Data Gathering and Engagement Summary Report

Oregon Offshore Wind Energy Planning

January 2022

BOEM
Bureau of Ocean Energy Management

Prepared by Kearns & West

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Table of Contents

List of Acronyms/Key Terms

AIS	Automatic Identification System
ATNI	Affiliated Tribes of Northwest Indians
BOEM	Bureau of Ocean Energy Management
BNOW	Business Network for Offshore Wind
CADR	U.S. Department of the Interior, Office of Collaborative Action and Dispute Resolution
Call	Call for Information and Nominations
COP	Construction and Operations Plan
COR	Contracting Officers Representative
CRSOA	Columbia River Steamship Operators' Association
CTCLUSI	The Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians
DLCD	Oregon Department of Land Conservation and Development
DOI	U.S. Department of the Interior
EA	Environmental Assessment
ESA	Endangered Species Act
FACT	Fishermen Advisory Committee for Tillamook
FINE	Fisherman in Natural Energy
GLD	Geographic Location Description
GPS	Global Positioning System
GW	Gigawatt
KW	Kearns & West
LiUNA	Laborers' International Union of North America
NEPA	National Environmental Policy Act
NGO	Non-governmental Organization
NOAA	National Oceanic and Atmospheric Administration
NMFS	NOAA National Marine Fisheries Service
NREL	National Renewable Energy Laboratory
NTS	Note to Stakeholders
OCEAN	Oregon Coastal Energy Alliance Network
OCMP	Oregon Coastal Management Program
OCS	Outer Continental Shelf
OCZMA	Oregon Coastal Zone Management Association
ODCC	Oregon Dungeness Crab Commission
ODFW	Oregon Department of Fish and Wildlife
OFCC	Oregon Fishermen's Cable Committee
OPAC	Ocean Policy Advisory Council
OPPA	Oregon Public Ports Association
OPUC	Oregon Public Utility Commission
OR	Oregon
OROWindMap	Oregon Offshore Wind Mapping Tool
OSW	Offshore Wind
OTC	Oregon Trawl Commission
PFMC	Pacific Fishery Management Council
Plan	Data Gathering and Engagement Plan for Offshore Wind Energy in Oregon

POET	Pacific Ocean Energy Trust
Portal	West Coast Ocean Data Portal
PUD	Public Utility District
RODA	Responsible Offshore Development Alliance
SAP	Site Assessment Plan
SOORC	Southern Oregon Ocean Resource Coalition
State	State of Oregon
Task Force	BOEM Oregon Intergovernmental Renewable Energy Task Force
TSP	Territorial Sea Plan
USCG	United States Coast Guard
VMS	Vessel Monitoring System
WEA	Wind Energy Area
WCOA	West Coast Ocean Alliance

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Executive Summary

The Bureau of Ocean Energy Management (BOEM) and the State of Oregon (State) are committed to offshore wind energy planning with meaningful and effective data gathering and engagement to inform potential leasing decisions.

BOEM and the State are seeking to identify potential areas in federal waters offshore Oregon that may be suitable for offshore wind energy development. In partnership with the BOEM Oregon Intergovernmental Renewable Energy Task Force (Task Force), BOEM and the State developed the Data Gathering and Engagement Plan for Offshore Wind Energy in Oregon (Plan) which outlined how BOEM and the State would conduct data gathering, and outreach and engagement with potentially interested and affected parties. The Plan served as the guiding document during the BOEM-State offshore wind planning effort and detailed the Plan goals, guiding principles, overall approach and target audiences. This report summarizes the outreach and engagement activities BOEM and the State, through DLCD, have conducted since the eighth Task Force meeting held in June 2020 through December 2021. The data gathering and engagement activities are intended to inform BOEM's leasing process beginning with the anticipated publication of a Call for Information and Nominations for Commercial Leasing for Wind Energy Offshore Oregon (Call) in the *Federal Register*. The Call solicits (1) formal public comment about a specific area, including its uses and any concerns, and (2) nominations for leasing in specified areas for offshore wind.

The primary goals of the data gathering and engagement were:

1. To ensure interested and affected parties are informed of the data and information gathering process for offshore wind planning and have meaningful opportunities to provide input,
2. To encourage the best available data and information are collected to inform wind energy leasing decisions offshore Oregon, and
3. To promote partnerships and a sense of shared ownership in offshore wind planning between BOEM, the State, and interested and affected parties.

To capture the available data for public access, the State (led by DLCD), in partnership with BOEM, developed the Oregon Offshore Wind Mapping Tool (OROWindMap) and Data Catalog page on the West Coast Ocean Data Portal (Portal). The approach for developing the data catalog and visualization tool was to leverage existing geospatial data infrastructure to curate a catalog of information specific to offshore wind planning on the Outer Continental Shelf (OCS) offshore Oregon and to generate thematic maps that highlight information about natural resources, the physical environment, and human uses on the OCS. OROWindMap is available for public access, and public webinars were hosted introducing the mapping tool and data catalog functions while also providing the public with opportunities to comment, provide feedback, or identify additional data resources for inclusion in the system.

Due to the COVID-19 pandemic, BOEM and DLCD were required to adhere to federal and state government guidelines restricting public in-person gatherings; therefore, all outreach and engagement meetings were held virtually. Beginning in October 2020 and through the October 2021 Task Force meeting, BOEM and the State held 6 webinars open to the public and over 60 meetings with Tribes,

elected officials, the commercial fishing community, mariners, the academic and research community, environmental groups, industry, labor unions, and the general public (Table ES.1). Since the October 2021 Task Force meeting through December 2021, there were over 15 additional meetings which are captured in this report. This report summarizes the BOEM and DLCD engagement with research organizations and potentially interested and affected parties to gather data and information to inform potential offshore wind energy leasing decisions offshore of Oregon.

The key messages in materials and communications shared during the meetings included:

- BOEM's planning and leasing process consists of various phases occurring over several years including multiple opportunities for public input.
- BOEM and the State of Oregon are engaging in a process to gather data and conduct outreach to understand the opportunities and challenges of offshore wind to inform future leasing, including a Call for Information and Nominations.
- Offshore wind has the potential to provide a new source of renewable energy. Floating offshore wind is likely to be used in deeper waters as Oregon's ocean waters are influenced by a narrow continental shelf and steep slope.
- Understanding the environment and uses of the OCS are critical to planning. The primary focus of this engagement effort is to gather data that identifies existing environmental and human use information to inform potential offshore wind leasing decisions in Oregon.
- The public is invited to stay connected with the offshore wind planning effort through future meetings and announcements on BOEM's webpage. Additionally, BOEM and DLCD welcome suggestions on other organizations, community groups, or members of the public that BOEM and the State should engage with for offshore wind energy planning.

Table ES.1 Summary of outreach and engagement meetings to support BOEM Oregon offshore wind energy planning.

Participants	Number of meetings
Coastal Community	14
Ocean Users	23
Industry	8
Elected Officials	13
Tribes	3
Environmental Organizations	7
Research Organizations	4
General Public	3
Total:	**75**

Discussion themes from outreach and engagement meetings are summarized below and discussed more fully in Sections 4 & 5 of this report.

Feedback Themes

- Support for continual, and meaningful engagement with potentially affected and interested users, especially ocean users, throughout all phases of planning, leasing and consideration of offshore wind development.
- Interest in understanding the role of and need for offshore wind energy as part of Oregon's energy portfolio, including the cost to the ratepayer.
- Interest in understanding the economic impacts and opportunities (e.g., jobs, tourism, port and shoreside infrastructure) associated with offshore wind development.
- Interest in understanding the potential socioeconomic impacts to fishing activities and its long-term impact on the livelihood of fishermen and other ocean users.
- Interest in understanding the potential environmental impacts, including noise impacts and disruption of species behavior and migration patterns, on marine species, birds, and other wildlife from offshore wind farms.
- Interest in understanding visual impacts from offshore wind farms.
- Interest to understand impacts to cultural resources and Native American lifeways.

1. Overview

1.1 Report Purpose

This report outlines the outcome of BOEM's and DLCD's engagement with research organizations and potentially interested and affected parties in gathering data and information to inform potential offshore wind energy leasing decisions offshore Oregon. The report identifies key input and concerns received from public, Tribal, and stakeholder engagement meetings regarding offshore wind energy planning in Oregon. This report was prepared by Kearns & West (KW), a neutral third-party consulting firm contracted to the U.S. Department of the Interior (DOI) Office of Collaborative Action and Dispute Resolution (CADR) under Contracting Officers Representative (COR) Guidance issued under Task Order #140D0420F0112.

A draft of this report was provided to the Task Force for review and discussion at the Task Force virtual meeting on October 21, 2021. The purpose of the meeting was to (1) update Task Force members on the offshore wind energy planning and studies since the June 2020 meeting, and (2) discuss next steps towards offshore wind energy leasing offshore Oregon. This report incorporates feedback from the October 2021 meeting and subsequent written feedback from Task Force members.

1.2 Background

In December 2010, Governor Theodore Kulongoski requested the establishment of a state-federal task force to address the use of the ocean for renewable energy development. The Governor designated the DLCD Coastal Management Program (OCMP) as the State agency lead to coordinate efforts with BOEM. In 2011, BOEM established a Task Force in response to Governor Theodore Kulongoski's request to address the use of the ocean for renewable energy development. The Task Force is comprised of members from federal, state, and local agencies, as well as federally recognized Tribes. The Task Force provides coordination and consultation with respect to BOEM's consideration of potential renewable energy activities on the Outer Continental Shelf (OCS) offshore Oregon, including issuing offshore wind leases. The Task Force also serves as a forum to share information about regulatory authorities and policy objectives, discuss and identify opportunities to overcome uncertainties in regulatory processes, and identify information needs that may benefit from further study.

Responding to industry interest in offshore wind development, in September 2019, BOEM and the State initiated a conversation with the Task Force regarding potential offshore wind planning offshore Oregon. Task Force members supported the development of an engagement plan. With review and input from BOEM and DLCD, KW developed the Plan that outlined the planning process for data and information collection and engagement to understand the opportunities and challenges for offshore wind for Oregon. BOEM distributed the draft engagement plan to the Task Force for review in advance of the eighth Task Force meeting hosted via webinar in June 2020. At this meeting, BOEM and the State made a commitment to move forward with offshore planning in Oregon and to conduct a planning process that will include a roughly 12-month effort of data gathering and meaningful public and stakeholder engagement as outlined in the *Data Gathering and Engagement Plan for Offshore Wind Energy in Oregon*[1], which was finalized after incorporating input received from the Task Force and the public.

[1] https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/BOEM-OR-OSW-Engagement-Plan.pdf

1.3 BOEM and State Authority

The State's territorial sea is from shore to three nautical miles offshore and shares a jurisdictional boundary with the OCS (i.e., federal waters). Offshore Oregon refers to the OCS portion that is three nautical miles from shore out to 200 nautical miles of the ocean.

BOEM

The *OCS Lands Act of 1953* and *Energy Policy Act of 2005* amendments authorize BOEM, a bureau within the DOI, to manage the development of OCS energy and mineral resources. The BOEM Pacific Regional Office is responsible for managing these resources offshore California, Oregon, Washington, and Hawaii. In 2009, the DOI issued final regulations (*30 CFR Part 585 - Renewable Energy and Alternate Uses of Existing Facilities on the Outer Continental Shelf)* that established procedures for issuance and administration of renewable energy leases on the OCS. Additionally, BOEM prepares environmental reviews and analyses pursuant to applicable laws, including *National Environmental Policy Act* (NEPA) and *Endangered Species Act* (ESA) for offshore energy development. BOEM also funds scientific research to inform policy decisions on the development of energy on the OCS.

BOEM is the federal agency authorized to issue renewable energy leases on the OCS. The leasing process may be competitive or noncompetitive. BOEM coordinates and consults with affected Tribal, State and local governments and other federal agencies throughout the authorization process. An example timeline of the offshore wind competitive leasing process is shown in Figure 1. For Oregon, BOEM and State through DLCD conducted a 12-month data gathering and engagement effort to inform the leasing process, which begins with the publication of a Call for Information and Nominations (Call). The Call published in the Federal Register, solicits formal public comment about the Call Area(s), including its uses and concerns and requests nominations of interest for leasing in specified areas.

Figure 1. BOEM's renewable energy competitive authorization process over four phases.

A Wind Energy Area (WEA) is an area within a Call Area, identified by BOEM, for environmental review for potential lease issuance. There is a public comment opportunity under the environmental review of the WEA as well as with the Proposed Sale Notice. After BOEM issues a Final Sale Notice, BOEM conducts an auction for a lease sale.

A lease gives the lessee the exclusive right to subsequently seek BOEM approval for the development of the leasehold. The lease does not grant the lessee the right to construct any facilities; rather, the lease grants the right to use the lease area to develop its plans, which must be approved by BOEM before the lessee can move on to the next stage of the process.

In order to hold a renewable energy lease, a wind energy developer must be legally qualified and demonstrate technical and financial capability to construct, operate, maintain, and terminate/decommission the type and scope of the project for which it is requesting authorization. See 30 CFR 585.106 and 585.107 for more information on who can hold a lease and how a potential lessee can show they are qualified. Another resource is the Qualification Guidelines to Acquire and Hold Renewable Energy Leases and Grants and Alternate Use Grants on the U.S. Outer Continental Shelf[2].

BOEM considers many marine uses in its decision-making process, including Tribal lifeways, other renewable energy facilities, fishing, military activities, vessel traffic, and any other human activities that could potentially be impacted by a proposed offshore wind project. As part of BOEM's NEPA analysis of potential impacts for construction, operation, and decommissioning of a commercial offshore wind facility, BOEM evaluates past, existing, and likely future uses of the coastal and ocean environment. BOEM strives for a rational balance between multiple, potentially competing factors when deciding on offshore renewable energy leasing and development.

BOEM's decisions are supported by reviews under the National Environmental Policy Act (NEPA) which occur twice in the authorization process. First, BOEM prepares an environmental assessment (EA) on the action of issuing a lease, which does not authorize any construction or operations. The EA includes anticipated activities for the site assessment and site characterization.

The second review under NEPA is the analysis of project infrastructure after a COP has been submitted by a lessee. This is where BOEM will have the information on the project configuration, lay-out, method of construction and operations, project timing, and other information. BOEM has typically prepared an EIS at this stage of the process.

The Information Guidelines for a Renewable Energy Construction and Operations Plan (COP)[3] provides guidance on the information requirements for a COP for OCS renewable energy activities on a commercial lease.

There are financial assurance requirements for each stage of a commercial lease development described in 30 CFR 585.516(a) and include:

1. Lease-specific financial assurance of $100,000 minimum,
2. Supplemental financial assurance added to the lease-specific financial assurance for site assessment activities,

[2] https://www.boem.gov/sites/default/files/documents/about-boem/Qualification%20Guidelines.pdf
[3] https://www.boem.gov/sites/default/files/documents/about-boem/COP%20Guidelines.pdf

3. Supplemental financial assurance in addition to above upon COP approval, and
4. Financial assurance or decommissioning bond based on anticipated decommissioning costs due to BOEM prior to the start of any construction in Federal waters. If the lessee's cumulative potential obligations and liabilities increase or decrease, BOEM may adjust the amount of supplemental or the decommissioning financial assurance.

State of Oregon

In March 2021, Oregon passed the "100% Clean Energy for All" bill – HB 2021 – which requires the state's investor-owned utilities and electricity service suppliers to supply 100% greenhouse gas free electricity by 2040. This new law operates alongside Oregon's preexisting renewable portfolio standard – last updated by SB 1547 (2016) – which requires the state's largest utilities to achieve 50% renewable supplies by 2040.

Oregon also recognizes the merits of studying and planning for offshore wind, though it has not committed to any specific deployment targets. HB 3375 (2021) requires the Oregon Department of Energy to develop a legislative report, to be completed by Sept. 15, 2022, that identifies the benefits and challenges of integrating up to three gigawatts (GW) of floating offshore wind by 2030 through a literature review and public comment process.

The State has shared authority for projects that cross state waters and onshore facilities. The State includes multiple agencies with permitting and other statutory authority. DLCD works in partnership with local governments, and state and federal agencies, to address the land use needs of the public, coastal communities, regions, and the State. Within DLCD, the federally approved OCMP has federal consistency authority to review federal activities that may affect coastal Oregon resources and land uses. The State receives automatic project review for marine renewable energy development activities as described in the Geographic Location Description (GLD), which is an area in federal waters where a federal license or permit action may have reasonably foreseeable adverse effects on a state's coastal uses or resources. Oregon's GLD extends from the State's territorial sea at three nautical miles from shore to a depth of 500 fathoms (3,000 feet).

The State's Ocean Policy and Management Framework is an important context for conducting a data gathering and cataloging process. Since 1977, Statewide Planning Goal 19 has guided the State's development of ocean policy and management of ocean resources. Goal 19 recognizes the balance between conservation and development and has specific policy preference statements embedded within it that guide the State as it evaluates potential new uses. Goal 19 was acknowledged and further developed with the passage of Oregon's Ocean Resources Management Act, or Ocean Plan. As a part of that Act, the Oregon Territorial Sea Plan (TSP) was created to formalize the framework for decision-making and serve as a coordinating mechanism. Additionally, for the purpose of documenting the methods and criteria to evaluate new proposed uses of the ocean, the Ocean Policy Advisory Council (OPAC) was established as the State's legislatively established stakeholder advisory body. OPAC serves to steward the TSP as new potential uses of the ocean are considered by the state.

Part Five of Oregon's TSP describes the process for making decisions concerning the development of renewable energy facilities, including offshore wind, in the State's territorial sea. The requirements of Part Five are intended to protect areas important to renewable marine resources (i.e., living marine

organisms), ecosystem integrity, marine habitat, and areas important to fisheries from the potential adverse effects of renewable energy development (facility siting, development, operation, and decommissioning). Part Five[4] provides a map and area classifications which correlate with review standards in order to identify the appropriate locations for development that minimizes potential adverse impacts to existing ocean resource users and coastal communities. The enforceable policies of Part Five of the TSP are likely to be considered in planning for offshore wind on the OCS, as documented in Oregon's GLD for marine renewable energy.

Part Four of Oregon's TSP details the use of the seafloor for cables, pipeline and other utilities that cross from the OCS into the State's territorial sea. The Department of State Lands is the point-of-contact for authorizations and permits and consults with several state and coastal local governments, as appropriate, before review and approval by the State Land Board.

1.4 Planning Area

As suggested by Task Force members in the September 2019 meeting, the current planning efforts encompass the entire Oregon coast from North to South. Additionally, the planning area is limited to water depths of up to 1,300 meters (4,265 feet), where offshore wind is technically viable as shown in Figure 2. The planning area has an average wind speed of at least 7 meters/second (13.6 knots). Although the planning area for offshore wind for potential leasing is outside of the State's Territorial Sea, the data gathering process also included state waters and lands onshore as it relates to aspects of offshore wind development outside of a potential lease area, including transmission cable routes and landfall, points of interconnection, and access to port infrastructure for installation, operations, and maintenance.

