorporated into the Commission's Coastal Management Program. However, the Commission has long used an environmental justice lens when analyzing projects' substantive consistency with Chapter 3 policies regarding public access and other coastal resources, and its EJ Policy calls for analyzing environmental justice issues in applicable staff reports and, when appropriate, proposing mitigation measures to avoid or fully mitigate identified impacts in a manner that is consistent with Chapter 3 policies. The Commission also has the mandate and the authority to maximize public participation in its decision-making process, including by ensuring that it solicits and carefully considers the viewpoints of communities that have been historically underserved or marginalized by government and that it ensures such communities have meaningful opportunities to be involved in the decision-making. (See, e.g., Coastal Act Sections 30006; 15 C.F.R. § 930.42.)

It is worth noting that although some impacts to Tribes are discussed in this section, impacts that were raised as a part of formal Tribal consultation are discussed in section

[33] Coastal Act Section 30013, which provides that the Commission is to advance the principles of environmental justice and equality, references California Government Code section 65040.12(e), which defines "environmental justice" as "the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies."

K. Additionally, some individuals working in the fishing industry may also be part of an environmental justice community or tribal community. This section focuses on impacts to environmental justice communities, while section F focuses on impacts to the fishing industry. In this section, staff evaluated environmental justice impacts resulting from lease activities and future development necessary to support offshore wind energy. Several issues regarding future benefits and burdens that may result from the project have been raised by Tribes in the region, stakeholders working with environmental justice communities, and other members of the public. These include substantive concerns on addressing environmental burdens and cumulative impacts in environmental justice communities, impacts of future port development, transition from fossil fuel sources of energy to clean energy, and community benefits from offshore wind (e.g., green jobs, access to clean energy). Procedural concerns include early regular, and transparent engagement with environmental justice communities and tribal communities that will continue through the life of offshore wind development. The Commission addresses these concerns in this section.

Identifying Communities of Concern

The Commission's EJ Policy was created to provide a framework to consider fair outcomes and requires staff to reach out to and include the voices of environmental justice community members[34] who have been historically marginalized in the governmental review process and whose households have been disproportionately burdened by environmental hazards often stemming from industrial development. In order to evaluate the distribution of the project's environmental burdens and benefits and cumulative impacts on communities of concern, it is critical to understand the existing socioeconomic and demographic profiles of those communities as well as existing environmental burdens. Here, the term "communities of concern" refers to low-income communities, communities of color, and other populations with higher exposure and/or sensitivity to adverse project impacts due to historical marginalization, discriminatory land use practices, and/or less capacity to mitigate adverse impacts. To identify these communities, staff evaluated various quantitative and qualitative sources of information for Morro Bay and the broader Central Coast region, including Ventura, Santa Barbara and San Luis Obispo counties, which may be affected by lease sale activities and future development. This broad area was selected for review due to the uncertainty surrounding coastal development to support offshore wind, e.g. where port development and cable installations would occur. Quantitative indicators used to identify communities of concern include the percentage of low-income households (either

[34] In these findings, the terms "underserved communities" and "environmental justice communities" are used interchangeably with the term "communities of concern."

through the low-income definition from AB1550[35] or twice the federal poverty level),[36] housing burden,[37] population of color,[38] and linguistically isolated households.[39] Staff also used the CalEnviroScreen (CES) 4.0 index which identified areas with multiple sources of pollution and populations with high sensitivity to pollution.[40]

Using these indicators, there are communities of concern in the Central Coast region that may be affected by offshore wind lease activities and future development. Around Morro Bay, there are some low-income communities and individuals who experience linguistic isolation (see **Exhibit 7-1**, **Exhibit 7-2**, **Exhibit 7-3**, and Table 3-1). Two of the census tracts in the region are low-income communities under AB 1550 which holds a higher income threshold than the federal poverty level. Additionally, the data in Table 3-1 indicates that the population near the project region has higher rates of cardiovascular disease and asthma compared to the San Luis Obispo (SLO) County averages. In the broader Central Coast region, there are also other communities of concern throughout San Luis Obispo, Santa Barbara, and Ventura Counties that may be affected by this project because of where they live or work in the region depending on choice of port, energy infrastructure buildout, and power supplies. For instance, the majority of census tracts surrounding Port Hueneme, Oxnard, Santa Maria, and Lompoc are considered low-income based on the AB1550 definition of low-income and have large population of people of color. Some census tracts in Oxnard near Port Hueneme, which is the closest deep-water port to the Morro Bay WEA, also have a larger population of color and Spanish-speaking population relative to Ventura County, which could require additional translation and interpretation services.