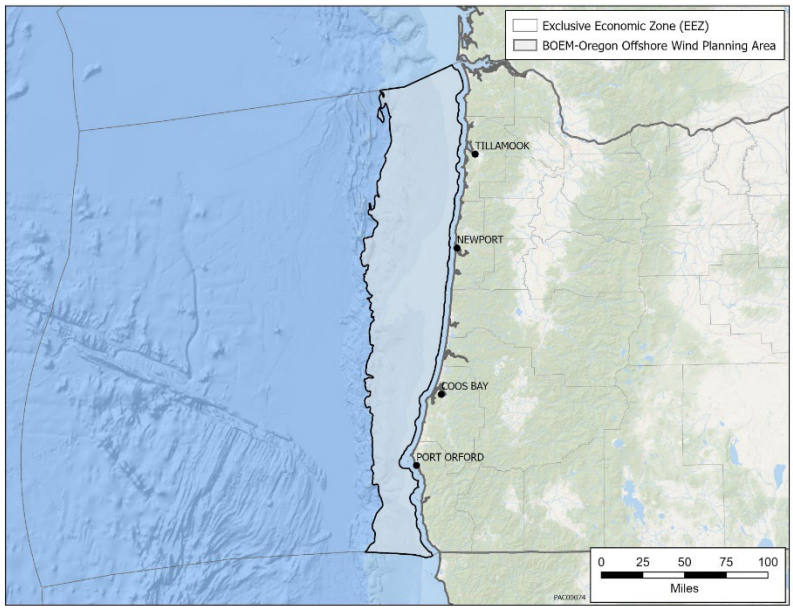

Figure 2. Planning area for potential leasing offshore Oregon

The upper value of the water depth limit for floating wind was determined in coordination with the National Renewable Energy Laboratory (NREL), and agreed upon by the State and Task Force, which reflects the advances in floating mooring line and submarine cable technology. Offshore Oregon, beyond 1,300 meters, the continental slope continues its steep drop to 2,500 – 3,000 m. The 1,300 m depth offshore Oregon is a reasonable limit for floating wind facility development with existing technology.

[4] https://bit.ly/3imptTo

1.5 Resources on Offshore Wind Energy and Environmental Studies

There are many resources for more information on floating offshore wind technology, offshore wind development, and environmental studies. Listed below are example resources.

- NREL hosted an *Overview of Floating Offshore Wind* webinar[5] in February 2020 which provided an introduction to floating offshore wind which is available online.
- The U.S. Department of Energy released the *Offshore Wind Market Report: 2021 Edition*[6], which includes floating offshore wind, is intended to provide offshore wind policymakers, regulators, developers, researchers, engineers, financiers, supply chain participants, and other stakeholders with up-to-date quantitative information about the offshore wind market, technology, and cost trends in the United States and worldwide. The report details information on the domestic offshore wind industry to provide a U.S. context and help navigate technical and market barriers and opportunities.
- Tethys[7], developed by the Pacific Northwest National Laboratory, provides information and data on the environmental effects of marine and wind energy technology.
- The BOEM Pacific Environmental Studies Section[8] has funded applied and basic research about the marine, coastal, and human environments offshore California, Oregon, Washington, and Hawaii to inform decisions about its energy programs.

2. Data Gathering, Visualization and Catalog

2.1 Overview of OROWindMap

The DLCD, in partnership with BOEM, developed the Oregon Offshore Wind Mapping Tool (OROWindMap) and OROWindMap Data Catalog to provide public access to the best available data throughout the planning process. The OROWindMap Tool and Data Catalog page are hosted by the West Coast Ocean Data Portal[9] and will be used to inform leasing decisions offshore Oregon in the context of

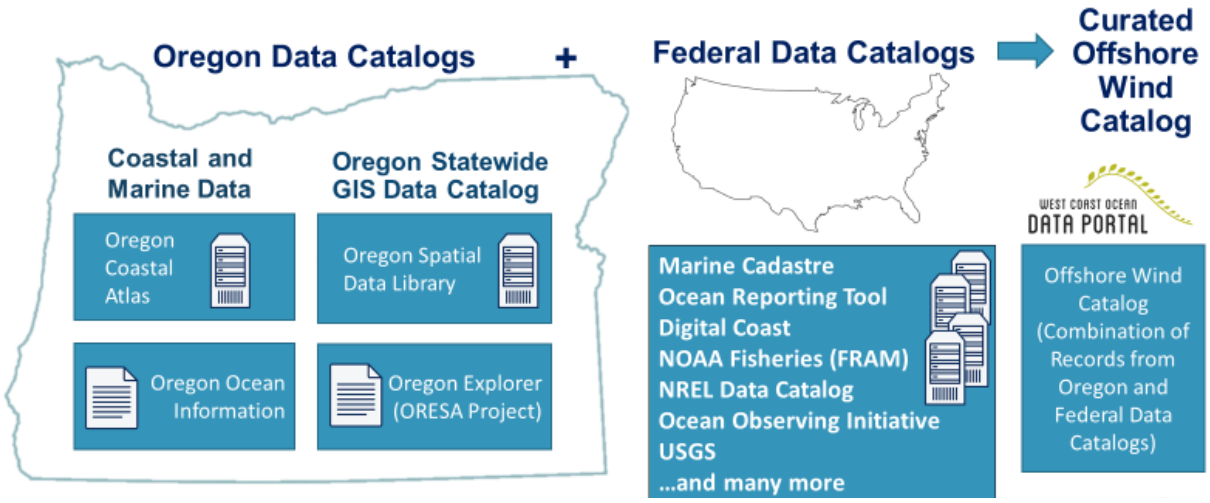

Figure 3. Offshore Wind Data Catalog Organizational Plan

[5] https://www.nrel.gov/news/video/overview-of-floating-offshore-wind-text.html
[6] https://www.energy.gov/sites/default/files/2021-08/Offshore%20Wind%20Market%20Report%202021%20Edition_Final.pdf
[7] https://tethys.pnnl.gov/
[8] https://www.boem.gov/environment/environmental-studies-pacific
[9] https://portal.westcoastoceans.org/

existing ocean resources and uses. The approach for developing the OROWindMap Tool and Data Catalog page was one based upon the principles of open data sharing, where all information being presented to the user is publicly available and appropriately documented. BOEM and DLCD staff worked to discover, connect, and share information relevant to offshore wind energy planning through the use of web map services and published metadata records. In doing so, the OROWindMap Tool was able to connect to and curate a catalog of regional data resources for the purpose of conducting a planning process on the OCS offshore Oregon. The effort leveraged work and technological infrastructure previously built to support ocean planning via the Oregon Coastal Atlas and of geospatial information framework services provided by the Geospatial Enterprise Office within the Department of Administrative Services. The OROWindMap Data Catalog Page provides a record of the data services presented in OROWindMap along with links to the source documentation, and map views bookmarked on the Tool. Figure 3 below shows how multiple sources of data are derived from a networked set of existing state and regional catalogs. The data layers presented in the OROWindMap Tool are organized by geographic and thematic means to serve the needs of BOEM and the State's offshore wind planning process. While leveraging the Portal's existing catalog of ocean data and mapping capabilities the State and BOEM pursued all relevant sources of data and information. The effort in data gathering was comprehensive on the Oregon coast and focused on ecological and natural resources, human uses, and the physical environment.

Overall, the OROWindMap Data Catalog[10] on the Portal provides a curated catalog of information specific to offshore wind planning on Oregon's OCS and preconfigured maps that highlight information about natural resources and human uses on the OCS.

The OROWindMap tool, as seen in Figure 4, is an easy-to-use mapping tool that provides visualization capabilities and includes relevant datasets such as wind speed, bathymetry, bird and marine mammal distribution and density, vessel traffic patterns, military-use areas, subsea cables, and commercial

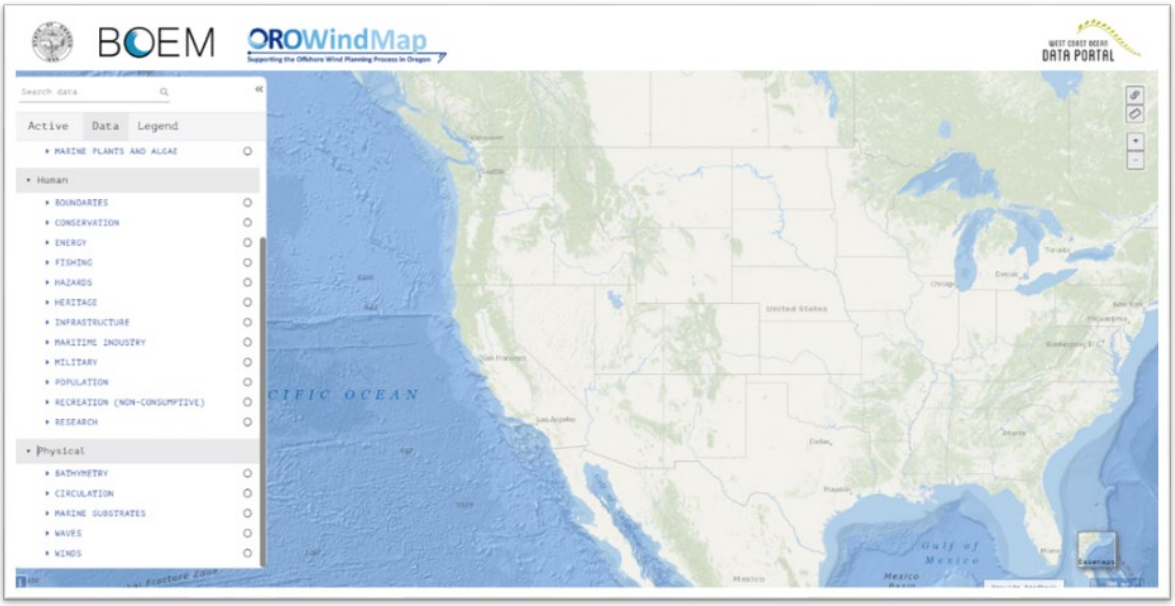

Figure 4. Screenshot of the OROWindMap Visualization Mapping Tool

[10] https://portal.westcoastoceans.org/OROWindMap-data-themes/

fishing information. The data records incorporated into the tool are documented on the OROWindMap Data Catalog Page. A user of the Tool is able to search for and select data layers to be displayed in the map viewer window via browsing the catalog layer list or through keyword search. The data is organized into three top level categories of data including: biological, human use, and physical resources. Once information layers are selected, a user can re-order the data layers to customize their view, adjust layer transparency, and bookmark maps to share.

2.2 Data Review, Outreach and Engagement

Overall Approach

The objective of engaging research organizations was to collect information relevant to offshore wind planning in Oregon. Communications with this audience focused on identifying existing data and information to input into OROWindMap. Any individual or group was welcome to participate in this engagement process, however target audiences for these meetings included research organizations comprising academia and national laboratories, governmental agencies, environmental groups, offshore wind industry, Tribes, and other potentially interested and affected ocean users and communities that have spatial data relevant to offshore wind planning.

After OROWindMap was launched in November 2020, BOEM and the State hosted an Introductory Webinar in March 2021 that focused on the functionality of the tool. The meeting was open to the public, but it targeted key data users and data providers. Two data review workshops in August 2021 were convened for the public to provide input and review existing data within the OROWindMap data catalog. A two-week comment period was available after the August 2021 Data Review Workshops for participants to submit data catalogs and information to BOEM and the State. A summary of these meetings is available in Table 2. An overview of the tool and resources were provided, and data were requested during these outreach meetings. Supplemental activities included periodic email updates.

Table 2 Summary of publicly available meetings targeting research organizations

	Meeting	Date	Host	Participants
1.	OROWindMap Introductory Webinar	3/11/21	BOEM, DLCD	138
2.	Oregon Offshore Wind Energy Planning Data Review: Physical, Human-Use, and Biological Data	8/4/21	BOEM, DLCD	129
3.	Oregon Offshore Wind Energy Planning Fisheries Data Review	8/11/21	BOEM, DLCD	123
4.	Oregon Infrastructure Summit	9/14/21	DLCD	N/A

The engagement resulted in identifying additional data sets, gathering feedback and refining current available data, and receiving referrals to organizations and researchers with expertise in the areas of marine mammals, seabirds, human-related datasets, and physical settings. The OROWindMap tool contains over 325 datasets representing information regarding offshore Oregon. BOEM and the State continue to work with researchers and organizations to ensure the best available data is available to inform decision-making and provide transparency to the public. Many of the research organizations, agency staff and subject matter experts who participated in the data focused workshops also participated in other meetings throughout the process.

Summary of Feedback

Feedback received from the outreach and engagement regarding data are summarized below and detailed feedback can be found in Appendix 8.1. Overall, there was an interest in data quality, data accessibility, and data transparency (i.e., how the data will be used).

Data Representation within OROWindMap Catalog

Overall, participants shared appreciation for the mapping tool and data resources. Recommendations were focused on the inclusion of a variety of datasets within the OROWindMap Data Catalog and observed several datasets missing or outdated from the catalog, including:

- Recreational fishing data,
- Additional maritime data,
- Paleo-landscapes recent research and data,
- Additional bird and marine mammal data, and
- Data on minority or low-income populations along the Oregon coast.

BOEM and the DLCD also received the request to provide additional analysis on the data compiled into OROWindMap and synthesize the data into maps that identify areas of ecological importance or hot spots for fishing activity for the general public to use and reference when providing public comment.

Representation of Fishing Data in OROWindMap

The vessel monitoring system (VMS) is a Global Positioning System (GPS) based surveillance system used to monitor the location and movement of commercial fishing vessels that fish for groundfish in US federal waters. Analysis of VMS data is useful in understanding fishing activities. BOEM and California Polytechnic State University created a fishing effort dataset based on VMS data provided by the NOAA Office of Law Enforcement. Fisheries with trawling vessels and vessels landing groundfish in federal waters are well represented in the dataset because they are required to have a VMS transponder. As part of the data vetting process, DLCD and BOEM held meetings with Oregon Department of Fish and Wildlife (ODFW) to discuss appropriate uses of the VMS data and the development of other fisheries datasets and are looking into developing other datasets as the process moves forward. BOEM and DLCD are presently working on bringing the VMS data into OROWindMap and anticipate it will be available by January 2022. Additionally, ODFW generated new fisheries data products from existing logbook information in order to fill some of the identified fishery data gaps, and those information were added to OROWindMap in December 2021.

Fishing communities and industry representatives recommended the inclusion of a variety of fishing related datasets within the OROWindMap Data Catalog. There were concerns regarding the validity and time span of some of the data that may under-represent the value of certain fishing grounds. Some participants had concerns that poor, outdated, or inconsistent data may be used to inform potential leasing decisions. For example, when fisheries data was collected for the Territorial Sea Plan (TSP)[11] data specific to Oregon's Territorial Sea were targeted versus the area under consideration for planning wind energy offshore Oregon in Federal waters. Port Orford communicated fisheries are important to their community and commercial fishing industry as it represents 35 percent of their local economy and

[11] https://www.oregon.gov/lcd/OCMP/Pages/Territorial-Sea-Plan.aspx

requested that BOEM consider the dependance on an area by community and the value that the fishing industry brings to communities.

Concerns were also expressed that the data does not reflect historic or future fisheries activity. It was suggested to incorporate long-term datasets to better understand the histories of different fishing sectors. Examples include the collapse of the West Coast Groundfish fishery in the late 1990s and the Rockfish Conservation Areas (RCAs) previously closed to fisheries which have opened in the past year. It was recommended to continue holding conversations with the fishing community, industry, and individuals to better understand data discrepancies, nuances, or gaps.

Fishermen expressed the importance of OROWindMap containing the most updated data on fishing grounds and to consider the high variability that exists around fishing grounds. Factors of variability include the following: infrequent shorter seasons, fisheries that are restrained by location, fishermen participate in various fishing sectors, and several fishing sectors occur along the entire West Coast. For example, based on how the Halibut fishery season is structured, certain areas may appear less important based on the frequency of visits to certain areas which may not be accurately recorded or represented in the data.

Meeting participants commented on existing data limitations, for example, while Automatic Identification System (AIS) and VMS data is valuable, not every vessel is required to use AIS or VMS. In particular, the Oregon Trawl Commission (OTC) noted limitations of the VMS analysis on Oregon pink shrimp. Participants suggested that the presentation of data in OROWindMap needs to explicitly identify what data is being shown, so public users do not infer that the data being shown is the full picture.

There were also concerns that data is not present to include the variability of fisheries, specifically how fisheries have expanded and changed over the years. Examples of these fishing sectors include rockfish, sablefish, sardines, and squid.

Data Clarification

BOEM and the DLCD are working to improve information resources and are continuing to receive data sets to include in the tool. Data shown in the OROWindMap Tool is contributed to the system by the data source providers. If there are issues with a layer and how it is being represented, DLCD and BOEM have addressed issues as they are brought to their attention. However, if there are larger data problems, caveats, or data gaps, BOEM and the State are cataloging and organizing those comments into an information data resource document to identify and inform future efforts in order to incorporate appropriate changes. See Appendix 8.1 for a summary of feedback received from data review efforts.

3. Outreach and Engagement

BOEM and DLCD, with input from the Task Force, identified the planning area, outreach goals, and engagement schedule and approach with four target audiences: research groups, ocean users, coastal communities and general public, and Tribal governments. The Plan outlined how to engage with individuals and groups most likely to have sources of relevant data and be affected by or have an interest in potential future offshore wind energy projects and identified an initial contact list of organizations in the appendix.

Beginning October 2020 through October 2021 BOEM and the State held virtual meetings, webinars, and briefings with members of coastal communities, fishing communities, Tribes, local, state, and federal

agencies, the academic and research community, environmental non-governmental organizations, and renewable energy developers. BOEM and the State operated in a virtual environment in compliance with federal and state guidelines due to the COVID-19 pandemic. Throughout the process, BOEM and the State strived to remain flexible by presenting to organizations that requested information, seeking out organizations thought to be potentially interested in offshore wind planning, and requesting to present at standing meetings of those organizations. BOEM and the State also hosted virtual public meetings and participated in one-on-one conversations and focused small group meetings. In some cases, BOEM and the State conducted follow-up meetings with interested parties and groups. At every meeting, BOEM and the State provided an overview and update of the BOEM-Oregon offshore wind planning process, and sought comments, feedback, relevant datasets, best available datasets, and other contacts for outreach. Sections 3.1 and 3.2 below provides expanded detail on the engagement approach with ocean users, coastal communities, and the general public. Below are some of the details that describe BOEM and the State's specific outreach and engagement activities:

- A webpage (www.boem.gov/Oregon) was expanded and maintained for interested parties to remain informed and connected about Oregon offshore wind activities, scheduled Task Force meetings and opportunities for engagement; interested parties were directed to this site for more information.
- Fact Sheets were developed on the BOEM-Oregon offshore wind planning effort[12] and data sharing with OROWindMap[13]. Fact Sheets may be found in Appendix 8.2a and 8.2b.
- A comprehensive contact list with over 1,000 contacts was developed, maintained, and expanded throughout the process. The contact list consisted of potentially interested and affected parties identified in the appendix of the Plan. Additional parties were added throughout the engagement process as they were identified or contacted BOEM directly. Appendix 8.3 provides the list of potentially interested and affected parties engaged with for offshore wind planning.
- Presentations were developed outlining BOEM's planning process and how to access data via the OROWindMap tool and catalog.
- A virtual meeting room[14] was created by BOEM which contains meeting materials for and webinar recordings of all public webinars held by BOEM and the State in 2021; the information includes presentation slides, webinar recordings, and links to relevant resources.
- The Task Force received regular communication about the planning process and engagement opportunities.
- BOEM sent out Notes to Stakeholders (NTS) to announce BOEM-DLCD hosted webinars or workshops which were also amplified with DLCD's listserv.
- BOEM resources, such as the Selected BOEM-Funded Research Informing Renewable Energy Offshore Oregon brochure[15] and the Renewable Energy Citizen's Guide[16], were provided for more information on BOEM's studies and process for overseeing renewable energy projects on the OCS.

[12] https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/renewable-energy/BOEM-Oregon-Joint-Effort-Fact-Sheet.pdf
[13] https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/renewable-energy/OROWindMapInfo.pdf
[14] https://www.boem.gov/renewable-energy/state-activities/2021-oregon-offshore-wind-energy-planning-public-webinars
[15] https://www.boem.gov/Selected-BOEM-Research-Renewable-OR
[16] https://www.boem.gov/sites/default/files/renewable-energy-program/KW-CG-Broch.pdf

- Formal consultation invitation letters were sent to Tribal Governments per their governmental-to-government consultation policies and code.

Additional details on the engagement meetings are available in Appendix 8.4. BOEM took the lead on outreach and engagement with federally recognized Tribes in Oregon. A summary of the outreach to federally recognized Tribes and Tribal organizations, led by BOEM, is included in Section 5 of this report.

The timeline of meetings and the numbers and types of participants for each meeting are presented below in Figure 5. As identified in the Plan, there is overlap in interests and audiences and there is a categorical overlap in Figure 5. Coastal community outreach consisted of county board of commissioner and city council meetings which were open to the public and elected official meetings were one-on-one which is the parameter that distinguished the two categories.

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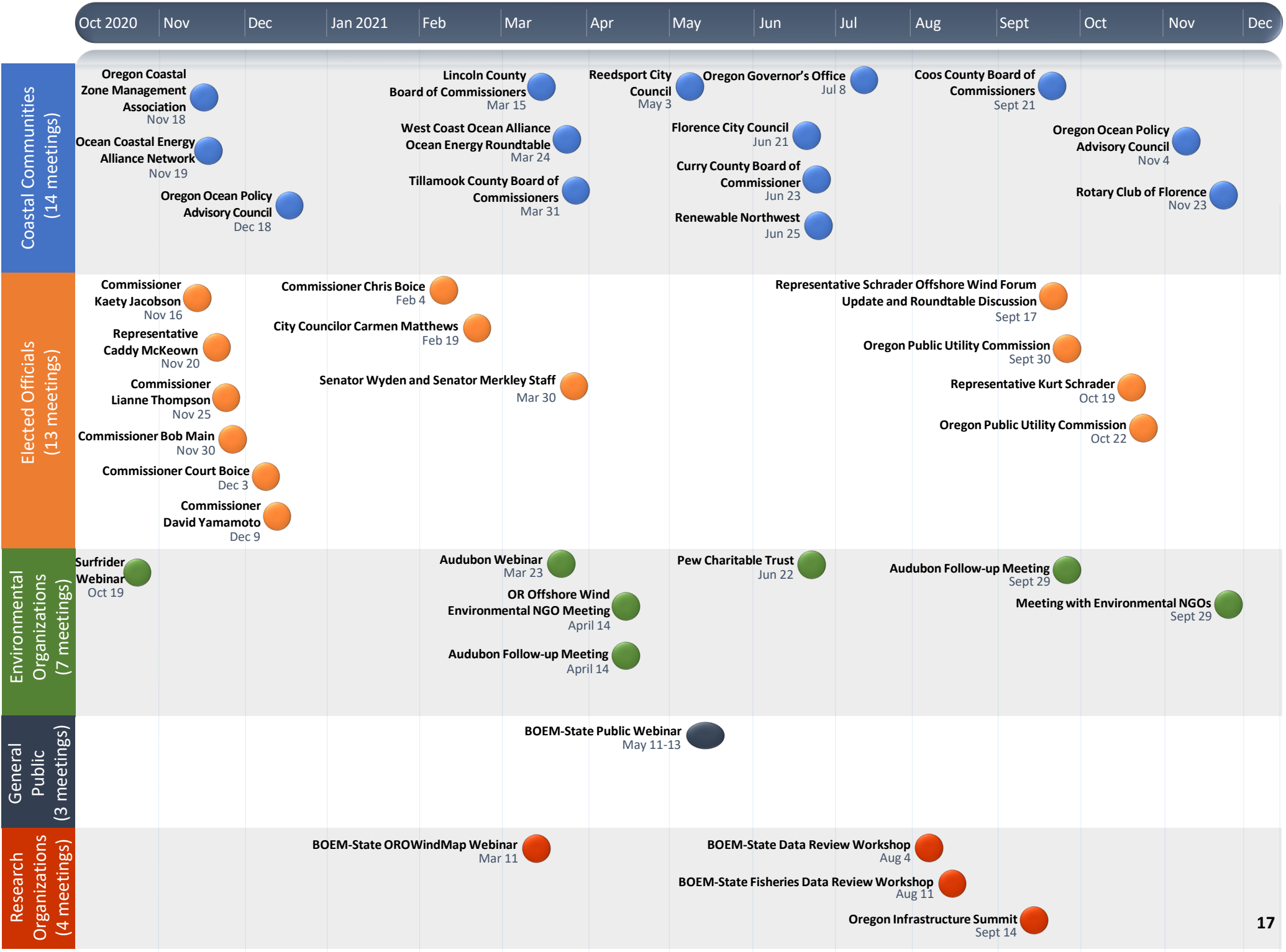
Oct 2020
Nov
Dec
Jan 2021
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
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Nov
Dec
Coastal Communities (14 meetings)
Oregon Coastal Zone Management Association Nov 18
Ocean Coastal Energy Alliance Network Nov 19
Oregon Ocean Policy Advisory Council Dec 18
Lincoln County Board of Commissioners Mar 15
West Coast Ocean Alliance Ocean Energy Roundtable Mar 24
Tillamook County Board of Commissioners Mar 31
Reedsport City Council May 3
Oregon Governor's Office Jul 8
Florence City Council Jun 21
Curry County Board of Commissioner Jun 23
Renewable Northwest Jun 25
Coos County Board of Commissioners Sept 21
Oregon Ocean Policy Advisory Council Nov 4
Rotary Club of Florence Nov 23
Elected Officials (13 meetings)
Commissioner Kaety Jacobson Nov 16
Representative Caddy McKeown Nov 20
Commissioner Lianne Thompson Nov 25
Commissioner Bob Main Nov 30
Commissioner Court Boice Dec 3
Commissioner David Yamamoto Dec 9
Commissioner Chris Boice Feb 4
City Councilor Carmen Matthews Feb 19
Senator Wyden and Senator Merkley Staff Mar 30
Representative Schrader Offshore Wind Forum Update and Roundtable Discussion Sept 17
Oregon Public Utility Commission Sept 30
Representative Kurt Schrader Oct 19
Oregon Public Utility Commission Oct 22
Environmental Organizations (7 meetings)
Surfrider Webinar Oct 19
Audubon Webinar Mar 23
OR Offshore Wind Environmental NGO Meeting April 14
Audubon Follow-up Meeting April 14
Pew Charitable Trust Jun 22
Audubon Follow-up Meeting Sept 29
Meeting with Environmental NGOs Sept 29
General Public (3 meetings)
BOEM-State Public Webinar May 11-13
Research Organizations (4 meetings)
BOEM-State OROWindMap Webinar Mar 11
BOEM-State Data Review Workshop Aug 4
BOEM-State Fisheries Data Review Workshop Aug 11
Oregon Infrastructure Summit Sept 14

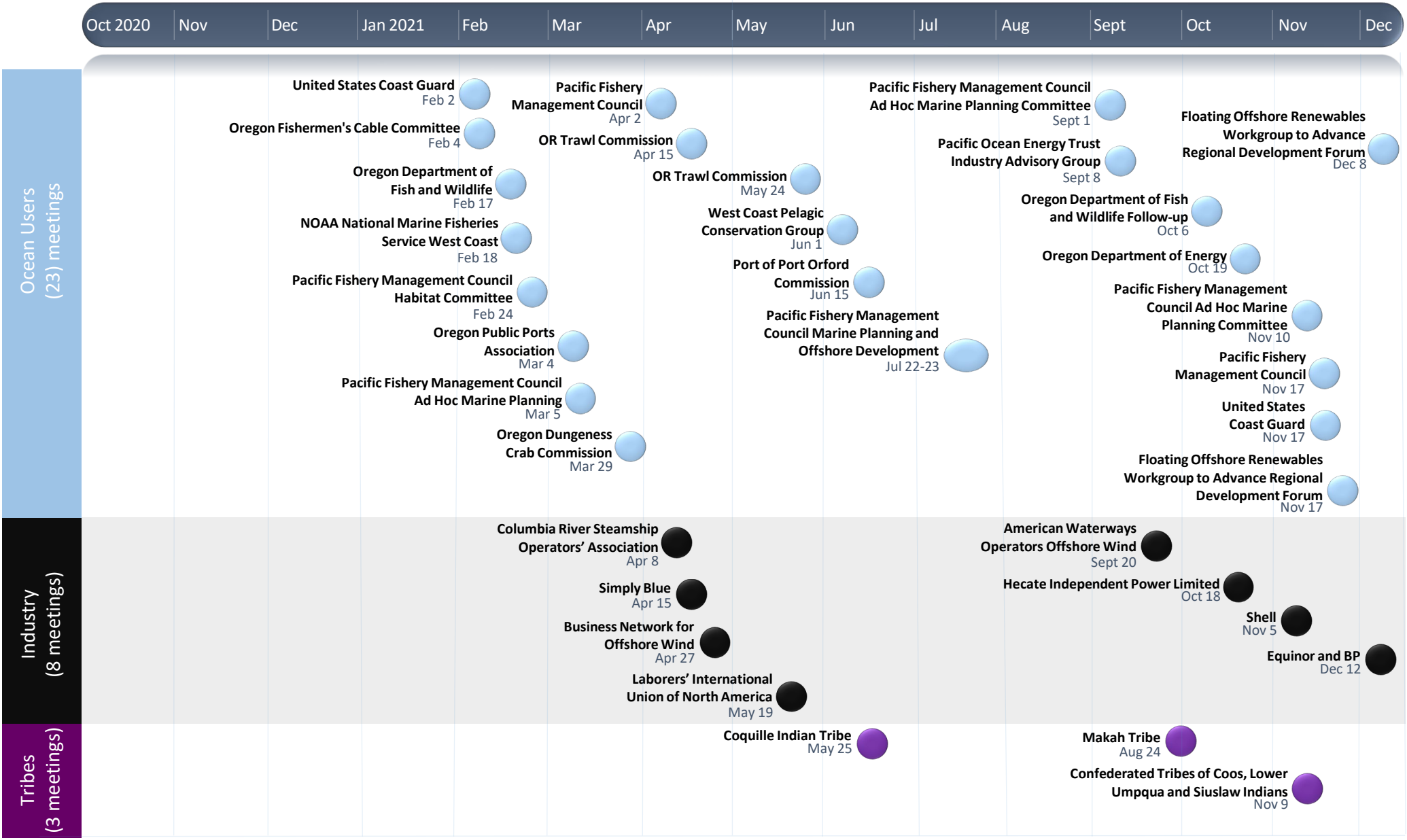


Figure 5. Engagement Timeline

3.1 Ocean Users

Overall Approach

BOEM and the State reached out to ocean users and mariners, including the fishing community, ports, the shipping community, and the tourism industry along the Oregon coast as well as the energy industry. BOEM and DLCD primarily engaged with ocean users through standing meetings with existing organizations or councils. BOEM and the State maintained a flexible approach in order to accommodate the interests of ocean users and ensure there was a range of opportunities for information sharing and engagement.

During early engagement, BOEM and DLCD participated in one-on-one calls and sought information on how to effectively engage ocean users through a virtual format, especially with the fishing industry and local communities and on the names of organizations or individuals that should be included in the outreach effort. At the federal level, BOEM and the State have had continued coordination with NOAA's National Marine Fisheries Service (NMFS) and at the regional level with groups including the Pacific Fisheries Management Council (PFMC). BOEM continues to work with the PFMC to understand regional fishing practices and patterns. In Summer 2021, PFMC established an Ad Hoc Marine Planning Committee to consider information related to the BOEM planning process for offshore wind leasing.

At the state level, BOEM and DLCD worked with ODFW and State fishery commodity commissions to provide status updates of the offshore wind planning process in Oregon, inform groups of existing datasets, and request additional datasets and input. Meetings with fishing commissions included the Oregon Dungeness Crab Commission (ODCC) and the OTC. BOEM and the State have been in contact with and provided materials to the Oregon Salmon and Albacore Commission.

Based on the feedback received during early engagement with the county commissioners and Oregon Sea Grant, BOEM and DLCD reached out to request meetings with fishing organizations established at the county level including Southern Oregon Ocean Resource Coalition (SOORC), Fishermen Involved in Natural Energy (FINE), and Fisherman's Advisory Committee for Tillamook (FACT).

BOEM and DLCD are planning to continue meeting with members of the fishing community and are in communication with the Oregon Salmon and Albacore Commission, SOORC, FINE, and FACT to schedule meetings or follow-up discussions.

Additionally, BOEM and the State were requested to present to various groups representing the maritime industry. Several small group and focused discussions were held with ocean users, including the U.S. Coast Guard, ports, and offshore wind industry interests.

Between February 2021 and December 2021, BOEM and the State participated in 31 meetings and briefings with potentially interested and affected ocean users. Table 3.1 provides a summary of the meetings.

Table 3.1 Summary of Outreach Meetings with Ocean Agencies, Organizations, Offshore Wind Industry and Users

	Meeting	Meeting Type	Date	Host	Number of Participants
1.	Meeting with United States Coast Guard (USCG)	One-on-one meeting	02/03/2021	BOEM	N/A
2.	Meeting with Oregon Fishermen's Cable Committee (OFCC)	One-on-one meeting	02/04/21	BOEM, DLCD	N/A
3.	Meeting with Oregon Department of Fish and Wildlife (ODFW)	Presentation	02/17/21	BOEM, ODFW	N/A
4.	Meeting with National Marine Fisheries Service (NMFS) West Coast	Presentation	02/18/21	BOEM, NMFS	N/A
5.	Pacific Fishery Management Council (PFMC) Habitat Committee Meeting	Presentation	02/24/21	PFMC	103
6.	Oregon Public Ports Association (OPPA) Meeting - *Port of Coos Bay, Astoria, Tillamook Bay, Newport, and Bandon were in attendance*	Presentation	03/04/21	Business Oregon	12
7.	PFMC Marine Planning Update Meeting	Presentation	03/05/21	PFMC	N/A
8.	Oregon Dungeness Crab Commission (ODCC) Meeting	Presentation	03/29/21	ODCC	17
9.	Meeting with PFMC	One-on-one meeting	04/02/21	BOEM, PFMC	N/A
10.	Columbia River Steamship Operators' Association (CRSOA) Industry Meeting	Presentation	04/08/21	CRSOA	21
11.	Meeting with Oregon Trawl Commission (OTC) Director	One-on-one meeting	04/15/21	BOEM, DLCD	N/A
12.	Meeting with Simply Blue Group	One-on-one meeting	04/15/21	BOEM, Simply	N/A
13.	Meeting with Business Network for Offshore Wind (BNOW)	One-on-one meeting	04/27/21	BOEM, BNOW	N/A

14.	Meeting with Laborers' International Union of North America (LiUNA)	One-on-one meeting	5/9/21	BOEM, LiUNA	N/A
15.	Oregon Trawl Commission Meeting	Presentation	05/24/21	OTC	≥29
16.	Meeting with West Coast Pelagic Conservation Group	One-on-one meeting	06/01/21	BOEM	N/A
17.	Port of Port Orford Commission Meeting	Presentation	06/15/21	Port of Port Orford	8
18.	PFMC-BOEM Marine Planning and Offshore Development Meeting	Presentation	07/22/21 to 07/23/21	PFMC	N/A
19.	PFMC Ad Hoc Marine Planning Committee	Presentation	09/01/21	PFMC	78
20.	Pacific Ocean Energy Trust (POET) Industry Advisory Group Meeting	Presentation	09/08/21	POET	12
21.	American Waterways Operators Offshore Wind Discussion	One-on-one	09/20/21	BOEM, American Waterways Operators	N/A
22.	Follow-up Meeting with ODFW	One-on-one	10/06/21	BOEM, ODFW	N/A
23.	Meeting with Hecate Independent Power Limited	One-on-one	10/18/21	Hecate, BOEM	N/A
24.	Meeting with Oregon Department of Energy (ODOE)	One-on-one	10/19/21	ODOE, BOEM	N/A
25.	Meeting with Shell	One-on-one	11/05/21	Shell, BOEM	N/A
26.	PFMC Ad Hoc Marine Planning Committee Meeting	One-on-one	11/10/21	PFMC	≥60
27.	Meeting with PFMC	One-on-one	11/17/21	PFMC	N/A
28.	Meeting with USCG	One-on-one	11/17/21	USCG, BOEM	N/A
29.	Floating Offshore Renewables Workgroup to Advance Regional Development (FORWARD) Forum	Presentation	11/30/21	FORWARD	10
30.	Meeting with Equinor and BP	Small group	12/06/21	Equinor, BP	N/A
31.	FORWARD Forum	Presentation	12/08/21	FORWARD	11

3.2 Coastal Communities, Elected Officials, and General Public

Overall Approach

BOEM and the State focused outreach along the entire coast of Oregon, including conducting meetings with elected officials, environmental groups, cities, counties, members of the public, government entities, and other stakeholders who live and work in coastal areas and may be impacted by offshore wind energy development. The objectives for engaging coastal communities were to raise awareness of offshore wind energy planning in Oregon and relevance of data and information gathering, build understanding of the process for offshore wind planning in Oregon, discuss how communities can participate in the process, hear concerns, and have questions answered.