There are likely additional communities of concern throughout the state that may be affected by Morro Bay offshore wind energy development that cannot be determined due lack of necessary information about where infrastructure buildout will occur, and

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[35] This analysis uses AB 1550 to identify “Low-income communities” as census tracts with median household incomes at or below 80 percent of the statewide median income or with median household incomes at or below the threshold designated as low-income by HCD’s State Income Limits adopted pursuant to Section 50093 of the Health and Safety Code. This provides a more reliable measure of low-income communities due to higher costs and wages in California than the Federal Poverty Level.

[36] A threshold of twice the federal poverty level was used in this analysis because California’s cost of living is higher than many other parts of the country.

[37] Housing burdened low-income households are households that are both low income and highly burdened by housings costs as identified by CalEnviroScreen 4.0 Households with lower incomes may spend a larger proportion of their income on housing and may suffer from housing-induced poverty.

[38] Population of color refers to anyone that identifies as Hispanic (of any race) and anyone who identifies as non-Hispanic but as a race other than white on the Census, such as Black or African American, Asian, or American Indian.

[39] Linguistic isolation is a term used by the US Census Bureau for limited English-speaking households. More than 40 percent of Californians speak a language other than English at home. About half of those do not speak English well or at all.

[40] CalEnviroScreen 4.0 identifies California communities most affected by pollution and ranks census tracts in California based on potential exposures to pollutants, adverse environmental conditions, socioeconomic factors and the prevalence of certain health conditions.

which ports will support offshore wind activities. BOEM and the State of California are assessing several existing ports, including Long Beach, Los Angeles, Hueneme, Avila Beach, Morro Bay, San Francisco, and Oakland as well as non-port sites with the potential to be developed into new ports. Several of these ports already generate environmental pollution that disproportionately burden environmental justice communities living near the port facilities. However, since the port site has not been finalized at this moment, it is difficult to determine which communities may be burdened by any port expansion and development necessary to support offshore wind.

Table 3-1: CES 4.0 Population Characteristics Indicators by Statewide Percentiles in Morro Bay Census Tracts

Census Tracts	6079010603	6079010503	6079010602	6079013000	6079010707	6079010703	6079010701	SLO County Average
Total Population	1,513	5,429	3,713	2,741	6,720	3,672	5,437	283,159
Cardiovascular Disease	25.35%	25.35%	25.35%	0.81%	10.48%	19.48%	20.64%	8.8%
Asthma	39.97%	39.97%	39.97%	8.77%	41.64%	53.41%	55%	20.7%
Housing Burden	17.41%	53.62%	68.94%	6.1%	34.8%	50.72%	34.80%	82%
Unemploy-ment	N/A	74.10%	73.41%	N/A	43.09%	3.58%	35.02%	4%
Pollution vulnerability	45.85%	28.25%	38.01%	29.71%	11.16%	40.24%	18.75%	N/A
Poverty	52.11%	35.57%	44.62%	32.27%	28.86%	71.22%	37.16%	30.40%
Linguistic Isolation	N/A	14.28%	0.92%	58.95%	14.86%	61.09%	4.59%	5.3%
AB 1550 Low Income	No	Yes	No	No	No	Yes	No	N/A

Table 3-2: Race and Ethnicity in Morro Bay Census Tracts

Total Population	6079010603	6079010503	6079010602	6079013000	6079010707	6079010703	6079010701	SLO County Average
White	77.52%	81.74%	79.12%	73%	83.76%	63.75%	72.72%	68.5%
Latino/ Hispanic	16.12%	10.31%	10.18%	22.65%	12.15%	21.65%	18.04%	22.9%
African American	<1%	2.3%	N/A	N/A	N/A	<1%	N/A	2%
Native American	<1%	N/A	3.12%	N/A	<1%	N/A	1.43%	1.4%
Asian American	3%	2.57%	4.57%	4.12%	2.81%	4.92%	5.75%	4%
Other	2.18%	3%	2.98%	N/A	<1%	8.98%	1.72%	3.8%

While the history and connection to the environment of several California Native American Tribes are described in detail in section K of this report, the Commission also recognizes the environmental injustices and demographic and socioeconomic inequities that have resulted from this history of marginalization. There are 13 Tribes in the region, as listed in section D, that may be disproportionately burdened by the project. A description of tribal consultation and the concerns described by Tribes is provided in section K.

Along with the quantitative data collected, qualitative information and the lived experience of the community members is key to understanding existing environmental justice burdens on a community and the potential for new development to inadvertently exacerbate those impacts or create new burdens, and in some cases create community benefits. Commission staff reviewed public comment letters and videos from past BOEM hearings to identify stakeholders with concerns regarding environmental justice. Staff sent outreach emails to several of these groups and environmental justice stakeholders in the Central Coast and near potential port locations, and followed up with emails and phone or video meetings if requested. At the time of publishing this report, staff had spoken to stakeholders from non-profits involved locally in coastal and social justice issues and statewide in environmental justice in renewable energy development.