BOEM and the State attended virtual meetings, requested to present at standing meetings of local government and state/regional/local organizations, and hosted focused discussions with affected and interested stakeholder groups. Community outreach and engagement with coastal communities and the general public included the following:

- Early calls and/or one-on-one meetings with elected officials, including Oregon's coastal legislators and county commissioners, to better understand the level of virtual engagement in their communities and provide a status update on Oregon's offshore wind energy planning process. BOEM and the State utilized these one-on-one meetings to seek information on existing scheduled meetings they could participate and present at, websites to connect with, and other ideas to virtually engage coastal communities.
- Presentations at standing meetings of coastal communities focused on televised/recorded county commission and city council meetings.
- Focused and regular email contact with coastal community interested parties.
- Public webinar series held in May 2021. Three meetings were held on different days/times and were recorded and posted on the BOEM website.
- Presentations/participation in standing meetings of coastal interest groups including energy, economy, and environmental focused organizations.

BOEM and the State participated in 37 meetings and briefings with various coastal community groups from October 2020 through September 2021. Table 3.2 lists the meetings BOEM and the State held with coastal communities during the data gathering and engagement planning process.

Table 3.2 Summary of Outreach Meeting with Coastal Communities, Elected Officials, and General Public

	Meeting	Meeting Type	Date	Host	Number of Participants
1.	Surfrider Meeting	Presentation	10/19/20	Surfrider	35
2.	Meeting with Commissioner Kaety Jacobson	One-on-one meeting	11/16/20	BOEM	N/A
3.	Oregon Coastal Zone Management Association (OCZMA)	Presentation	11/18/20	OCZMA	45
4.	Ocean Coastal Energy Alliance Network	Presentation	11/19/20	OCEAN	21

	(OCEAN) Monthly Meeting				
5.	Meeting with Representative Caddy McKeown	One-on-one meeting	11/20/20	BOEM, DLCD	N/A
6.	Meeting with Clatsop County Commissioner Lianne Thompson	One-on-one meeting	11/25/20	BOEM, DLCD	N/A
7.	Meeting with Coos County Commissioner Bob Main	One-on-one meeting	11/30/20	BOEM, DLCD	N/A
8.	Meeting with Curry County Commissioner Court Boice	One-on-one meeting	12/03/20	BOEM, DLCD	N/A
9.	Meeting with Tillamook County Commissioner David Yamamoto	One-on-one meeting	12/09/20	BOEM, DLCD	N/A
10.	Oregon Ocean Policy Advisory Council (OPAC) Presentation	Presentation	12/18/21	OPAC	N/A
11.	Meeting with Douglas County Commissioner Chris Boice	One-on-one meeting	02/04/21	BOEM, DLCD	N/A
12.	Meeting with Coos Bay City Councilor Carmen Matthews	One-on-one meeting	02/19/21	BOEM, DLCD	N/A
13.	Lincoln County Board of Commissioners Meeting	Presentation	03/15/21	Lincoln County	21/televised
14.	Audubon Educational Webinar	Presentation	03/23/21	Portland Audubon	73
15.	West Coast Ocean Alliance (WCOA) Ocean Energy Roundtable	Presentation	03/24/21	WCOA	N/A
16.	Meeting with Senator Wyden and Senator Merkley staff	One-on-one meeting	03/30/21	BOEM and Senator staff	N/A
17.	Tillamook County Board of Commissioners Meeting	Presentation	03/31/21	Tillamook County	≥29/televised
18.	Oregon Offshore Wind Environmental NGO Meeting - *American Bird Conservancy, American Wind Wildlife*	Presentation	04/14/21	BOEM, DLCD	14

	Institute, Environment Oregon, The Nature Conservancy, Natural Resource Defense Council, Oregon Coast Alliance, OCEAN, Oregon Shores Conservation Coalition, Whale and Dolphin Conservancy, and Wild Rivers Coast Alliance were in attendance.				
19.	Follow-up Meeting with Oregon Audubon	One-on-one meeting	04/14/21	BOEM	N/A
20.	Reedsport City Council Meeting	Presentation	05/03/21	Reedsport City Council	≥14/televised
21. – 23.	Three Oregon Ocean Wind Energy Planning Public Webinars	Presentation	05/12/21 – 05/13/21	BOEM, DLCD	216
24.	Florence City Council Meeting	Presentation	06/21/21	Florence City Council	≥27/televised
25.	Meeting with Pew Charitable Trust	One-on-one meeting	06/22/21	BOEM, PEW	N/A
26.	Meeting with Renewable Northwest	One-on-one meeting	06/25/21	BOEM, RWE	N/A
27.	Curry County Board of Commissioner Meeting	Presentation	06/23/21	Curry County	Unknown/televised
28.	Meeting with Oregon Governor's Office	One-on-one meeting	07/08/21	Governor's Office	N/A
29..	Representative Kurt Schrader Offshore Wind Forum: Update and Roundtable Discussion	Presentation	09/17/21	Congressman Kurt Schrader	30
30.	Coos County Commissioner Meeting	Presentation	09/21/21	Coos County	24
31.	Follow-up Meeting with Portland Audubon	One-on-one	09/29/21	BOEM, Audubon	N/A
32.	Meeting with Oregon Public Utility Commission (OPUC)	One-on-one	09/30/21	BOEM, OPUC	N/A
33.	Meeting with Representative Kurt Schrader Staff	One-on-one	10/19/21	BOEM	N/A
34.	Meeting with OPUC	One-on-one	10/22/21	BOEM, DLCD, OPUC, POET	N/A
35.	Meeting with OPAC	One-on-one	11/4/21	OPAC	51

36.	Rotary Club of Florence Presentation	Presentation	11/23/21	Rotary	≥44
37.	Meeting with Environmental NGOs – *American Bird Conservancy, Oceana, Oregon Shores Conservation Coalition, Portland Audubon Society, Redwood Region Audubon Society, Surfrider Foundation, Whale and Dolphin Conservancy were in attendance.*	One-on-one	11/29/21	Audubon	10

4. Feedback Received

Outreach and engagement activities allowed BOEM and the State to share information about the Oregon Task Force; the potential for offshore wind in Oregon; data gathering efforts; BOEM's authorization process for offshore wind energy including its environmental review process; and to receive process or communications feedback. This section summarizes the feedback received during outreach and engagement meetings which BOEM considers over the multi-year and multi-phase offshore wind authorization process.

Potentially affected and interested groups included ocean user groups from Oregon, Washington, and Northern California, including the following: Tribes, mariner-related groups and offshore wind industry groups, elected officials, members of the public, climate change interest groups, labor unions and environmental groups. Elected officials contacted includes federal, state, and local officials, including county commissioners and city council members. The outreach efforts revealed a wide range of questions, concerns, and ideas regarding offshore wind for Oregon. Groups were primarily concerned about potential conflicts with existing human and ocean uses from a proposed offshore wind energy project as well as developing a greater understanding of BOEM's offshore wind planning, decision making, and lease approval process. Common questions included:

- How will BOEM use the OROWindMap tool to inform the Call?
- How much offshore wind energy in Oregon is BOEM working towards? (e.g., number and size of Call Areas and lease areas, number of megawatts)
- How does BOEM determine and address impacts, including negative, direct, and indirect, from a proposed offshore wind energy project?
- How will cumulative impacts from multiple large-scale wind farms in close proximity (e.g., Northern California and Southern Oregon) be evaluated?
- How are socio-economic impacts considered in the environmental review?
- Which agencies are involved in determining offshore wind energy impacts from a proposed project?
- What mitigation measures, including compensation, are negotiated and which agencies are involved in mitigation measures?

- What type of monitoring of birds, fish, and marine mammals occur throughout construction and operations of an offshore wind farm?
- Would leasing for offshore wind generate revenue for the State or local governments?
- Can offshore wind energy be developed in water depths beyond 1,300 m?

BOEM and the State are continuing to solicit data to identify areas most suitable for leasing. A summary of highlights from meeting feedback follows and are categorized by the themes fishing; impacts to wildlife; Oregon's energy portfolio; and meaningful engagement.

4.1 Fishing and Other Ocean Users

In addition to feedback on data described in Section 3, the fishing industry, elected officials, and community stakeholders consistently expressed concerns about the potential loss of commercial and recreational fishing grounds and requested siting of offshore wind energy projects in areas that are already closed off to or used less by the fishing industry.

Feedback included:

- Engagement
    - The fishing industry and community, including individual fishermen, should be consulted early, often, and continuously to cultivate good working relationships and build trust.
    - Concern that the engagement process will mirror that of the east coast and fisheries feedback will not be considered.
- Siting or Potential Loss of Fishing Grounds
    - A proposed offshore wind energy project may impact some fisheries more than others, especially those who fish for semi-migratory species.
    - Future scenarios where current unproductive fishery grounds could become productive and potentially overlap with Call Areas.
    - The changes in fish behavior and migration patterns in response to climate change and its changing ocean conditions.
    - Impacts to fishermen's livelihoods; lasting impacts to the local economy. Consideration of how the area adjacent to call areas supporting offshore wind will impact fisheries (e.g., area needed and given for transmission cables).
    - There are recreational fisheries off Oregon that extend past state waters, such as pacific halibut and the albacore/tuna industry. These recreational fisheries are a large contributor to the Oregon economy and lifestyle.
    - There are current mandatory and voluntary closed fishing areas off the coast of Oregon. BOEM was asked to consider the amount of ocean in the technologically viable area that has no conflicts or the fewest number of conflicts with other interests.
- Offshore Wind Energy Installation and Operations
    - Impacts to fisheries operations during the construction of offshore wind structures.
    - Safety for fishermen and their equipment if fishing near or around floating offshore wind structures.
    - Offshore development will interfere with scientific survey efforts that are important to the fishing industry.
    - Potential conflicts with vessel traffic.

4.2 Impacts to Wildlife

The fishing community, elected officials, environmental groups, and several others provided feedback on the potential impacts of the construction and operation of offshore wind development on marine species, such as various species of whales, birds, and fish.

Feedback included:

- It was noted that the Oregon coast is an important breeding place for seabird and pelagic birds due to favorable habitat conditions and the abundance of nutrients.
- Impacts on marine species distribution, migration, and behavior.
    - Concerns over the interaction between marine species and birds with offshore wind structures, including collision, entanglement, and any possible electromagnetic field effects from cables.
    - Concerns on the cumulative impacts on seabirds and marine species from multiple offshore wind projects located in the California Current (e.g., Southern Oregon and Northern California)
- Impacts on marine species that can potentially impact the fishing community and industry.
- Impacts of climate change on marine species. Groups asked BOEM to consider future ocean conditions in siting and approval processes and the changes in physical conditions, changing habitats, and shifting fisheries due to climate change

4.3 Oregon's Energy Portfolio

Interested groups in outreach meetings were interested about how offshore wind energy fits into Oregon's energy portfolio and the potential role of offshore wind for Oregon. Many groups expressed interest about the impacts of offshore wind development and construction of cables onshore on tourism, visual resources, the environment, marine species, and the fishing industry.

Feedback included:

- Questions on offshore wind and Oregon's energy profile including:
    - Potential impacts to taxpayers.
    - Electrical rates needed to make offshore wind viable.
    - How offshore wind projects would be financed.
    - Cost-effectiveness of offshore wind in comparison to other electricity sources in the state (competitive costing models).
    - Tradeoffs of increased renewable energy compared with the total cumulative impacts to fisheries, habitat, and ecological systems.
    - Commercial developers' level of interest and how other offshore wind projects worldwide are performing.
    - Whether there is potential for generating power offshore Oregon and distributing the power outside of Oregon.
    - How the power would be distributed onshore and noted that the connection with the local Public Utility District (PUD) is critical.
    - Feasibility of offshore wind-to-hydrogen production
- Groups requested an analysis for job creation, economic development, as well as analysis of total job displacement in the fishing industry relative to new jobs in the energy industry and

sought information regarding compensation for potential lost fishing grounds due to the development of offshore wind.

- Concern for any possibility of projects requiring a feed-in tariff and the subsequent impacts to local ratepayers.
- Comments included support for offshore wind energy off Oregon's coast, particularly in Southern Oregon, and subsequent economic benefits of renewable energy to their communities, if the planning and process is done responsibly, is transparent, and meets environmental protection standards. Many recognized the value of the offshore wind development, including coastal resiliency and reliability, and wanted more information and discussion about how best to balance existing and future uses.

4.4 Meaningful Engagement

Many groups expressed the importance of meaningful engagement. Overall, many shared appreciation for the engagement approach to planning for offshore wind in Oregon.

Feedback included:

- The fishing industry and community expressed concern that their feedback will not be taken into consideration. These groups want to ensure that BOEM and the State consider their feedback and that BOEM's leasing decisions are based on input from all current users of the ocean space.
- Industry users expressed positive support for offshore wind projects, assuming that maritime partnerships are developed early, that partners understand the process, and that state agencies work with lessees who prioritize safety and labor standards.

5. Tribal Outreach and Engagement

Overall Approach

BOEM and the DLCD endeavored to inform and engage federally recognized Tribes throughout the data gathering and engagement process in a manner that is respectful of Tribal sovereignty, the government-to-government relationship between Tribal governments, the U.S. federal government, and the State, and each Tribe's consultation policies, codes and practices to the greatest extent possible. BOEM serves as the lead agency for Tribal engagement because of the federal government's trust relationship with federally recognized Tribes and for appropriate engagement with federally recognized Tribes who are currently located outside of Oregon and have ancestral territory in Oregon and/or interest in Oregon offshore wind activities.

Federally Recognized Tribes

BOEM invited engagement with federally recognized Tribes with known or potential interest in offshore wind activities offshore Oregon. In February 2021, BOEM invited engagement via formal letter to each of the nine federally recognized Tribes in Oregon, listed below. BOEM issued the invitations on behalf of BOEM and DLCD. The invitations deferred to each Tribal government's policies and preferences on whether the engagement would occur via government-to-government consultation or pre-consultation informational discussions, and preferences regarding tri-lateral dialog with DLCD participation.

- Burns Paiute Tribe
- Confederated Tribes of Siletz Indians of Oregon

- Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians
- Confederated Tribes of the Grand Ronde Community of Oregon
- Confederated Tribes of the Umatilla Indian Reservation
- Confederated Tribes of the Warm Springs Reservation of Oregon
- Coquille Indian Tribe
- Cow Creek Band of Umpqua Tribe of Indians
- Klamath Tribes

In May 2021, BOEM invited engagement via formal letter to two federally recognized Tribes currently located in California with ancestral lands in Oregon, listed below.

- Elk Valley Rancheria
- Tolowa Dee-ni' Nation

The Task Force includes members representing four Tribes in coastal Oregon: the Confederated Tribes of Siletz Indians of Oregon, the Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians, the Confederated Tribes of the Grand Ronde Community of Oregon, and the Coquille Indian Tribe. In addition to Tribal engagement invitations from BOEM, these Task Force members received information and updates regarding data gathering and engagement efforts from the BOEM Oregon Task Force Coordinator.

BOEM also communicated periodically with Tribal representatives via email and telephone to keep Tribes apprised of the broader engagement and data gathering process and public meetings of potential interest to ensure Tribes had opportunities to participate if deemed appropriate. BOEM will continue to consult with Tribes and strive to integrate traditional ecological knowledge datasets.

Tribal Organizations

From November 2020 through September 2021, BOEM and DLCD provided regular updates on data gathering and engagement efforts to the West Coast Ocean Tribal Caucus, an entity within the West Coast Ocean Alliance. BOEM and/or DLCD are regularly invited to share updates during the Tribal Caucus' monthly meetings or as written information for distribution to Tribal Caucus members.

In January 2021, contacts from the Affiliated Tribes of Northwest Indians (ATNI), Columbia River Inter-Tribal Fish Commission, and Pacific Northwest Tribal Climate Change Network were invited to participate in the OROWindMap Introductory Webinar on March 11, 2021.

In May 2021, BOEM outreached to the ATNI via their Tribal Liaison to gauge their potential level of interest in engagement with BOEM and DLCD on offshore wind energy. The ATNI Tribal Liaison shared recommendations on how to engage the ATNI. BOEM's implementation of the recommendations is discussed in Section 6, Next Steps.

Meetings with Tribes

The Coquille Indian Tribe requested a staff-to-staff meeting with the agencies to begin the coordination and consultation process for offshore wind energy. The requested staff-to-staff meeting with the Coquille Indian Tribe, BOEM, and DLCD was held on March 25, 2021. Discussion topics included: the processes and timelines for potential Oregon offshore wind energy development; engagement and data gathering; coordination of studies, activities, and consultations; and initial discussion on issues of

interest to the Coquille Indian Tribe. BOEM presented an overview of the Oregon offshore wind energy process, environmental and Section 106 reviews, relevant studies, and Tribal consultation and coordination. DLCD presented the State's role in offshore wind energy and the OROWindMap tool and data.

The Coquille Indian Tribe, BOEM, and DLCD discussed the following topics:

- Sensitive data in OROWindMap,
- Timing and scope of BOEM NEPA reviews,
- Consideration of other ocean uses within a lease area, such as potential aquaculture,
- Tradeoffs between wind energy development suitability and relative adjacency to an electrical grid interconnection,
- Project size in terms of energy capacity, and
- Tribal Cultural Landscapes approach.

The Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians (CTCLUSI) engaged with BOEM staff on September 9, 2021 to gather information on offshore wind planning and subsequently requested government-to-government consultation with BOEM to further the Tribe's engagement with BOEM's process. Formal consultation between CTCLUSI and BOEM took place on November 9, 2021. At this meeting the Tribe's leadership and staff engaged with BOEM on a variety of topics relating to planning for Oregon offshore wind energy development. Some highlights from the feedback received from this consultation are listed below. CTCLSUI continued to engage with BOEM through 2021, providing input for BOEM's analysis, including recommendations for future study needs to help inform offshore wind development. These needs, outlined in a letter to BOEM dated December 10, 2021, included recommendations for further research into cumulative impacts, earthquake effects, species specific natural resource implications, historic land use, and socio-economic impacts.

BOEM-funded Tribal Cultural Landscapes (TCL) studies include a definition of TCLs (defined by Tribes), best practices for consultation, an example of how Tribes might collect and have information available to inform future consultations, and an example of how agencies might implement a TCL approach in their regulatory review process.

Feedback Received

Feedback received from the Coquille Indian Tribe included:

- All marine life is important to the Coquille Indian Tribe. Species of importance include Coho salmon, Chinook salmon, coastal trout, and lamprey. The Tribe is interested in how offshore wind development will interact with salmon, lamprey, marine mammals, fisheries, eel grass, and kelp.
- Climate change impacts, carbon reduction, and carbon sequestration are important to the Coquille Indian Tribe. Offshore wind energy could be a solution, but it will also have impacts.
- Viewshed impacts will be of interest once specific areas under consideration for offshore wind leasing are known, and visual simulations will be helpful to Tribal staff and the greater community.
- The Tribe is interested in potential hydrogen production and whether it might be considered with offshore wind development.