Based on available sources of information, the Commission concludes that there are communities of concern near Morro Bay and in the broader Central Coast region that may be affected by project impacts and experience disproportionate burdens, particularly low-income communities. Potential impacts to those communities that will be triggered by offshore WEA development both offshore and onshore, depending on its location, and the Commission’s ability to address those impacts warrant additional consideration.

Environmental Justice Coastal Act Analysis

Procedural concerns

Procedural concerns regarding the offshore wind lease activities and future development include transparent and equitable engagement with Tribes and environmental justice communities during offshore wind development and inclusion of stakeholders in environmental impact monitoring. To date, both BOEM and California state agencies have engaged with Tribes, fishing communities, and other members of the public in several efforts, which are summarized in section D and include formal Tribal consultation and virtual scoping meetings with the fishing community and public comment on the Draft EA. Additionally, Commission staff have conducted independent Tribal consultation meetings and reached out to individually to several stakeholders who have raised environmental justice concerns during scoping and public comment for the draft EA or who staff have communicated with previously regarding environmental justice issues in San Luis Obispo, Santa Barbara, and Ventura counties. Commission staff also created and sent a Frequently Asked Questions handout in English and Spanish to individuals interested in environmental justice via the Commission's EJ email list.

The Commission addresses several substantive concerns raised during these meetings throughout this CD, and stakeholders have requested that BOEM and lessees establish additional measures for meaningful engagement during all stages of offshore wind scoping and energy generation. In the Commission's findings for CD-0001-22, which examined the Humboldt WEA, communities raised concerns on BOEM's draft EA that "BOEM develop strategies to specifically engage [Black, Indigenous, and People of Color] communities throughout all phases of the Humboldt WEA development going forward" to ensure offshore wind development has long-term community benefits and accountability and monitoring measures for lease activities and lessees.[41] Specific requests include establishing a regional community steering committee with representation from Tribes, communities of color, low-income communities and other disadvantaged communities and that the cost of future working groups and monitoring activities should be covered by BOEM, lessees, and/or developers. These same considerations should be applied in the Morro Bay WEA, as there is a history of industrial development, environmental pollution, and lack of engagement of central coast communities.

Similarly, in the Commission's findings for CD-0001-22, Tribes and local communities raised concerns about the safety of Indigenous women and other vulnerable populations and the impacts of large-scale development projects. Murder rates of Indigenous women are more than 10 times the national average and have been documented as Missing and Murdered Indigenous Women, Girls, and Two Spirit People (MMIWG2), with some of the highest rates in California (Yurok Tribal Court and Sovereign Bodies Institute, 2020). Comments received by the Commission from the Humboldt area expressed concerns regarding the potential for large scale energy infrastructure development in the region to exacerbate MMIWG2 and disproportionately

[41] Yurok Tribe and CORE HUB public comment letters to BOEM in February 2022.

burden indigenous communities.[41] The Commission expects future wind development to not only provide benefits to the community, but also in a manner that does not exacerbate or create harm in Native American communities and additional vulnerable populations with limited resources to address these harms. In the findings for CD-0001-22, the Commission lays out its expectations for BOEM's lessees to develop workforce plans, with elements to ensure local community safety. BOEM's lessees in the Morro Bay WEA should meet the same expectations as lessees in Humboldt to ensure community safety.

Additionally, not all communities in the region have equitable access to information about the project or future activities, which also results in inequitable opportunity to meaningfully participate in discussions that may affect them. BOEM's EA and Commission staff analysis have identified populations in the region who do not speak English as their first language. The draft EA identifies that translation and interpretation services may be needed for individuals with limited English proficiency in the region's Latino community who may be affected by the project. Many of these individuals may not receive information in forms they understand because common channels of sharing information such as email noticing, are often in English and contain highly technical language. As such, targeted engagement should be conducted in consultation with trusted community partners to identify ways to disseminate information in an accessible format, in their native language, and to reach individuals with limited English proficiency.

Because offshore wind development in California is in the early scoping and planning stages, there is an opportunity to create fairer outcomes for Tribes and other underserved communities in the region by starting meaningful engagement from the beginning. To ensure meaningful engagement and a project that benefits all who may be impacted in an equitable manner, future offshore wind development proposals that come before the Commission, either from BOEM, local governments, lessees or other future developers, the Commission expects meaningful engagement to be embedded in the project development process and input from communities of concern to be addressed in all project elements and documents submitted for Commission review. As such, **Condition 5** requires BOEM to require lessees to make reasonable efforts to demonstrate long-term engagement with environmental justice communities identified in this section, including the broader Central Coast region and near ports that would support offshore wind development in the Morro Bay WEA, on all elements of a lessees' project development process. This condition as well as other requirements BOEM may include in its leasing documents, do not prescribe a specific structure for engagement, but instead allow communities to work with lessees to determine what structure would achieve the engagement goals of all parties. The Commission recommends that lessees and communities explore mechanisms for compensating community members (who most often volunteer their time) for their time participating in engagement activities. **Condition 5** also requires that any engagement plan be developed in coordination with affected communities and that the plan include strategies to reach individuals with limited English proficiency who may be affected by future offshore wind development. Finally, **Condition 6** requires engagement with California Native American Tribes. This condition includes many of the same engagement elements as **Condition 5**, but also addresses issues unique to Tribes. See section K for additional