Feedback received from the (CTCLUSI) included:

- There is a need for analysis of transmission needs and impacts, including onshore requirements, and for an understanding of required permits and authorizations for a subsea transmission cable traversing from a project site and to a point of interconnection on shore.
- There is a need for analysis of potential impacts to fisheries, including for crabbing, flatfish, and salmon.
- It is important to considering potential impacts of migratory species like whales and to ensure a robust analysis is available to inform potential project siting.
- The Tribe is interested in exploring how BOEM may facilitate the use of Tribal expertise and skills to inform its analysis and decision making.
- The Tribe expressed interest in providing additional input to inform BOEM's selection of Call Areas.

In April 2021, the Makah Tribe requested a staff briefing on ocean energy from BOEM. A staff ocean energy meeting with the Makah Tribe and BOEM was held on August 24, 2021. The focus of the meeting was not Oregon offshore wind energy exclusively, but the data gathering and engagement effort and Oregon offshore wind planning were discussed.

Tribal representatives participated in several public meetings, including the OROWindMap Webinar on March 11, 2021, Oregon Offshore Wind Energy Planning Public Webinars in May 2021, and Offshore Wind Energy Planning Data Review Workshops in August 2021.

The meeting summary from the staff ocean energy meeting with the Makah Tribe and BOEM on August 24, 2021, has not been reviewed and approved by the Makah Tribe as of the publication date of this report. Therefore, feedback from the Makah Tribe relevant to Oregon offshore wind planning is not included in this report.

6. Next Steps

BOEM, in coordination with the State, anticipates a Task Force meeting to discuss the proposed Call Area(s) prior to publishing a Call for Information and Nominations (Call) in the *Federal Register* in Winter 2022. BOEM and DLCD will continue to collect and review data and engage with interested parties throughout BOEM's authorization process.

Tribal Engagement

BOEM will continue to share information regarding offshore wind energy in Oregon with federally recognized Tribes and reiterate the standing invitation to engage with BOEM (and DLCD as appropriate) in a manner that is respectful of Tribal sovereignty, the government-to-government relationship between Tribal governments, the U.S. federal government, and the State, and each Tribe's policies and practices to the greatest extent possible. BOEM will engage with each Tribe who accepts the invitation. Federally recognized Tribes who are not members of the Task Force are invited to join the Task Force as members as they deem appropriate.

BOEM and DLCD will continue to engage with the West Coast Ocean Tribal Caucus by invitation. BOEM will continue its outreach to the ATNI and will initiate dialog with the other Tribal organizations listed in Appendix 8.7.

7. Contact

BOEM and the State are partners in this engagement effort. Whitney Hauer (whitney.hauer@boem.gov, 805-384-6263) is the BOEM Oregon Task Force Coordinator in addition to serving as the primary contact on behalf of the BOEM Pacific Office. Additional points of contact from the Pacific Office include John Romero (Public Affairs Officer, john.romero@boem.gov, 805-384-6324) and Parker McWilliams (Tribal Liaison, parker.mcwilliams@boem.gov, 805-384-6397)[17]. Andy Lanier (Andy.Lanier@dlcd.oregon.gov, 503-206-2291) is the OCMP Marine Affairs Coordinator and the overall contact on behalf of the State.

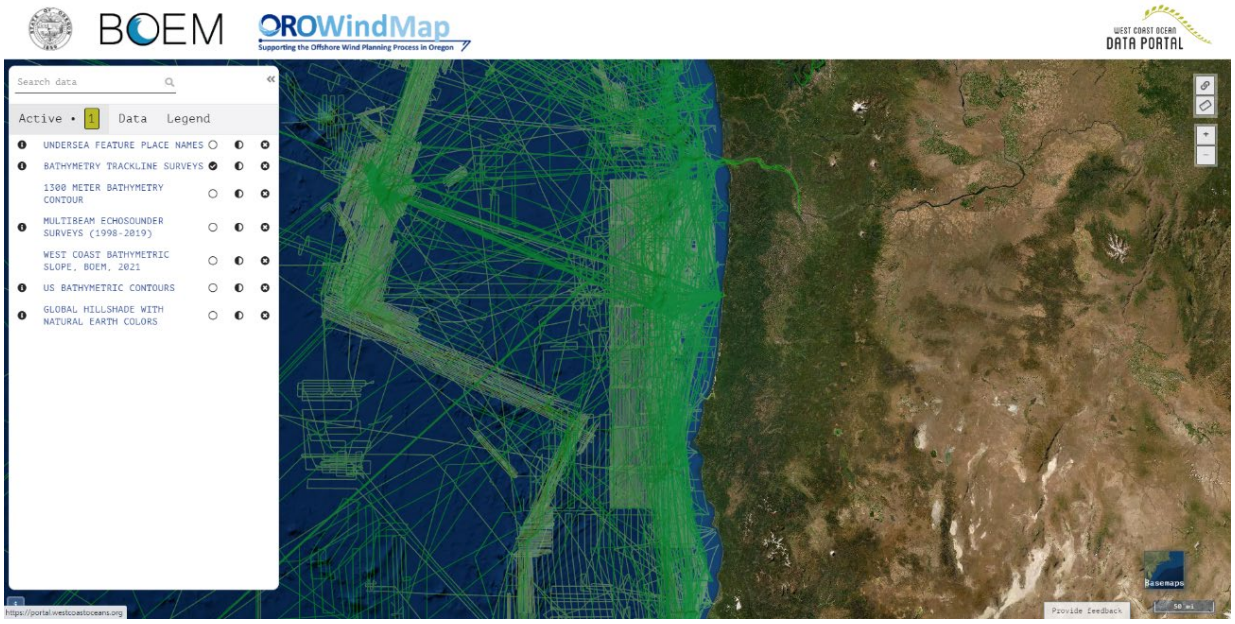
[17] Sara Guiltinan (sara.guiltinan@boem.gov, 805-384-6345) served as the Tribal Liaison through September 2021.

8. Appendices

Appendix 8.1 Oregon Offshore Wind Energy Planning Tool and Data Catalog Review

OROWindMap

Supporting the Offshore Wind Planning Process in Oregon



Abstract

This document summarizes the feedback on the data layers of the Oregon Offshore Wind Mapping (OROWindMap) Tool that were received via Public Data Review workshops held in August 2021 or in written comment throughout the engagement period through December 2021. We include a list of the comments provided and the data available through the OROWindMap Tool and Data Catalog pages as hosted on the West Coast Ocean Data Portal.

Introduction

The Bureau of Ocean Energy Management (BOEM) and the Oregon Department of Land Conservation and Development (DLCD) led two workshops that provided an opportunity to review the OROWindMap Data Catalog and Tool. Comments received varied widely in the focus, scope, data technology or applicability to the available information.

In this Appendix, we provide an introduction to the OROWindMap Tool and Data Catalog technology in addition to the types of feedback received. Understanding the technology can provide insight into the ability of the BOEM or DLCD staff to respond to comments received during the public data review workshops. In this appendix, we catalog the comments in addition to providing the list of data layers which have been incorporated into Tool and Catalog resources to-date.

Catalog and Tool Technical Information

This information is provided as context for understanding how BOEM and DLCD have provided information which has been gathered and presented back to the BOEM Oregon Intergovernmental Renewable Energy Task Force through the OROWindMap Tool and Data Catalog page.

Data Catalog Technology

The State of Oregon and BOEM leveraged the infrastructure of the West Coast Ocean Data Portal (WCODP) to produce a catalog of information relevant to ocean planning for offshore wind development on the outer continental shelf of Oregon. The WCODP infrastructure is a customization of the open source ESRI Geoportal 2 database software that serves to connect data catalogs across the region and country. Through a custom interface design users can browse a curated set of data records through a number of search facets that allows filtering of the catalog records by geography, keyword, time period, and catalog hierarchy or data source provider. The data resources gathered and organized for inclusion in OROWindMap are documented on the OROWindMap Data Catalog page[18] on the WCODP. The information about each resource is provided to the WCODP through a systematic harvest of the metadata record generated by the data source provider. In rare instances, the State and BOEM had to publish metadata records in an online accessible folder which the State (DLCD) established to support the planning effort. WCODP portal staff do not have the capacity to alter metadata records that are provided in the catalog by the original source

[18] http://intranet.dlcd.state.or.us/commissionhttps:/portal.westcoastoceans.org/OROWindMap-data-themes/

provider. Comments that were received regarding data documentation were valuable in providing additional context but are outside of the scope of BOEM or DLCD staff action as the data source provider would be required to implement the recommended updates. The WCODP system can harvest many different types of metadata file formats which allows flexibility for the data source providers. Visit the West Coast Ocean Data Portal Knowledge Base to learn more about technical requirements for adding data records into the catalog (https://wcodp.readthedocs.io/).

OROWindMap Tool Technology

The OROWindMap Tool was developed using an Open-Source Marine Planner software[19] technology developed by Ecotrust that allows the organization of publicly accessible web map services into a data visualization tool. The OROWindMap Tool has aggregated over 325 different data layers into more than 50 different data catalog themes. The visualization tool connects to the published web map services of more than 30 data source providers. The system design ensures that the data being served through the tool is coming from an authoritative source provider. The OROWindMap Tool allows a user to select the map services for display, and the flexibility to customize the drawing order on the map and layer transparency. The visualization of the information for each layer is generated by the source provider and BOEM and DLCD staff supporting the planning process do not have the ability to modify it. In rare circumstances BOEM or DLCD has re-published data sets from a source provider to generate requested visualizations of the data, but only after receiving permission to do so. Suggested metadata corrections or layer name changes will be communicated with the data source providers, but there is no requirement on their part to implement the recommended revisions.

Data Source Providers

The following list represents the entities who created and / or publish the spatial data layers currently available through OROWindMap. The range of entities listed demonstrates the breadth of data resources discovered during the data gathering and engagement process, and includes federal and state agencies, universities, nonprofit organizations, private institutions, and research partnerships.

- Active Tectonics and Seafloor Mapping Lab (ATSML), Oregon State University http://bhc.coas.oregonstate.edu/geoportal/catalog/main/home.page
- Bureau of Land Management (BLM) https://www.blm.gov/
- Bureau of Ocean Energy Management (BOEM) https://www.boem.gov/
- Bureau of Safety and Environmental Enforcement (BSEE) https://www.bsee.gov/
- Ecotrust https://ecotrust.org/
- Environmental Protection Agency (EPA) https://www.epa.gov/
- Federal Aviation Administration (FAA) https://www.faa.gov/
- Georgia Institute of Technology https://www.gatech.edu/
- Marine Cadastre (A joint initiative of NOAA & BOEM) https://marinecadastre.gov/
- Marine Mammal Institute (MMI), Oregon State University https://mmi.oregonstate.edu/
- National Audubon Society https://www.audubon.org/
- National Park Service (NPS) https://www.nps.gov/

[19] https://github.com/Ecotrust/marine-planner-wcodp

- National Oceanic and Atmospheric Administration (NOAA) https://www.noaa.gov/
  - Office for Coastal Management (OCM) https://coast.noaa.gov/
  - National Centers for Coastal Ocean Science (NCCOS) https://coastalscience.noaa.gov/
  - National Centers for Environmental Prediction (NCEP) https://www.weather.gov/ncep/
  - National Geophysical Data Center (NGDC) https://www.ngdc.noaa.gov/
  - Northwest Fisheries Science Center (NWFSC) https://www.fisheries.noaa.gov/about/northwest-fisheries-science-center
  - Southwest Fisheries Science Center (SWFSC) https://www.fisheries.noaa.gov/about/southwest-fisheries-science-center
- Oak Ridge National Laboratory (ORNL) https://www.ornl.gov/
- Ocean Reports (A joint tool of BOEM, NOAA NCCOS & NOAA OCM) https://coast.noaa.gov/digitalcoast/tools/ort.html
- Oregon Coastal Atlas https://www.coastalatlas.net/
- Oregon Department of Fish and Wildlife (ODFW) https://www.dfw.state.or.us/
- Oregon Department of Land Conservation and Development (OR DLCD) https://www.oregon.gov/lcd
- Oregon Department of Transportation (ODOT) https://www.oregon.gov/odot
- Oregon Fishermen's Cable Committee (OFCC) http://www.ofcc.com/
- Oregon Geospatial Enterprise Office (GEO) https://www.oregon.gov/GEO
- Pacific Fishery Management Council (PFMC) https://www.pcouncil.org/
- Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) https://www.pacificfishhabitat.org/
- Pacific States Marine Fisheries Commission (PSMFC) https://www.psmfc.org/
- Point Blue Conservation Science https://www.pointblue.org/
- Surfrider https://www.surfrider.org/
- The Nature Conservancy (TNC) https://www.nature.org
- United States Department of Homeland Security https://www.dhs.gov/
- United States Geological Survey (USGS) https://www.usgs.gov/
- Virginia Tech https://vt.edu/
- Washington State Department of Natural Resources (WA DNR) https://www.dnr.wa.gov/
- West Coast Ocean Data Portal (WCODP) https://portal.westcoastoceans.org/

Public Comment Summary

During the course of the public webinars to review the data both written and verbal comments were provided. In addition, written comments were submitted following the meetings (within a two-week comment period). In total, 189 comments were received, and they were provided by more than 24 different organizations. A summary of the feedback from the comments is provided in Section 4 of the Data Gathering and Engagement Report and will not be repeated in this document. The data review comments have been combined with the OROWindMap Data Catalog list below, to document the state of the information available to inform planning on the outer continental shelf. Comments received varied in their focus, but can broadly be summarized into the following thematic groupings:

- Comments focused on new spatial data layers to add/include – 24 Comments
- Data Set layer representation or metadata (annotation) – 46 Comments
- Data Gaps Identified – 7 comments

Annotated OROWindMap Data Catalog Layer List

Data Catalog Layer List

Annotated comments description and criteria for inclusion:

Text in teal and italics represent public comments submitted for a particular layer, set of layers, or general category of layers during the data gathering and engagement process. They include the date the comment was received and the entity it was submitted on behalf of. Comments that focus on the process of weighing data in the offshore wind planning process or historical context of data may be omitted here if they do not specifically address spatial data, which is the focus of this catalog. This does not mean these comments will not be given full consideration in the context of the entire offshore wind planning process. The text depicted here has been edited for length and clarity and may not represent the full written or verbal comment submitted. Additionally, similar comments that were submitted by the same entity in written and verbal form, or by multiple different staff, may have been combined here. Actions being undertaken (primarily by the WCODP team, OR DLCD, and / or BOEM) in response to these comments are indicated as 'completed' or 'in process.' If a comment was made that affirms the use of a particular dataset and does not make a point of its limitations, it was omitted from this particular document, in order to focus on the comments that require specific responses and / or actions moving forward.

Physical Data

Marine Bathymetry

"Bathymetry and Elevation" includes measures of the height of a location above or below a reference surface. Bathymetry is the elevation of the Earth's surface beneath a body of water, especially the ocean, typically determined by measurements of depth from the water surface at mean lower low water.

- Bathymetric Contours, NOAA, 2018
  - *ODFW, 18-Aug-21: Contours shallower than 100m are not labelled on map, which would be preferable, and legend and metadata are inconsistent.*
    - *Action (in process): Need to request changes to map layer and metadata by source provider.*
- 1300 Meter Bathymetry Contour, BOEM, 2020
  - *WA Dungeness Crab Association, 4-Aug-21: You made a reference to the slope, which could be an issue for anchoring OSW; is there an overlay that could describe where OSW could not be anchored due to slope? Can you show the footprints of where anchors would possibly be located?*
    - *Indications from industry suggest that slope is an important consideration. BOEM has not identified areas most suitable for leasing. A lessee's COP would define the specific location of anchor points.*
- West Coast Seafloor Slope, BOEM, 2021
  - *ODFW, 18-Aug-21: Layer has no metadata.*
    - *Action (in process): Metadata has been requested from BOEM staff and will be updated when received.*
- MultiBeam Echosounder Survey footprints (1998-2019), NOAA, 2020
  - *ODFW, 18-Aug-21: Layer is missing almost all the footprints for the multibeam surveys conducted by OSU, USGS and ODFW in state waters, Stonewall Bank, Heceta Bank, and possibly other sites. DLCD may already have the survey area boundaries in state waters but if not, ODFW can provide bounding boxes or you may contact the Active Tectonics and Seafloor Mapping Lab (ATSML) at OSU for missing data.*
    - *Action (in process): OR DLCD reviewing available data and options for additional layer for state waters.*
- Bathymetry Trackline Surveys, NOAA, 2020
  - *ODFW, 18-Aug-21: Layer is missing almost all the footprints for the multibeam surveys conducted by OSU, USGS and ODFW in state waters, Stonewall Bank, Heceta Bank, and possibly other sites. DLCD may already have the trackline footprints in state waters but if not, please contact the ATSML at OSU for the most accurate footprint layer.*
    - *Action (in process): OR DLCD reviewing available data and options for additional layer for state waters.*
- Global Earth DEM Hillshade with Natural Colors, NOAA, 2020

- *ODFW, 18-Aug-21: This layer is appropriate for visualization only at very broad (e.g., state) scales and should have a view scale threshold imposed, because at fine scales it obscures bathymetric relief details visible in the underlying background map, and actually introduces artifacts in some places when viewed close-up.*
    - *Action (in process): Adding comment with attribution to ODFW to information regarding the limitations of this layer. Investigating possibility of imposing view scale threshold.*

- Undersea Feature Place Names
    - *ODFW, 18-Aug-21: 1. Regardless of the zoom scale applied, the place names are too small and seem to get smaller when zooming in. Missing features include Garibaldi Reef, Arago Reef, Bandon High Spot, Orford Reef, Rogue Canyon.*
        - *Action (in process): Contacting source provider to inquire about changing data representation.*

Category-wide Comments (Marine Bathymetry):

- *ODFW, 18-Aug-21: Consider additional data layers used in the analysis of rocky habitat for the revision of Territorial Sea Plan Part 3 such as Hydrography - Rivers and Waterbodies.*
    - *Action (in process): looking into harvesting this additional layer.*

Ocean Currents

"Ocean Currents" refers to relatively constant directional flows of large water masses, which can be driven by a variety of dynamic forces.

- Current Magnitude and Direction, NOAA, 2019
    - *ODFW, 18-Aug-21: Monthly average currents would be more useful than an annual average. Metadata states these are available; please include in OROWindMap.*
        - *Action (in process): New services will be published after downloading and generating monthly average maps.*
- Mean Tidal Current, Georgia Tech, 2010
    - *ODFW, 4-Aug-21: Would like to see current maximums represented as well if available.*
        - *Action (in process): Looking for existing data layer to meet this request.*
- Upwelling (1988 - 2004), TNC, 2005
    - *ODFW, 4-Aug-21: Would like to see downwelling represented as well if available.*
        - *Action (in process): Looking for existing data layer to meet this request.*
    - *ODFW, 18-Aug-21: Have been improvements in upwelling indices since the creation of this layer. Unclear if spatial data is available for newer indices.*
        - *Action (in process): Looking into existence of layers for updated indices.*

Marine Substrates

"Substrate" represents the character and composition of the surface and near surface of the sea floor in subtidal or intertidal areas, as defined in the Substrate Component of CMECS or in similar classification systems.