discussion. Together, **Conditions 5 and 6** are needed to ensure that BOEM's project will protect special communities (per Section 30230 and 30253(e)); protect public access, views, and lower-cost recreational opportunities for EJ and low-income communities (per, e.g., Sections 30210, 30251, 30213), create equitable benefits that can lead to a just transition from fossil fuels to clean energy, and protect marine resources that are used by EJ and tribal communities for cultural, economic, recreational, and subsistence purposes (per Section 30230).

Substantive Concerns

Lease Exploration

As discussed in BOEM's draft EA, lease exploration activities include an increase in vessel trips to and from Morro Bay for surveys and other lease exploration activities and installation of metocean buoys in the WEA. BOEM's EA analysis identifies the potential for environmental justice impacts related to air and water pollutants. Air emissions would result from vessels and powered equipment being used for lease activities, and would primarily consist of carbon monoxide, nitrogen dioxide, sulfur dioxide, and fine particulate matter ($PM_{2.5}$), marine diesel, lube oils, and greenhouse gases. As discussed in the air quality section, BOEM does not expect lease exploration to violate any of San Luis Obispo County's air quality standards. BOEM also does not expect adverse impacts to communities around Morro Bay or further inland due to the limited scope and short duration of the activities.

There may also be instances where vessel fuel or other oil-based pollutants would be emitted or discharged in amounts that may result in harmful impacts to marine life due to foreseeable but unlikely events or emergencies. The impacts of oil spills are analyzed in the oil spill section. In these events, Tribal members and members of the fishing industry would be disproportionately impacted due to their dependence on ocean resources for food and their livelihood. Further discussion of tribal coastal resource use is included in the tribal and cultural resources section, and discussion of impacts to fishing communities is included in the commercial and recreational fishing section. To prevent and minimize the impacts of oil spills, the Commission expects BOEM's lessees to submit a project-specific spill prevention and response plan, as detailed in **Condition 1(f)(ii)**.

Additionally, while narrow in scope, the lease activities happening at this stage of the offshore wind development process will inform future construction operations plans, export cable routes to shore, lease terms, and onshore development needs, which may have unforeseen consequences to underserved communities dependent on ocean resources. To ensure that all possible impacts to communities of concern are proactively identified and addressed, **Condition 5 and 6**, as discussed above, require ongoing engagement with Tribes and environmental justice communities, and **Condition 1(d)** requires documents and data resulting from research, surveys, and other data collection efforts conducted during the leasing phase, that are subject to the Freedom of Information Act, to be publicly available to the maximum extent feasible to better inform impacts to local communities.

Lease development

Although currently no actual projects, designs, or other related development has been presented to either BOEM or to the Commission regarding future offshore wind development, a high-level analysis can be conducted to understand future impacts that may occur in environmental justice communities. This analysis provides a broad understanding of what impacts can be reasonably foreseen and will also identify areas where more information is needed to adequately assess impacts. This analysis identifies the following substantive issues that may occur from future development activities: 1) addressing environmental burdens and cumulative impacts, 2) community benefits from offshore wind (e.g., green jobs, access to clean energy, a just energy transition), and 3) safety of Native American Tribes and local communities. Staff also consulted with Native American Tribes as described in section D and address concerns that came up during formal consultation meetings in section K of this report.

1) Addressing future environmental burdens from offshore wind: Future development related to construction of offshore wind facilities will likely have a variety of effects and may add to the cumulative impacts of environmental burdens present in the region from existing industrial development and environmental hazards. Some effects will occur from any port-related activities and future development that will occur to support offshore wind. Ports have significant economic importance both locally and statewide. However, industrial activity and development at ports can result in significant environmental burdens for communities of concern living near ports, including air, water, noise and light pollution (EPA, 2021). This not only affects residents, but also workers and visitors who might recreate near port areas. State agencies and BOEM are currently conducting research to evaluate ports suitable for offshore wind activities, pursuant to AB 525, which requires California state agencies led by the CEC to develop a strategic plan for offshore wind energy generation in California. While there is limited information available regarding the site of port expansion and development for offshore wind activities at the Morro Bay WEA at the moment, all future siting and development at ports, whether existing or new, should consider how port activities will affect communities of concern surrounding ports and along transportation routes and other infrastructure buildout from ports. Low-income communities, communities of color and populations with additional sensitivities such as asthma and cardiovascular disease already live near many ports in California that may support future offshore wind activities, especially near industrialized ports such as Port of San Francisco, Port of Oakland, Port Hueneme, Port of LA and Port of Long Beach.[42] These industrialized ports have significant impacts on the health of nearby communities; stakeholders noted that port emissions reduce the life expectancy of community members and cause high childhood asthma rates in their communities surrounding the Ports of Long Beach and Los Angeles. Any existing pollution burdens and environmental hazards that may be intensified by constructing, assembling, and transporting offshore wind turbines at these industrialized ports, should be considered.