- National Seafloor Sediment (usSEABED)
- GLORIA National Seafloor Geology, NOAA, 2018
- Ocean Sediment Thickness Contours, NOAA, 2013
- Surficial Sediment Classification, NOAA, 2018
    - *ODFW, 18-Aug-21: It is not clear if this layer includes sediment sample sites from the OSU-ATSML (Oregon State University - Active Tectonics and Seafloor Mapping Lab) collected during the state waters seafloor mapping project and other OSU-led mapping surveys in state and federal waters. Recommended to contact the ATSML at OSU.*
        - *Action (in process): Contacting ATSML and source provider for clarification.*
- Surficial Geological Habitat v.4.0, NOAA
    - *ODFW, 18-Aug-21: This data layer is the best available, but the variables presented in OROWindMap are not the best way to look at this data. We propose an alternative grouping of the substrates that present a better overview of what the habitat conditions are on the bottom.*
        - *Action (in process): BOEM and OR DLCD are working with ODFW to publish a different version of this layer.*

Category-wide Comments (Marine Substrates):

- *ODFW, 18-Aug-21: Consider addition of data layers used in the analysis of rocky habitat for the revision of Territorial Sea Plan Part 3, such as Intertidal Substrate, 2017 (CMECS 2019).*
    - *Action (in process): Looking into harvesting this additional layer.*

Waves

Waves are formed by energy moving through the water. Wave resource potential refers to the potential generation of electricity from wave power by using fixed or floating wave energy capture devices, for which estimates focus on mean wave power density.

- Wave Resource Potential, NREL, NCEP, EMRI, Virginia Tech, 2011
- Significant Wave Height and Direction, NOAA, 2018

Wind Resources

Wind Resource data "Wind" refers to the natural movement of air in horizontal currents. Distributions are maps of wind climatology and observations of wind speed, direction, and variability in the lower atmosphere as a function of location, time, or elevation.

- Wind Speed Monthly Averages, NREL, 2015

- *National Weather Service, 15-Oct-21: Concerned with representation of monthly wind data because the letter that represents each month is just the first letter, so the letter "J" has the exact same wind climatology for January, June, and July. March and May are identical, as are April and August.*
    - *Action (completed): Reviewed and edited data slider to make sure that layers represent the appropriate month and can be clearly identified.*

- Wind Speed Annual Average, NREL, 2015
- Wind Speed and Direction, NOAA, 2018

Category-wide comments (Wind Resources):

- *Pacific Ocean Energy Trust, 4-Aug-21: Does the data include the most recent updates from NREL?*
    - *Action (in process): BOEM staff is working on adding these updates soon.*
- *ODFW, 4-Aug-21: Layer information should specify what height this data is taken from.*
    - *Action (completed): Edited layer information to reflect that this data is collected at 100m.*

Human Uses

Human - Boundaries

- Energy Policy Act, NOAA, 2016
- Outer Continental Shelf Lands Act, NOAA, 2017
- Coastal Zone Management Act, NOAA, 2018
- Federal Consistency Geographic Location Descriptions, NOAA, 2018
- Submerged Lands Act Boundary, NOAA, 2016
- Unofficial State Lateral Boundaries, BOEM
- Federal and State Waters, NOAA, 2021
- City Limits, ODOT, 2020
- Oregon Counties, BLM
- Coastal Ports, Ecotrust, 2011
- Coastal Populated Places, NOAA, 2018
- Coastal Tribal Lands, NOAA, 2013
- Marine Place Names, NOAA, 2019
- Collision Regulation Demarcation Lines (COLREGS), NOAA, 2019
- Military Operating Area Boundaries, NOAA, 2019
- Regulated Navigation Areas, NOAA, 2018
- Special Use Airspace, FAA, 2021
- Oregon Coast National Wildlife Refuges, USFWS, 2019
- Oregon Offshore Islands and Rocks, USFWS, 2019
- National Marine Sanctuaries, NOAA, 2018
- Territorial Sea Plan Part V, DLCD, 2019
- PFMC Landmarks and Areas, PFMC, 2020

- Offshore Wind Planning Area, BOEM, 2020

Human - Economy - Fishing

Automatic Identification System (AIS) Vessel Traffic

Vessel traffic data, or Automatic Identification System (AIS) data, are collected by the U.S. Coast Guard through an onboard navigation safety device that transmits and monitors the location and characteristics of large vessels in U.S. and international waters in real time. The AIS data layers below are provided by the Marine Cadastre and Ocean Reporting Tool.

- AIS Vessel Transit Counts: Fishing (2016)
- AIS Vessel Transit Counts: Fishing (2017)
- Marine Traffic Fishing (High Traffic) by Aliquot AIS 2017
- Marine Traffic Fishing by Aliquot AIS 2017

Category-wide Comments (AIS Vessel Traffic):

- *ODFW, 20-Aug-21: Fishing vessels under 65 feet in length are generally not required to have AIS. Over 80% of Oregon's commercial fishing fleet consists of boats under 65 feet in length and virtually all recreational fishing boats are under 65 feet, thus it is unlikely that the AIS data represent these smaller vessels. Data to complement AIS vessel transit count layers should be identified to fill this data gap and the AIS layer metadata should emphasize what the data does and does not cover.*
    - *Action (in process): AIS data represent the best available option for spatial data of vessel transit counts at this time. BOEM and OR DLCD are working with ODFW to identify complementary data layers if available. Information for AIS layers will be edited to make the limitations of the data clear.*

Fishing Effort in the 2002-2017 U.S. Pacific Coast Groundfish Fishery, NOAA

This set of map services depicts the relative intensity and proportion of commercial fishing effort for several gear types used off the U.S. West Coast from 2002-2017 (Somers et al. 2020). Spatial summaries of fishing effort were developed from lines connecting gear set and retrieval points. It is recognized that fishing events, particularly for mobile gears, rarely follow straight-line paths; however, this was the most readily available information. These summaries are not intended to quantify total impact of fishing on either benthic or pelagic habitats. Please reference the related report (Somers et al 2020) at https://doi.org/10.25923/8y7r-0g25

- At-sea Midwater Trawl Catcher-Processor Intensity (2002-2005)
- At-sea Midwater Trawl Catcher-Processor Intensity (2006-2010)
- At-sea Midwater Trawl Catcher-Processor Intensity (2011-2015)

- At-sea Midwater Trawl Catcher-Processor Intensity (2016-2017)
- At-sea Midwater Trawl Mothership Intensity (2002-2005)
- At-sea Midwater Trawl Mothership Intensity (2006-2010)
- At-sea Midwater Trawl Mothership Intensity (2011-2015)
- At-sea Midwater Trawl Mothership Intensity (2016-2017)
- Catch Shares Bottom Trawl Intensity (2011-2015)
    - *ODFW, 20-Aug-21: Layer appears accurate for the timeframes and conveys some of the historic nearshore trawling extent, but should note that the layer does not show fishing in the RCA areas, which opened to trawling in 2020.*
        - *Action (in process): Adding comment with attribution to layer information regarding newly opened trawling areas.*
- Catch Shares Bottom Trawl Intensity (2016-2017)
- Catch Shares Hook-and-Line Intensity (2011 - 2017)
    - *ODFW, 20-Aug-21: Fishing areas are likely to be variable from year to year because there are so few vessels that fall into this category. Data should be updated now and in the future to reflect changes in areas used by this fleet.*
        - *Action (in process): Working with ODFW to determine how this data might be updated more frequently to reflect these changes. Area for future work.*
- Catch Shares Pot Intensity (2011-2015)
- Catch Shares Pot Intensity (2016-2017)
- Limited Entry Bottom Trawl Intensity (2002-2006)
    - *ODFW, 20-Aug-21: This appears accurate for the two timeframes shown but it should be noted that they show historic nearshore trawling which still exists but is less prevalent in the current fishery.*
        - *Action (in process): Adding comment to information box with attribution to ODFW.*
- Limited Entry Bottom Trawl Intensity (2006-2010)
    - *ODFW, 20-Aug-21: This appears accurate for the two timeframes shown but it should be noted that they show historic nearshore trawling which still exists but is less prevalent in the current fishery.*
        - *Action (in process): Adding comment to information box with attribution to ODFW.*
- Non-Catch Shares Hook-and-Line Intensity (2002-2010)
- Non-Catch Shares Hook-and-Line Intensity (2011-2015)
- Non-Catch Shares Hook-and-Line Intensity (2016-2017)
- Non-Catch Shares Pot Intensity (2002-2010)
- Non-Catch Shares Pot Intensity (2011-2015)
- Non-Catch Shares Pot Intensity (2016-2017)
    - *ODFW, 20-Aug-21: For Non-Catch Shares Hook-and-Line Intensity and Pot Intensity (all dates), the fishing areas represented appear incomplete and the metadata acknowledges that it does not have complete coverage of the fishery. Specifically, known locations of this fishery are missing, as well as the nearshore hook and line fishery and hagfish fishery. There is existing logbook data that may provide a clearer picture.*

- *Action (in process): Working with ODFW to understand how to better represent these fisheries, which would involve creation of new layers. Area for future work.*
- *Update 15-Dec-21: ODFW provided data layers based on logbook data that represent pot and hook and line fishing effort, including nearshore hook and line and hagfish fisheries. These can be found on OROWindMap.*
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- Shoreside Midwater Trawl for Hake Intensity (2011-2015)
  - *Whiting Shorebased, 11-Aug-21: The data from midwater trawl for whiting for shore side is missing some data. If you go back to that data to 2002, the fishing data will look a lot different due to different regulations.*
    - *Action (in process): Checking FRAM database for additional data, but some earlier data was not high enough caliber to analyze.*
    -
- Shoreside Midwater Trawl for Hake Intensity (2016-2017)
  - *ODFW, 20-Aug-21: The source data description appears to have an error: either this statement has a typo or they incorrectly used at-sea processed trawl data to depict the shoreside fishery: "This data layer depicts the relative intensity of fishing effort for shoreside processed commercial midwater rockfish off the U.S. West Coast from 1 Jan 2011 to 31 Dec 2015. Records of at-sea processed midwater trawl tows were compiled from observer records from the West Coast Groundfish Observer Program (WCGOP) and the electronic monitoring program coordinated by the Pacific States Marine Fisheries Commission (PSMFC)."*
  - *Action (in process): looking into whether source data has a typo or incorrect data was used to create layer; will update accordingly.*
- Shoreside Midwater Trawl for Rockfish Intensity (2011-2015)
  - *ODFW, 20-Aug-21: The source data description appears to have an error: either this statement has a typo or they incorrectly used at-sea processed trawl data to depict the shoreside fishery: "This data layer depicts the relative intensity of fishing effort for shoreside processed commercial midwater rockfish off the U.S. West Coast from 1 Jan 2011 to 31 Dec 2015. Records of at-sea processed midwater trawl tows were compiled from observer records from the West Coast Groundfish Observer Program (WCGOP) and the electronic monitoring program coordinated by the Pacific States Marine Fisheries Commission (PSMFC)."*
    - *Action (in process): looking into whether source data has a typo or incorrect data was used to create layer; will update accordingly.*
- Shoreside Midwater Trawl for Rockfish Intensity (2016-2017)

Category-wide Comments (Fishing Effort in the 2002-2017 U.S. Pacific Coast Groundfish Fishery, NOAA):

- *Goldfish Seafoods, 11-Aug-21: Missing important data for trawl fisheries.*
  - *Action (in process): Will be working with ODFW and fishing representatives to address this gap with best available information.*
  - *Update 15-Dec-21: ODFW has provided additional midwater and bottom trawl fisheries layers based on logbook data. These can be found on OROWindMap.*

- *Goldfish Seafoods, 11-Aug-21: In the non-trawl, have you looked at the datasets for the prawn fishermen. I don't see any data or legend that would steer me to that user group with prawn fishermen pots.*
    - *Action (in process): Pink shrimp data are cut off due to the rule of three. Will be running it again without slowing down to fishing speeds and see what we find then; may be able to include.*
    - *Update 15-Dec-21: ODFW has provided pink shrimp and spot prawn fishing effort layers based on logbook data. These can be found on OROWindMap.*
- *ODFW, 20-Aug-21: Layer titles that use phrases such as "catch share" and "limited entry" are only meaningful to a fishery manager or participant. More descriptive names should be developed, or the information box should clearly describe these fisheries.*
    - *Action (in process): In conversation with ODFW for expert guidance on potential renaming of these layers. May also link to glossary of fishing terms on OROWindMap.*
- *ODFW, 20-Aug-21: For 'Catch Shares Pot Intensity' and 'Non-Catch Shares Pot Intensity' layers there appears to be a large decrease in size of the fishing areas between the 2011-2015 and the 2016-2017 layers, which may not be accurate. There is also a significant hot spot just north of Cape Blanco/ Bandon High Spot area that does not show up on these layers.*
    - *Action (in process): Working with ODFW to understand how to better represent these fisheries, which would involve creation of new layers. Area for future work.*
    - *Update 15-Dec-21: ODFW has provided additional layers based on logbook data that better illustrate these fisheries. These can be found on OROWindMap.*
    -
- *ODFW, 20-Aug-21: Recommend data mapped by ODFW in 2020 for the Oregon Trawl Commission be added to OROWindMap. These data depict Oregon mid-water trawl fishing effort in tow-hours derived from logbook data analyzed using kernel density estimation to create a heatmap of activity spanning 2011-2019. Logbook data used in this analysis was only from fishing trips that landed catch into Oregon, not into other states or onto motherships.*
    - *Action (in process): Working with ODFW to access and include this layer*
    - *Action (completed): As of 15-Dec-2021, these data have been provided by ODFW and can be found on OROWindMap.*

Oregon Marine Fisheries Uses and Values Data Products to Support the Territorial Sea Plan, Ecotrust, 2010-2012

- Astoria All Fishing Sectors Fisheries Uses and Values Grid, Ecotrust, 2010
- Astoria Commercial Dungeness Crab Fishery Uses and Values Grid, Ecotrust, 2012
- Astoria Commercial Passenger Fishing Vessel Fisheries Uses and Values Grid, Ecotrust, 2010
- Garibaldi All Fishing Sectors Fisheries Uses and Values Grid, Ecotrust, 2010

- Tillamook, Garibaldi Commercial Dungeness Crab Fishery Uses and Values Grid, Ecotrust, 2012
- Depoe Bay All Fishing Sectors Fisheries Uses & Values Grid, Ecotrust, 2010
    - *ODFW, 20-Aug-21: It is not possible to review the accuracy of layers that combine more than one fishery per layer without the ability to separate out the individual fisheries.*
        - *Action (in process): BOEM and OR DLCD are following up with ODFW to discuss the limitations of this layer and its use in planning processes.*
- Depoe Bay Commercial Dungeness Crab Fishery Uses and Values Grid, Ecotrust, 2012
- Salmon River Recreational Dungeness Crab Fishery Use and Value Grid, Ecotrust, 2010
- Salmon River Recreational Fisheries Uses and Values Grid, Ecotrust, 2010
- Salmon River Recreational Pacific Halibut Fishery Use and Value Grid, Ecotrust, 2010
- Salmon River Recreational Rockfish Fishery Use and Value Grid, Ecotrust, 2010
- Salmon River Recreational Salmon Fishery Use and Value Grid, Ecotrust, 2010
- Newport All Sector Fisheries Uses Grid, Ecotrust, 2010
    - *ODFW, 20-Aug-21: The trawl, deepwater sablefish fishery (pot and longline), and tuna fisheries appear underrepresented on this layer; it is also not possible to review the accuracy of layers that combine more than one fishery per layer without the ability to separate out the individual fisheries.*
        - *Action (in process): BOEM and OR DLCD are following up with ODFW to discuss the limitations of this layer and its use in planning processes.*
- Newport Charter and Recreational Fisheries Uses Grid, Ecotrust, 2010
- Newport Commercial Dungeness Crab Fishery Uses and Values Grid, Ecotrust, 2012
- Florence All Fishing Sectors Fisheries Uses and Values Grid, Ecotrust, 2010
    - *ODFW, 20-Aug-21: In multiple ways, this layer appears to be inaccurate or incomplete in its representation. The total fishing area appears quite large for the small fleet from Florence, but it does seem to highlight crab and salmon troll fisheries. The fishing location off the Columbia seems too distant for the fleet. Tuna doesn't appear to be represented.*
        - *Action (in process): BOEM and OR DLCD are following up with ODFW to discuss the limitations of this layer and its use in planning processes.*
- Florence Commercial Dungeness Crab Fishery Uses and Values Grid, Ecotrust, 2012
- SOORC Commercial Dungeness Crab Fishery Uses and Values Grid, Ecotrust, 2012
- SOORC Commercial Fishing Fisheries Uses and Values Grid, Ecotrust, 2010
    - *ODFW, 20-Aug-21: It is not possible to review the accuracy of layers that combine more than one fishery per layer without the ability to separate out the individual fisheries.*
        - *Action (in process): BOEM and OR DLCD are following up with ODFW to discuss the limitations of this layer and its use in planning processes.*
- Port Orford Commercial Dungeness Crab Fishery Uses and Values Grid, Ecotrust, 2012
- Port Orford Commercial Fishing Fisheries Uses and Values Grid, Ecotrust, 2010
    - *ODFW, 20-Aug-21: It is not possible to review the accuracy of layers that combine more than one fishery per layer without the ability to separate out the individual fisheries.*
        - *Action (in process): BOEM and OR DLCD are following up with ODFW to discuss the limitations of this layer and its use in planning processes.*
- Brookings, Gold Beach All Fishing Sectors Fisheries Uses and Values Grid, Ecotrust, 2010

- *ODFW, 20-Aug-21: Offshore tuna appears underrepresented in this layer; it is also not possible to review the accuracy of layers that combine more than one fishery per layer without the ability to separate out the individual fisheries.*
    - *Action (in process): BOEM and OR DLCD are following up with ODFW to discuss the limitations of this layer and its use in planning processes.*

- Brookings, Gold Beach Commercial Dungeness Crab Fisheries Uses and Values Grid, Ecotrust, 2010
- Statewide Commercial Dungeness Crab Greatest Importance and Percent Volume Polygons, Ecotrust, 2012
- Statewide Commercial Dungeness Crab Stated Importance Percent Volume Contours, Ecotrust, 2012
- Statewide All Sectors Commercial Fisheries Uses and Values, Ecotrust, 2010
    - *ODFW, 20-Aug-21: The title of this layer implies that it shows all commercial fisheries combined but data are skewed toward fisheries that occur in the nearshore and shelf and underrepresent some major Oregon fisheries. For example, there is very little overlap between this layer and the major bottom and midwater trawl fisheries shown in other OROWindMap layers. We recommend that this layer not be used in making offshore wind energy siting decisions.*
        - *Action (in process): BOEM and OR DLCD are following up with ODFW to discuss the limitations of this layer and its use in planning processes.*

Category-wide Comments (Oregon Marine Fisheries Uses and Values Data Products to Support the Territorial Sea Plan, Ecotrust, 2010-2012):

- *ODFW, 20-Aug-21: There are some overarching issues that we should carefully consider to determine the appropriate use of these data in OROWindMap: (1) The data are now over 10 years old and may not provide an accurate representation of current fishery spatial distribution. (2) These data were generated for territorial sea planning and may be skewed more toward expression of nearshore areas of importance. Most of the layers seem to underrepresent fisheries that occur on the outer shelf and slope (the prime area for potential future wind energy development). Similarly, layers that depict inner shelf fisheries, such as Dungeness crab, seem to underrepresent the offshore component of those fisheries. (3) It is not possible to review the accuracy of layers that combine more than one fishery per layer without the ability to separate out the individual fisheries (see individual comments, 'All Sectors' layers). It is difficult to determine how each fishery influences the combined depiction of fishing "hot spots". The ports have different combinations of fisheries combined into the layers, making them difficult to compare our use as a group. Some fisheries were not covered by Ecotrust during the interviews as described by Ecotrust at the August 11 workshop. The data have value in what they represent but need better definition to convey what they do not represent. For these reasons, we recommend follow up discussion to carefully consider which Ecotrust Layers are most appropriate for use in OROWindMap.*
    - *Action (in process): BOEM and OR DLCD are following up with ODFW and NMFS to discuss the limitations of these layers and their use in planning processes, as well as*

appropriate ways to better define what they represent / do not represent in their respective information boxes.