Additional air pollution may occur from increased vehicle emissions on land and vessel

[42] See CalEnviroScreen 4.0

emissions offshore to transport raw materials and turbines. The air quality section discusses this potential impact in further detail. As discussed in the oil spill section, the construction and operation of offshore wind turbines uses oil-based lubricants and other products. This means that there is a foreseeable but unlikely chance that an oil spill may occur. A spill of oil, lubricant, or other hazardous liquid in the Morro Bay WEA may disproportionately impact communities of concern and Tribes who depend on ocean and coastal resources that may affected by an oil spill. Any spills may cumulatively add to existing environmental burdens for local communities. For example, there are a number of industrial sites around the Morro Bay WEA found on EnviroStor[43], including the Morro Bay Power Plant, the Diablo Canyon Power Plant, Los Osos Landfill, which are contaminated and also impact local communities' exposure to hazardous chemicals.

Currently, the extent of the air emissions, water pollutants, and other existing pollution impacts from industrial and hazardous waste sites, cleanup sites, traffic and how these sources of pollution may cumulatively affect environmental justice communities in the region is unknown, because future development proposals have not been submitted. However, the Commission expects future environmental studies and monitoring plans from BOEM's lessees to include the extent of future impacts and identify avoidance and mitigation strategies addressing any environmental burdens that may affect communities of concern. Environmental studies should include population characteristics and current environmental conditions experienced by environmental justice communities that live, work, and/or recreate near sites of future development considerations and be validated with input from communities of concern through ongoing engagement as described in **Condition 5**.

2) Community benefits

Although future wind projects will have some impacts on environmental justice communities, they also have the potential to provide significant benefits to those communities in terms of providing clean energy and economic opportunities. As stated in AB 525: "Investment in offshore wind energy development can offer career pathways and workforce training in clean energy development. Offshore wind energy will provide additional blue collar industrial work opportunities and support apprenticeship opportunities for a diverse labor pool and provide those opportunities to local and tribal communities experiencing high unemployment through prioritization of local hiring first." In addition, construction of offshore wind facilities is critical to help the state achieve its aggressive clean energy goals and help avoid the worst effects of climate change, which will be felt most severely by low-income and other communities of concern that do not have the resources to adapt or avoid the impacts of climate change.

The project area's future exploration and possible development of offshore wind energy can bring a number of benefits to populations along the shore, in Morro Bay, and in communities near offshore wind-serving ports. As such, the Commission expects to see future project proposals for this area contain a co-developed community benefits

[43] EnviroStor is the Department of Toxic Substances Control's data management system for tracking our cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further.

package to ensure that communities of concern receive benefits from offshore wind, including access to clean energy, job training and employment opportunities, and more. This includes but should not be limited to mitigation of impacts to the fishing industry because there may be impacts to communities of concern beyond what will be experienced by those dependent on fishing for their livelihood. Additional opportunities include cleanup of existing environmental pollution from superfund sites, fossil fuel industrial development, and infrastructure no longer in use. There should be targeted engagement and allocation of benefits for Tribes and other communities of concern in the region, particularly low-income households.

BOEM's lessees should engage with these communities to develop community benefits in a form that works for the communities and supports existing low-income families and individuals in an equitable way. There are many ways to do this, and community benefits agreements or packages is one way to articulate and agree to these benefits. Some examples from other community benefit packages in the green energy field include:

A. Community solar grants and incentives
B. An equitable feed-in-tariff program for low-income communities that have solar panels and the infrastructure to sell energy
C. If there is a lack of infrastructure for this, lease applicants could explore creation of infrastructure as a community benefit
D. Low-income battery grants and incentives
E. Workforce development for fishing community, low-income, and Native American individuals
F. Equitable internships and apprenticeships throughout the project for low-income, youth, indigenous, formerly incarcerated, neurodiverse, women, and people of color.

The above suggestions can support existing initiatives and strengthen communities that are facing several socioeconomic issues by providing additional benefits. Future exploration and development of the WEA could become an asset to the community and should also provide strong support for indigenous communities in Morro Bay and near the selected port communities. **Condition 5** will help ensure that potential benefits to local communities are maximized by calling on lease developers to engage with communities throughout the process of developing future projects and to develop workforce plans that will include a plan for local hiring and minimizing the use of short-term or transient workers in all phases of leasing and construction and operations.

Conclusion

The Coastal Commission's EJ Policy was created to introduce a greater level of fairness to a government process that has historically excluded communities of color, low-income communities, and other underserved communities from participating in land use decisions that may cause disproportionate impacts to their households. The EJ Policy also provides a framework for the Commission to evaluate and address the equitable

distribution of project benefits and burdens.

In this case, the Commission has identified several communities of concern that may be affected by Morro Bay WEA development and identified several procedural and substantive concerns that should be addressed during lease activities and future development proposals. Offshore wind generation off the coast of California has the potential to bring several benefits to the state and the Central Coast. However, without consideration of environmental justice at all stages of development and measures for meaningful engagement and accountability, communities of concern in the region may experience inequitable distribution of the project benefits and burdens.

Currently, BOEM and the State of California still have not identified which port(s) will support construction, energy transmission and maintenance activities necessary for offshore wind generation in Morro Bay WEA. As ongoing planning and research occurs to inform offshore wind strategic planning and future development, any cumulative impacts that may affect environmental justice communities adjacent to selected ports should be considered as part of the assessment. At a high level, the Commission expects BOEM, future lessees, and/or developers of offshore wind infrastructure to identify and address environmental burdens that may affect environmental justice communities in the region, ensure protections for safety of Native American Tribes and local communities, and develop community benefits packages, agreements, or other mechanisms to ensure that benefits are provided to affected communities and ensure meaningful engagement during all stages of offshore wind generation, as described by **Conditions 5 and 6**.

M. Air Quality

Coastal Act section 30253 states:

> *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*

BOEM's EA indicates that San Luis Obispo County is in attainment or unclassifiable for all national ambient air quality standards and California ambient air quality standards with the exception of the federal ozone standard for east San Luis Obispo County. As stated in BOEM's EA:

> *San Luis Obispo County [Air Pollution Control District] APCD has been delegated by the U.S. EPA to regulate air pollution on the OCS in accordance with section 328 (a) (3) of the Clean Air Act (SLO Co. APCD, 1990).*

Both lease exploration and lease development may lead to changes in air quality, due to an increase in vessel traffic.

Lease Exploration

The marine vessels, auxiliary engines, buoy back-up generators, trucks and locomotives, and goods-moving equipment used for lease exploration activities have the potential to generate air quality contaminants. The primary air quality contaminants from these sources are carbon monoxide, nitrogen dioxide, sulfur dioxide, and fine particulate matter ($PM_{2.5}$), marine diesel, lube oils, and greenhouse gases. According to BOEM's EA:

> *Carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM are criteria pollutants that are regulated under the national ambient air quality standards, 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, is also an ozone precursor.*

BOEM does not provide a quantitative estimate of air quality pollutants expected to be generated by the use of the equipment mentioned above but has indicated that lease exploration activities are not expected to violate any national or California ambient air quality standards.[44] In its EA, BOEM provides the table included below as Table 4-1 with example emissions from lease exploration activities on the Atlantic OCS.

Table 4-1: Example Emissions from WEA Site Characterization and Site Assessment for the Atlantic OCS

Activity	CO	NO_x	VOCs	PM_{10}	$PM_{2.5}$	SO_x	CO_2	N_2O	CH_4	CO_2e
Site Characterization Surveys	3.50	37.99	1.46	2.07	3.74	3.74	1,828.78	0.05	0.24	1,900.47
Construction of Meteorological Towers	0.36	2.11	0.43	0.14	0.20	0.20	131.33	0.003	0.04	144.39
Operation of Meteorological Towers	4.03	22.04	1.85	1.47	1.64	1.64	790.99	0.01	0.04	801.83
Decommissioning of Meteorological Towers	0.36	2.75	0.44	0.16	0.27	0.27	164.32	0.00	0.04	176.07
Sum of emissions from all sources	**8.26**	**64.89**	**4.18**	**3.85**	**5.86**	**5.86**	**2,915.42**	**0.07**	**0.35**	**3,022.77**

Notes: Units are tons per year (Metric tons per year for greenhouse gases) in a single year.

1. Towers are not being considered but this serves as a conservative (high) estimate for construction, deployment, and decommissioning of meteorological buoys and equipment.
2. Sum of individual values may not equal summary value because of rounding.

[44] Additional information on air quality standards can be found on the SLO Co. APCD website.