- *ODFW, 20-Aug-21: All Ecotrust Commercial Dungeness Crab layers underrepresent the overall footprint and use of deeper waters in recent seasons. The statewide layer appears to significantly reduce the footprint of the fishery in all areas when compared to the separated port area Ecotrust maps, except for the Newport and Garibaldi layers, and it is unclear if all of these layers by port can be used in combination or if doing so overestimates use in some areas. ODFW has commercial crab logbook data from the 2007-08 through 2018-19 commercial crab seasons, which is considerably more recent than the Ecotrust fishery maps. This logbook data could be used to better estimate the spatial distribution of the fishery.*
    - *Action (in process): The Ecotrust Commercial Dungeness Crab layers represent the best available spatial data at this time; their information boxes will be updated to include the concerns identified and attributed to ODFW. Analysis of ODFW logbook data for the creation of an updated Dungeness crab spatial data layer is an area to consider for future work.*
    - *Update 15-Dec-21: ODFW has provided Dungeness crab data layers. These can be found on OROWindMap. Further discussion is required to determine whether the Ecotrust layer will be removed.*

Miscellaneous Fishing Related Data

- West Coast Fishing Ethnography

- *ODFW, 20-Aug-21: Layer appears to show the maximum spatial extent of various fishing sectors and is not useful in its current format with all the fishing sectors combined onto one layer. The data would be useful to the offshore wind energy process if each fishing sector was displayed on a separate layer.*
    - *Action (in process) Working with ODFW to determine best way forward. Contacting source provider to determine availability of layers for individual fishing sectors.*

Category-wide Comments (Fishing):

- *Fisherman, 11-Aug-21: Dungeness crab data is missing.*
    - *Action (in process): Working with ODFW and fisheries representatives to represent this fishery with the best available data at this time.*
    - *Update 15-Dec-21: ODFW has provided Dungeness crab layers based on logbook data. These can be found on OROWindMap.*
- *Oregon Trawl Commission, 11-Aug-21: The OROWindMap data, specifically for the bottom trawl and midwater trawl fisheries does not adequately represent these fisheries in the present time, and neither is it indicative of where the industry is heading. Additionally, Vessel Monitoring System (VMS) data is not suitable for evaluation of the Oregon pink shrimp fishery or the fishing activity associated with it. Our recommendations include accessing historic logbook data to get a more accurate representation of trawl fisheries and the associated fishing activity. For the Groundfish fishery (midwater trawl and bottom trawl), the logbook data must include years before the fishery started to decline. In addition, a consideration must be given to the 'cross-*

border' nature of the trawl fishing fleet. In the federally managed Groundfish fishery, permitted Groundfish trawlers can fish anywhere on the West Coast the law allows them to. In the state-managed Pink Shrimp fishery, it is more common than not that shrimp fishermen own permits in at least 2 of the 3 West Coast states.

  - *Action (in process): Working with ODFW and fisheries representatives to assess how to best represent these fisheries, including the use of logbook data.*
  - *Update 15-Dec-21: ODFW provided data layers for these fisheries based on logbook data. They can be found on OROWindMap.*

- *Oregon Dungeness Crab Commission, 11-Aug-21: OROWindMap should add projected fleet congestion and how long that congestion will last.*
  - *Action (in process): Do not believe this data / analysis currently exists. May be area for future research.*
- *West Coast Pelagic Conservation Group, 11-Aug-21: There has been an increase and fluctuation in crab data in recent years. Can you show this? This could impact economics. There should be cross-year comparisons. Look at X vessel price from 2017 to now, and the price would increase. Markets have changed, and crab demand has increased. What would it look like if we took a big year of crab deliveries and inserted the pricings that they are getting now to get an economic evaluation that would be of value today and increasing in the future?*
  - *Action (in process): This analysis / spatial data does not currently exist. May be an area for future research.*
- *WA Dungeness Crab Association, 11-Aug-21: Concern that VMS data will not accurately reflect Dungeness crab fishery. Recommend logbook data be included as well.*
  - *Action (in process): Working with ODFW to explore options for creating layers from logbook data.*
  - *Update 15-Dec-21: ODFW provided data layers for these fisheries based on logbook data. They can be found on OROWindMap.*

- *ODFW, 20-Aug-21: Include data from PFMC Groundfish Essential Fish Habitat (EFH) Review (2013), in which NMFS summarizes commercial fishing effort (2002-2010) coastwide for six focal species to represent ecologically distinct groups within the groundfish fishery: petrale sole, darkblotched rockfish, yelloweye rockfish, sablefish, longspine thornyhead, and greenstriped rockfish. The data package has been provided to OR DLCD and offers several summary layers, including cumulative fishing effort, habitat weighted cumulative fishing effort, and spatial-temporal change for each of the three major gear sectors (bottom trawl, midwater trawl and fixed gear).*
  - *Action (in process): OR DLCD has confirmed priority layers and is seeking confirmation of appropriate metadata for the layers provided before publishing and including in tool.*

- *ODFW, 20-Aug-21: There are additional spatial fishing regulations for fisheries other than groundfish bottom trawl that should be represented in OROWindMap. BOEM should consult with fisheries representatives on adding additional representations of spatial regulations.*
  - *Action (in process): BOEM and OR DLCD are working with ODFW and NOAA to identify appropriate and accessible layers for inclusion. Additionally, BOEM is working with California Polytechnic State University to produce updated fishery regulation maps.*

- *ODFW, 20-Aug-21: Consider adding additional data layers from the NMFS Northwest Fishery Science Center (NWFSC) Fishery Resource Analysis and Monitoring (FRAM) data warehouse.*
    - *NMFS, 23-Nov-21: We would be happy to review and discuss this data with BOEM*
    - *Action (in process): Data available from the FRAM warehouse were assessed in the initial curation of OROWindMap. BOEM and OR DLCD are working with ODFW and NMFS to identify specific layers that should still be included.*
- *ODFW, 20-Aug-21: The shrimp trawl fishery is not currently represented on OROWindMap. We recommend that data mapped by ODFW in 2020 for the Oregon Trawl Commission be added to OROWindMap.*
    - *Action (in process): BOEM and OR DLCD are working with ODFW to acquire this data and assess its metadata and publication status in order to include it in OROWindMap.*
    - *Update 15-Dec-2021: ODFW provided shrimp trawl fishery data. The layer can be found on OROWindMap.*
- *ODFW, 20-Aug-21: Several Oregon fisheries are not currently represented in OROWindMap. These include nearshore groundfish; tuna; various coastal pelagic species; the directed pacific halibut fishery; pink shrimp; spot prawn; hagfish; recreational crab; salmon troll; and ocean recreational bottomfish, halibut, tuna, crab, and salmon (some of these species may have been mentioned more specifically in other comments from ODFW). ODFW has identified a variety of data sources from which spatial data might be derived in order to include these species in OROWindMap.*

  NMFS, 23-Nov-21: We appreciate that BOEM has begun to work with NMFS to ensure the best available scientific information for fishing effort is available for consideration. We recommend you continue this effort for this topic and others where NMFS holds expertise, as well as continue outreach to fishers, fishing communities, and other stakeholders.
    - *Action (in process): BOEM and OR DLCD are working with ODFW, NOAA and Pacific States Marine Fisheries Commission (PSMFC) to identify solutions for addressing these data gaps where possible. This is a significant area of future work and will require analysis of logbook and other data and creation of new data layers.*
- *ODFW, 20-Aug-21: Most recent data in the layers derived from logbooks or observer data is from 2017. More recent data exists for these layers and efforts should be made to incorporate the most recent data.*
    - *Action (in process): BOEM and OR DLCD are working with ODFW to identify the specific layers that are out of date and update them where more recent data layers are available; however, the creation of spatial data layers from logbook and observer data often lags behind the release of the written data.*
- *ODFW, 20-Aug-21: In 2020 there was a significant change in the application of the Rockfish Conservation Area (RCA) in Oregon, resulting in opening up areas that were closed to certain fisheries during the time periods currently depicted in many of the layers in OROWindMap. This has and will continue to result in significant changes to fishing spatial patterns, which could overlap with areas of interest for offshore wind energy developers. This change in fishing patterns needs to be represented by updating layers with data from 2020 and later, and by potentially developing a layer that shows the recently-reopened RCA areas as potential future fishing areas.*

NMFS, 23-Nov-21: BOEM, NMFS, and other agencies collaborated on the 2019 deep sea corals, sponges, and habitat cruise, which evaluated deep sea habitat before and after the revisions to the rockfish conservation areas. From that cruise, we now have both habitat information about formerly closed areas that are now open and about formerly open areas that are now closed.

- *Action (in process): BOEM and OR DLCD are working with ODFW and NMFS to consider the best way to account for these changes. This is an area for future work. ODFW also recommends a near-term solution of adding a spatial representation of the areas opened to fishing in 2020 that may appear unfished or lightly fished in the pre-2020 data (18-Nov-21). This data may exist in OROWindMap as "EFH Trawl Rockfish Cons. Area (removed) (PFMC 2020)", which the OROWindMap team will review with ODFW to determine whether it is sufficient for this purpose.*

- *ODFW, 20-Aug-21: ODFW is aware that BOEM is currently working on fisheries layers based on VMS (Vessel Monitoring Systems) and is assisting with feedback on this process. It should be noted that many fisheries do not have full representation with VMS such as Dungeness crab, salmon troll, tuna, nearshore groundfish, shrimp, urchin, hagfish, CPS species and others. We will continue to work with BOEM and others as VMS map layers are developed and will provide further comments as these layers are incorporated into OROWindMap.*
  - *NMFS, 23-Nov-21: ODFW is correct in that not all fisheries use VMS. And even in fisheries that do use VMS and for which VMS data is available, such coverage is not necessarily representative of the entire fleet (and in cases excepting the groundfish trawl and whiting fleets, is definitely not representative). Therefore, we recommend that BOEM work with NMFS and the states to determine how representative this VMS data is and what gaps remain.*
  - *Action (in process): BOEM will continue to engage with ODFW and NMFS in the creation of these VMS layers and acknowledge their limitations in the planning process.*
- *ODFW, 20-Aug-21: 1. The fishery layers vary in accuracy. For example, the NOAA bottom trawl layers appear to provide an accurate depiction of fishing locations, while some of the Ecotrust layers appear to inaccurately depict fishing areas. In addition, some of the layers, such as 'Non-Catch Shares Hook and Line,' clearly state cautions for their use in their metadata: "Because all fishing operations are not observed, neither the maps nor the data can be used to characterize the fishery completely. We urge caution when utilizing these data due to the complexity of groundfish management and fleet harvest dynamics." While any compilation of spatial data layers from disparate sources will likely vary in their quality, we need to carefully consider how and whether to use the layers for offshore wind planning and siting. Some layers may not be appropriate for use in OROWindMap; specific recommendations provided where possible.*
  - *Action (in process): BOEM and OR DLCD are following up with ODFW to discuss the limitations of specific layers and their use in planning processes.*

- *CTCLUSI, 29-Nov-21 date of comment: Studies should include impacts to Herring fish, which are a first food and culturally significant to CTCLUSI and other coastal Tribes.*
  - *Action (in process): DLCD and BOEM will continue to work with ODFW and other agencies to search for information available for Herring.*

Marine Transportation

Among the oldest of human uses of the ocean, the movement of people, goods, and armies by ship remains a major component of the Nation's ocean use footprint. All involve the transit far offshore by large ships over long distances, with periodic passages into shallower waters for loading, offloading, repairs, refueling, and so on.

- AIS Vessel Transit Counts: All Vessels (2015), NOAA, 2018
- AIS Vessel Transit Counts: All Vessels (2016), NOAA, 2018
- AIS Vessel Transit Counts: All Vessels (2017), NOAA, 2019
- AIS Vessel Transit Counts: Cargo (2016), NOAA, 2019
- AIS Vessel Transit Counts: Cargo (2017), NOAA, 2019
- AIS Vessel Transit Counts: Fishing (2016), NOAA, 2019
- AIS Vessel Transit Counts: Fishing (2017), NOAA, 2019
- AIS Vessel Transit Counts: Passenger (2016), NOAA, 2019
- AIS Vessel Transit Counts: Passenger (2017), NOAA, 2019
- AIS Vessel Transit Counts: Pleasure Craft and Sailing (2016), NOAA, 2019
    - *ODFW, 4-Aug-21: Most pleasure craft do not have AIS, representing a limitation for this source.*
        - *Action (in process): Adding note on limitation to layer information, attributed to ODFW.*
- AIS Vessel Transit Counts: Pleasure Craft and Sailing (2017), NOAA, 2019
    - *ODFW, 4-Aug-21: Most pleasure craft do not have AIS, representing a limitation for this source.*
        - *Action (in process): Adding note on limitation to layer information, attributed to ODFW.*
- AIS Vessel Transit Counts: Tanker (2016), NOAA, 2019
- AIS Vessel Transit Counts: Tanker (2017), NOAA, 2019
- AIS Vessel Transit Counts: Tug and Tow (2016), NOAA, 2019
- AIS Vessel Transit Counts: Tug and Tow (2017), NOAA, 2019
- Oregon Tugboat Towlanes, WSG, 2007

Category-wide Comments (Marine Transportation):

- *Whale and Dolphin Conservation, 4-Aug-21: Regarding transportation, are you able to include models of predicted increase? The potential projects might increase vessel traffic.*
    - *Action (in process): We do not currently have this data but it may be included in future research by the USCG.*
- *Surfrider Foundation, 4-Aug-21: Surfrider did near and offshore work in 2011 with marine board registered surveys for pleasure craft - was that data looked at or do you have access to it? It may be of use.*
    - *Action (in process): Reviewing these layers and their applicability to OROWindMap.*

Marine Infrastructure

Infrastructure is a top-level category of data that represent the locations of permanent or temporary installations intended to support basic human activities or needs, including communication, transportation, shoreline protection, housing, recreation, and utilities. Data required for marine planning are limited to infrastructure that has effects on environmental processes or human activities that impact the coast, Great Lakes, or ocean.

- Aids To Navigation, NOAA, 2019
- Coastal Maintained Navigational Channels, NOAA, 2018
- Coastal Energy Facilities, NOAA, 2017
- Electric Power Substations, HIFLD, 2017
- Electric Power Substations, ORNL, 2020
- Electric Power Transmission Lines, ORNL, 2019
- Facilities with NPDES Permits, EPA, 2019
- Coastal Ports, Ecotrust 2011
- NASCA Submarine Cables
  - *ODFW, 18-Aug-21: This layer is missing the two most recently installed cables and includes two cable segments that have been decommissioned and removed. It is useful for identifying cable names.*
    - *Action (in process): Contacting source provider regarding updating layer.*
- NOAA Charted Submarine Cables
  - *ODFW, 18-Aug-21: This layer is missing the two most recently installed cables and includes two cable segments that have been decommissioned and removed.*
    - *Action (in process): Contacting source provider regarding updating layer.*
- Pipeline Areas, NOAA, 2018
- Research SubSea Cables, OFCC, 2020
- Telecommunication SubSea Cables, OFCC, 2020

  - *ODFW, 18-Aug-21: This layer correctly reflects that the ATT cable segments E1 and N9, landing in Bandon, Oregon, were decommissioned and removed in 2020. There is an additional new fiber optic cable currently being installed by Edge Cable Holdings / Facebook (the "Jupiter" cable), landing just north of Pacific City, Oregon. Route information can be obtained from Oregon Dept of State Lands and should be added to OROWindMap. Along with "Research subsea cables, OFCC 2020", these two layers appear to represent all known subsea cables. The other cable layers, while incomplete and inaccurate, can be referenced to identify cable names.*

  - *Action (in process): The OROWindMap team is contacting Oregon Dept of State Lands to acquire route information and a spatial data layer to represent the Jupiter cable.*

Research Use

The pursuit of knowledge in the ocean is facilitated through use of the ocean to monitor, observe, and analyze information that is collected using scientific principles and design. Data in this category provide areas of the ocean that have a pattern of use, including long-term research transects, stations, and areas that have repeated observations.

- Nearshore Research Inventory Areas, OCMP, 2012
  - *ODFW, 4-Aug-21: These layers include marine reserve comparison areas from 2012 that have since changed and are represented accurately in 'Marine Reserve Comparison Study Areas, ODFW, 2020.' This layer should not be eliminated, but the information should be updated to acknowledge this change or the comparison area polygons should be updated.*
    - *Action (completed): Added information to reference the Marine Reserve Comparison Study Areas layer in the Tool for the updated comparison. The comparison area polygons may be updated as part of future work.*
- Nearshore Research Inventory Lines, OCMP, 2012
- Nearshore Research Inventory Points, OCMP, 2012
- Nearshore Research Inventory Stations, OCMP, 2012
- Nearshore Research Inventory Transects, OCMP, 2012
  - *ODFW, 4-Aug-21: The Southwest Fisheries Science Center conducts CPS (Coastal Pelagic Species) research along the entire West Coast. I see you have an inventory of transects but these transects change every year; how do you deal with this?*
    - *Action (completed): The transects in this layer represent recurring transects and therefore repeated use of the same ocean space. If the SWFSC transects change every year, then they are not captured in this layer and are of less interest to this process than long-term recurring transects.*
- Marine Reserve Comparison Study Areas, ODFW, 2020
- Research SubSea Cables, OFCC, 2020

Category-wide Comments (Research):

- *ODFW, 18-Aug-21: The five Nearshore Research Inventory layers provide a good representation of fixed or repeated research sites in 2012, but are becoming outdated, and consideration should be given to updating them.*
  - *Action (in process): These layers represent the best available spatial data at this time. Updating these inventories could be an area for future work.*

Human - Conservation

Data that delineate areas where some or all of the natural and cultural resources are given a heightened level of protection through regulation or other effective means in order to achieve conservation or societal goals.