CO = carbon monoxide NOX = nitrogen oxides VOCs = volatile organic compounds
PM_{10} = particulate matter with aerodynamic diameters of 10 microns or less
$PM_{2.5}$ = particulate matter with aerodynamic diameters of 2.5 microns or less
SOx = sulfur oxides CO_2 = carbon dioxide N_2O = nitrous oxide CH_4 = methane
CO_2e = carbon dioxide equivalent
Source: Environmental Assessment, BOEM's EA

As outlined in the CD, BOEM requires all appropriate federal, state, and local air quality regulations be followed by requiring lessees to obtain appropriate permits and implement mitigation measures where relevant. Therefore, lease exploration activities are expected to be consistent with the requirements imposed by an air pollution control district or the California Air Resources Board, a thus consistent with section 30253 of the Coastal Act.

Lease Development

Future lease development activities, particularly the construction and decommissioning phase, have the potential to produce air quality contaminants. The construction phase will produce emissions from marine vessels, turbine manufacturing equipment, and transportation of materials used for turbine manufacturing. Ongoing operations of offshore wind development will produce some air emissions from vessels traveling to/from the development for maintenance. The turbines themselves are not expected to produce substantial air emissions. The decommissioning phase of the offshore wind projects will bring additional air emissions due to the increased use of vessels to remove turbines, anchors, and mooring lines from the water.

It is not currently known the extent to which port infrastructure upgrades are necessary to support offshore wind development along the Central Coast. However, should port expansion or upgrades be pursued, communities near the proposed terminal redevelopment may have disproportionate vulnerability and will likely bear disproportionate impacts of air emissions as a result of manufacturing and transport of materials required for manufacturing. The Commission expects that BOEM's lessees will involve communities in the lease development process to ensure that they are adequately protected from air pollutant emissions.

On the whole, lease development is expected to reduce California's reliance on fossil fuels for electricity, and will reduce the State's greenhouse gas emissions over the project's lifetime. It is foreseeable, but not certain, that lease development has the potential to lead to curtailment of gas fired power plants locally and would indirectly reduce air pollutant emissions.

N. Fill of Coastal Waters

Coastal Act Section 30233(a) states:

> *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.

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

…

BOEM's proposed leasing of the Morro Bay WEA would allow for installation and anchoring of up to three metocean buoys in the WEA. During the COP or lease development phase, lessees would propose installing numerous floating offshore wind turbines, their associated anchors, substations, and inter-array cables as part of their development. Both of these activities constitute the placement of fill in open coastal waters and further discussion of each phase and its consistency with Section 30233(a) is provided below.

Lease Exploration

As mentioned above, the lease exploration phase would allow for the placement of up to three metocean buoys in the Morro Bay WEA. According to BOEM, each buoy could require two anchors, although one anchor is more likely. Drag embedded anchors are expected to have a maximum footprint of 25 square feet on the seafloor. Thus, a conservative estimate of the seafloor space that could be taken up though the installation of buoys is 150 square feet.

The proposed installation of up to three metocean buoys and six anchoring devices on the seafloor constitutes the placement of fill in open coastal waters and is therefore subject to the three-part test of Coastal Act Section 30233(a). The first test requires that the proposed activity must fit into one of seven categories of uses enumerated in Coastal Act Section 30233(a). The second test requires that there be no feasible less environmentally damaging alternative. The third test mandates that feasible mitigation measures be provided to minimize the project's adverse environmental effects.

Allowable Use Test

Two of the seven allowable uses of fill under 30233(a) include expanded energy facilities and nature study. Because the proposed anchoring devices would support future energy development and also study natural ocean conditions, the Commission finds that the proposed project meets the allowable use test of Coastal Act Section 30233(a).

Alternatives

The Commission must further find that there is no feasible less environmentally damaging alternative to the proposed placement of fill in open coastal waters. The purpose of the buoys is to collect information needed to inform design of offshore wind projects. BOEM anticipates that the buoys will only be installed if the information is not available from an existing source. In addition, there are no known alternatives for collecting the type of information provided by the buoy that result in fewer impacts.

BOEM has not yet selected the type of metocean buoy, and thus the anchoring system, for this proposal. There are three different types of metocean buoys proposed to be

used in the site assessment of the WEA: discus-shaped, boat-shaped, and spar buoys. Discus-shaped buoys and boat-shaped buoys are the two buoy types that would most likely be used for site assessment of wind areas. These buoy types are moored using solid cast-iron anchors, each weighing 11,000 pounds, that rest on the seafloor, and BOEM expects these anchors to have a footprint of 6 square feet. Spar buoys are less likely to be used for lease exploration; these buoys are moored using drag-embedded anchors. BOEM has proposed to deploy up to three metocean buoys which would be fixed to the seafloor using up to six total anchors (two anchors per buoy) at fixed locations in potential commercial lease areas. Both anchoring systems (weighted and drag-embedded anchors) are relatively simple to install and remove which would minimize the seafloor disturbance compared to other anchoring systems that are permanent or require underwater drilling or pile driving. Table 5-1 below, which was provided in BOEM's CD, shows the estimated mooring scenario of up to six embedment anchors and the total area of potential impact:

Table 5-1: Estimated Mooring Scenario

Seafloor Footprint	**Area m ^{2} (ft $^{2)}$ of 1 anchor**	**Area m ^{2} (ft ^{2}) of 6 anchor**
Anchor	0.5 to 9.3 (6 to 100)	3 to 55.8 (32.3 to 601)
Chain sweep and/or anchor placement	10.5 to 95 (113 to 1023)	63 to 570 (678 to 6135)

Finally, the maximum footprint on the seafloor (601 square feet if using an embedment anchor) is very small relative to the size of the Morro Bay WEA, 376 square miles. For these reasons, the Commission finds that the second test of Coastal Act Section 30233(a) has been met and that for this project, no less environmentally damaging feasible alternative exists.

Mitigation

The final requirement of Coastal Act Section 30233(a) is that filling of coastal waters may be permitted if feasible mitigation measures have been provided to minimize any adverse environmental effects associated with that fill. In prior sections of this report, the Commission has identified Conditions that would help minimize the adverse environmental effects associated with the placement of fill. As discussed, due to the small footprint of the proposed anchors over a large area, anticipated absence of sensitive habitat within their installation sites, the ability of soft substrate benthic organisms to quickly recover from small disturbance events (such as installation of anchors), and the regional abundance of soft substrate habitat similar to that expected to be found at the installation sites, the fill associated with the proposed anchors would not result in significant adverse environmental effects. To ensure feasible mitigation measures are implemented, **Condition 2** ensures that lessees avoid intentional bottom contact, including anchoring, within hard substrate, rock outcroppings, seamounts, or deep-sea coral and sponge habitat and requires a protective buffer around these sensitive habitats. In addition, **Condition 1(f)(iv)** includes an Anchoring Plan which would require detailed maps of anchoring sites (away from sensitive habitats) and anchor handling procedures that directs anchors to be placed and removed vertically to

avoid anchor dragging. Furthermore, **Condition 1(f)(i)** requires Marine Wildlife Protection and Monitoring Measures which would require the use of a qualified marine wildlife observer during anchor installation that has the authority to halt operations if marine wildlife is observed or anticipated to be near a work area and installation activities have the potential to result in injury or entanglement of marine wildlife. This requirement would minimize the risk to marine wildlife associate with the proposed anchor installation activities.

With the incorporation of these conditions, the Commission finds that the third test of Coastal Act Section 30233(a) has been met and that proposed lease exploration activities within the Morro Bay WEA are therefore consistent with Coastal Act Section 30233(a).

Lease Development

As discussed previously, there are no specific lease development projects in BOEM's current proposal. However substantial fill is expected in the future once lessees receive approval to move forward with offshore wind projects, and these projects will be subject to the three-part test of section 30233(a). Because it is not known where turbines, cables or other "fill" would be located, the Commission cannot analyze impacts or alternatives related to specific projects. However, it is important to analyze the potential consistency of foreseeable future activities at a broad scale now in order to determine if there are any fundamental issues with moving forward toward lease development or if there is information or mitigation that must be gathered or imposed at this stage.

As stated at the beginning of this report, offshore wind projects are expected to include floating wind turbines which would be connected to anchors on the seafloor by at least three mooring lines. There are four possible types of anchor systems that could potentially be used, each with different levels of impact on the seafloor: drag-embedment, suction caissons, gravity anchor, and anchor piles. In addition to anchors, inter-array cables and cables bringing power to shore may also be buried or weighted to the seafloor, however the total footprint of these cables on the seafloor is unknown at this time. BOEM does not currently have an estimate of how many wind turbines would be deployed, and there is no current estimate of the amount of fill from anchoring systems or inter-array cables on the ocean floor, potential alternatives or feasible mitigation measures. However, all of these types of "fill" are allowable uses pursuant to Coastal Act Section 30233(a) because they relate to expanded energy and coastal-dependent industrial development. Analysis of alternative designs, cable routes, or siting locations for specific projects will have to occur later during siting phase and once lessees develop more specific proposals for specific technology that they will use. Likewise, most decisions regarding mitigation can only be made once there are specific proposals, designs, and known technologies. However, it is important that any fill is allowed only if there are not less damaging alternatives, and as explained elsewhere in these findings, the development of offshore wind projects will have a variety of impacts on marine habitat, fisheries, and other resources. Accordingly, it is important to have BOEM begin the process of working with State agencies and the fishing community now to develop a process for mitigating the impacts that "fill" related to offshore wind will have on fishing interests, as required by **Condition 7**. The Commission will review

future consistency certifications for consistency with Coastal Act Section 30233(a), and the Commission expects that BOEM's lessees will provide sufficient information about construction plans, anchoring and other fill to enable a comprehensive analysis.

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