- Coastal Critical Habitat Designations, NOAA, 2018

- *ODFW, 18-Aug-21: This layer combines critical habitat for many species. It would be more informative to display the critical habitat designations for each listed species.*
- *NMFS comment: NMFS invites BOEM and ODFW to review and make use of our Protected Resources App, which provides the data for the ranges and critical habitats of ESA-listed species managed by NMFS (https://www.fisheries.noaa.gov/resource/map/protected-resources-app).*

- *Action (in process): BOEM and OR DLCD are working with ODFW to identify the specific species layers from NOAA's Critical Habitat Service to be added*

- EFH 700 fathom Bottom Trawl Closure, PFMC, 2020
- EFH Conservation Areas, PFMC, 2020
- EFH Deep-sea Ecosystem Conservation Area, PFMC, 2020
- Groundfish Habitat Areas of Particular Concern, PFMC, 2006
    - *- ODFW, 18-Aug-21: This layer appears to be a compilation of all groundfish habitat areas of particular concern (HAPCs), except that the Daisy Bank HAPC "areas of interest" is missing from this layer. Salmon HAPC for marine and estuarine habitats should also be included, either as a separate layer or combined with Groundfish HAPC and differentiated in the legend. Also, the HAPC layer(s) should be named for the species group (groundfish and/or salmon) it represents, such as: "Groundfish HAPC" and "Salmon HAPC". As written, the metadata does not describe the HAPC content of this layer but instead describes EFH generally. HAPC is a subset of EFH, defined by specific criteria and constitutes specific habitat features that are high priority areas for conservation - this should be noted in the metadata. Additionally, the EFH text in the metadata has inaccuracies and is misleading. For example, it fails to mention that substrate and water (not just vegetation) are also EFH. Additionally, the term "Areas Protected from Fishing" is not applicable to west coast EFH designations. It seems this text comes from the EFH Mapper site, which has a nationwide context and does not provide west coast designations. Consider rewriting the metadata to discuss west coast HAPC. The HAPC criteria are as follows: important ecological function, sensitive to human-induced degradation, stressed, or rare. Include that HAPC designations for groundfish FMP species include seagrass, canopy kelp, estuaries, rocky reefs and "areas of interest" (for Oregon these are: Daisy Bank, Thompson Seamount, President Jackson Seamount). The legend in the map should show these different HAPC designations. HAPC for salmon are more complicated and include channels and floodplains, mapped spawning habitats, submerged aquatic vegetation (including canopy kelps and eelgrass) and thermal refugia (identified as specific tributaries, streams, etc.). The metadata should also explain that HAPC are designated for federally managed species only (not state-managed), and currently designated for particular species groups (groundfish and salmon species). Please note, the PFMC is currently conducting the required periodic EFH review for CPS. If HAPC should be designated for CPS species, the layer should be updated. More information on West Coast HAPC is at https://www.fisheries.noaa.gov/westcoast/habitat-conservation/habitat-areas-particular-concern-west-coast.*
        - *NMFS comment: NMFS invites BOEM and ODFW to review and make use of our Protected Resources App, which provides the data for the ranges and critical habitats of ESA-listed species managed by NMFS (https://www.fisheries.noaa.gov/resource/map/protected-resources-app).*
        - *Action (in process): OR DLCD will review the availability of individual HAPC's and work with PFMC to make changes to metadata and legend, if individual data sets are not available.*

- Trawl Rockfish Conservation Area
  - *ODFW, 18-Aug-21: The information and metadata for this layer are the same as 'EFH Rockfish Conservation Area lines (2019-2020), PFMC, 2020' and do not describe this layer. This layer is the "Core RCA" for the commercial groundfish bottom trawl fishery.*
    - *Action (in process): Seeking accurate metadata for this layer.*
- Trawl Rockfish Cons. Area (removed), PFMC, 2020
  - *ODFW, 18-Aug-21: Retain this layer but rename it "Groundfish EFH Conservation Areas (Historic) PFMC 2006." This would be consistent with the naming convention used for the current EFHCA layers included in OROWindMap, although a more logical organization would be to group layers representing fishery-specific regulations with fishing data or a new sub-heading.*
    - *Action (in process): Need to involve source provider for potential name change. Considering alternative organization strategies for EFHCA-related layers.*
- EFH Rockfish Conservation Area lines (2019-2020), PFMC, 2020
  - *ODFW, 18-Aug-21: Layer name, information and metadata do not accurately describe this data. A more accurate layer name would be "Depth-based fishery management lines" because these are not only used for rockfish management. "EFH" should be removed from this layer name.*
    - *Action (in process): Need to involve source provider for potential name change and metadata improvements.*
- Rocky Shore Managed Areas, ODFW, 2019
  - *ODFW, 18-Aug-21: A description of the layer should be added to the information box.*
    - *Action (in process): Updating harvest location to pull appropriate metadata for information box.*
- Marine Reserves and Protected Areas, ODFW, 2019
- Offshore Islands and Rocks, USFWS, 2019

Category-wide Comments (Conservation):

- *ODFW, 18-Aug-21: Consider additional data layers used in the analysis of rocky habitat for the revision of Territorial Sea Plan Part 3 such as State Park Boundaries, and additional publicly available layers such as Designated State Natural Areas.*
  - *Action (in process): Looking into harvesting these additional layers. ODFW emphasizes that it is critically important that nearshore and onshore constraints be considered by BOEM in the siting of call areas, and the near-term addition of these layers would help illustrate those (18-Nov.-21).*

Human - Hazards

This data theme includes information related to geographic areas and their vulnerability or resilience to the effects of human uses, natural hazards, and global climate change.

- Oregon 100-yr Flood Zones, Oregon GEO, 2013
- Oregon 500-yr Flood Zones, Oregon GEO, 2013

- Oregon Fault Lines, Oregon GEO, 2009
- Quaternary Fault Lines Offshore Oregon, USGS, 2020
- Tsunami Regulatory Line, DOGAMI, 2014
- Wrecks and Obstructions, NOAA, 2021
- Estuary Sea Level Rise, 2030 Scenario (.75ft), OCMP, 2017
- Estuary Sea Level Rise, 2050 Scenario (1.5ft), OCMP, 2017
- Estuary Sea Level Rise, 2100 Scenario (4.6ft), OCMP, 2017
- Ocean Disposal Sites, NOAA, 2021

Category-wide Comments:

- *League of Women Voters of Oregon, 4-Aug-21: Missing layers related to landslide infrastructure.*
    - *Action (in process): Looking for layers to meet this need.*

Human - Military

This data theme includes areas of the ocean and air space used for the transit of military vessels or aircraft related to training activities, homeland security, search and rescue, ship and submarine maneuvers, and war games.

- Coast Guard Jurisdictions, NOAA, 2020
- Danger Zones and Restricted Areas, NOAA, 2017
- DoD Offshore Wind Mission Compatibility Assessments, NOAA, 2014
- Formerly Used Defense Sites, NOAA, 2018
- Unexploded Ordnance Areas, NOAA, 2018
- Military Operating Area Boundaries, NOAA, 2019
- Special Use Airspace, FAA, 2021

Human - Non-consumptive Recreation

Data in this theme include activities pursued by individuals or groups for the purposes of recreation, exercise, sport, cultural traditions, or spiritual renewal. Many involve people in, on, or under the water, often with a small vessel or dive gear.

- AIS Vessel Transit Counts: Pleasure Craft and Sailing, NOAA, 2016
- AIS Vessel Transit Counts: Pleasure Craft and Sailing, NOAA, 2017
- Oregon Recreation Wildlife Viewing, Surfrider, 2010

Human - Energy

Data in this theme include “Energy Resources” which refers to natural features that provide a capacity to do work through combustion, movement, radiation, or heat; these resources include oil, natural gas, coal, wind, sun, currents, tides, and natural heat gradients. Also included is information related to planning for offshore energy.

- BOEM Block Aliquots, BOEM, 2020
- BOEM Limit of OCSLA 8(g) zone, BOEM, 2020
- BOEM OCS Lease Blocks, BOEM, 2020
- DoD Offshore Wind Mission Compatibility Assessments, NOAA, 2021
- Offshore Wind Technology Depth Zones, NOAA, 2021
- Distance to Shore, BOEM, 2021
- Permitted Marine Hydrokinetic Projects, NOAA, 2018
- Oregon Offshore Wind Planning Area, BOEM, 2020
- Territorial Sea Plan Part V, DLCD, 2019

Human - Economy - Population

This data theme includes information on coastal population demographics, and analysis of the impact of the marine environment on the coastal counties.

- Coastal Census Statistics, NOAA, 2018

Time-Series Data on the Ocean and Great Lakes Economy for Counties, States, and the Nation between 2005 and 2017 (Sector Level)

National Ocean Watch (ENOW) contains annual time-series data for over 400 coastal counties, 30 coastal states, 8 regions, and the nation, derived from the Bureau of Labor Statistics and the Bureau of Economic Analysis. It describes six economic sectors that depend on the oceans and Great Lakes and measures four economic indicators: Establishments, Employment, Wages, and Gross Domestic Product (GDP).

- All Ocean Employment Sectors by County
- Marine Construction Employment Sector
- Living Resources Employment Sector
- Offshore Mineral Extraction Employment Sector
- Ship and Boat Building Employment Sector
- Tourism and Recreation Employment Sector
- Marine Transportation Employment Sector

Human - Culture & Heritage

Cultural Use includes traditional and current use of specific ocean, coastal, and shoreline areas by tribal and indigenous communities, based on the area's inherent cultural, spiritual, or aesthetic values and significance; it excludes activities that can be classified in other "Ocean Use" categories. Maritime heritage includes not only physical resources such as historic shipwrecks and pre-contact archaeological sites, but also archival documents, oral histories, and the stories of indigenous cultures that have lived and used the ocean for centuries. Note that the location of archaeological sites is typically considered sensitive information and are not included in the tool.

- National Register of Historic Places, NPS, 2021
- US Historic Lighthouses, NOAA, 2018
- TSP Visual Resource Management, Scenic Class Value Viewsheds, OCMP, 2019
- TSP Visual Resource Management, Scenic Quality Evaluations, OCMP, 2019
- TSP Visual Resource Management, Special Area Viewsheds, OCMP, 2019
- TSP Visual Resources Management, Special Area Viewpoints, OCMP, 2019
- Wrecks and Obstructions, NOAA, 2021

Biological Data Resources

Category-wide Comments (Biological Data Resources):

- *ODFW, 18-Aug-21: Consider additional biological species layers from Oregon Biodiversity Information Center (ORBIC) (level of detail dependent on the ability to crop to relevant coastal areas and generalize species representation).*
    - *Action (in process): Working with ODFW to identify specific layers for inclusion in tool.*

Marine Birds

Marine Birds data theme includes information on avian fauna, including flying and nonflying forms.

- Important Coastal Bird Areas, Audubon, 2013
    - *ODFW, 18-Aug-21: May be important to differentiate between global and state important bird areas.*
        - *Action (in process): Investigating layer differences to confirm use of global versus state data.*
- PaCSEA All Surveys Avg 2011-2012
    - *ODFW, 18-Aug-21: Provides useful data, but data by species may be more important for offshore wind planning. The metadata indicates that the species data can be obtained at: https://www.sciencebase.gov/catalog/item/54d54b8ce4b0f7b2dc9f2ecc. That site refers to a United States Geological Survey (USGS) web map service that may have more data; however, an error message prevented the map service link from loading. It would be helpful if individual species layers could be added or at minimum if a reliable link to species data could be identified. Additionally, data are becoming outdated and BOEM should pursue analysis of newer seabird data or conduct new surveys in the near future.*
        - *Action (in process): Working on identifying appropriate link and harvesting individual species layers. Updated seabird data area for future research.*
- PaCSEA Seabird Transects 2011-2012
    - *ODFW, 18-Aug-21: Information box in map should be clear that this layer shows actual transects without bird density.*
        - *Action (completed): Edited information box to reflect this clarification.*

- Predicted Seabird Abundance for 16 Species in the California Current System, PRBO, 2011 Catalog|OROWindMap
    - Predicted Seabird Abundance by Season, PRBO, 2011
    - Predicted Seabird Abundance by Species, PRBO, 2011
        - Black-footed Albatross
        - Bonaparte's Gulls
        - Brandt's Cormorants
        - Brown Pelicans
        - California Gulls
        - Cassin's Auklets
        - Common Murres
        - Fork-tailed Storm Petrels
        - Glaucous-winged Gulls
        - Heermann's Gulls
        - Herring Gulls
        - Leach's Storm Petrels
        - Red-necked Phalaropes
        - Sabine's Gulls
        - Sooty Shearwaters
        - Western Gulls
    - *ODFW, 18-Aug-21: These are the overall abundance layers for all the modeled seabird species. In addition to the annual averages, PRBO produced the single species data for each of 4 seasons - if those layers are available, please consider including those data with a map slider. PRBO also produced an overall seabird importance layer (core areas), a persistence layer, and a hotspot map. Including these other layers in OROWindMap for combined species would be useful.*
        - *Action (in process): Looking into harvesting additional PRBO layers suggested. May require permission from source provider.*
- Seabird Colony Relative Ecological Importance, USFWS, 2017
    - *ODFW, 18-Aug-21: Arrangement of data difficult to use. A table would be much more useful for getting information on abundance of individual species.*
        - *Action (in process): Contacting source provider about provision of data in alternative formats.*

Category-wide Comments (Marine Birds):

- *Coast Range Forest Watch, 4-Aug-21: Requests for marbled murrelets data in the biological assessment.*
    - *Action (in process): Seeking spatial data layers for marbled murrelets.*
- *Portland Audobon, 4-Aug-21: Suggestion to reach out to Cottom Rockwood at Point Blue (crockwood@pointblue.org) and include new data in OROWindMap. They are working on a newer modeling analysis examining bird hotspots off the West coast with respect to OSW development. Expected to be completed in Nov 2021.*
    - *Action (in process): Following up with Point Blue to add layers as they become available.*

- *WA Dungeness Crab Association, 4-Aug-21: I noticed in your list of seabirds you did not include the ESA listed short tailed albatross. What are the expectations for ESA listed albatross interaction with the offshore wind turbines and impacts of this?*
    - *Action (in process): Seeking data layers on short-tailed albatross. Second part of question is process-based and will be addressed elsewhere.*
- *USGS, 4-Aug-21: For Short-tailed Albatross distribution - there are several published and available papers that have maps that include the Oregon offshore waters: Orben RA, O'Connor AJ, Suryan RM, Ozaki K, Sato F, Deguchi T (2018) Ontogenetic changes in at-sea distributions of immature short-tailed albatrosses Phoebastria albatrus. Endang Species Res 35:23-37. https://doi.org/10.3354/esr00864; Overlap of North Pacific albatrosses with the U.S. west coast groundfish and shrimp fisheries , https://doi.org/10.1016/j.fishres.2013.06.009 . Across borders: External factors and prior behavior influence North Pacific albatross associations with fishing vessels, Orben et al. 2021...https://doi.org/10.1111/1365-2664.13849*
    - *Action (in process): Reviewing these publications for ability to include maps as layers in tool.*
- *ODFW, 18-Aug-21: Consider adding additional nearshore seabird datasets (e.g. Marbled Murrelet Critical Habitat and Marbled Murrelet at sea use) created by Crescent Coastal Research for US Fish and Wildlife Service. These reflect data through 2010; producing layers with more recent data would be valuable but would require additional data processing.*
    - *Action (in process): Seeking permission to access these additional layers from source providers. Processing more recent data may be an area for future work.*
- *ODFW, 18-Aug-21: Add additional data used in the analysis of rocky habitat for the revision of Territorial Sea Plan Part 3, such as Black oystercatcher (Audubon 2015-2017), Snowy Plover Critical Habitat, Snowy Plover Designated Management Areas (SPMAs, RMAs).*
    - *Action (in process): Looking into harvesting these additional layers.*

Marine Fish

Bony and cartilaginous fishes, including primitive fish-like chordates.

All Marine Fish Layers on OROWindMap

- Groundfish Biodiversity Maps, NCCOS, 1971-2010
    - Predicted probabilities of abundance hotspots
    - Predicted probabilities of biomass hotspots
    - Predicted probabilities of nearshore assemblage abundance hotspots
    - Predicted probabilities of species number hotspots
    - *ODFW, 18-Aug-21: Information for these layers should include that (1) the data used in these models were collected during summer and fall months and distributional patterns during winter months may differ and (2) bottom trawls were used to sample the fish populations; therefore, only demersal fish species susceptible to trawl gear are represented in the models.*
        - *Action (completed): Updated layer information to reflect this comment with attribution to ODFW.*

- Pacific Hake Adult Relative Abundance
    - Summer 2012 Catalog
    - Summer 2013 Catalog
    - Summer 2015 Catalog
  - *West Coast Pelagic Conservation Group, 4-Aug-21: Slight correction: Pacific Hake survey is a Biannual survey.*
    - *Action (in process): Updating information to reflect this correction.*
  - *ODFW, 18-Aug-21: These data appear to show non-zero hake relative abundance points along transects. There is no indication of the total length and position of each transect other than the non-zero points. It would be helpful if the full transects could be shown to indicate where the vessels surveyed, if these data are available.*
    - *Action (in process): Contacting source provider to inquire about the availability of transect data.*
- Pacific Lamprey Distribution, Streamnet, 2019
  - *ODFW, 18-Aug-21: This layer includes data from 2012, but there is 2020 freshwater data available. This more recent data should be retrieved from Data Basin and included in OROWindMap. For marine distribution of Pacific Lamprey, ODFW recommends a layer be created based on best professional judgement from ODFW's subject matter expert. This layer should extend coastwide from shore to 800 meters depth, bounded by the Oregon state border.*
    - *Action (in process): Seeking permission from Data Basin to access and harvest updated freshwater data; working with ODFW on creation and publication of new marine data layer.*
- Albacore Tuna Average Quarterly Predictions, NOAA SWFSC, 2019
  - *ODFW, 18-Aug-21: Recommend that (1) logbook data be used to create effort layers that depict the Oregon albacore fishing effort; (2) a fishery-based temporal break up of season be added; and (3) annual layers or layers occurring during abnormal years (e.g. marine heat waves) be added to show patterns in distribution in response to different ocean conditions.*
    - *Action (in process): This is the best spatial data available for albacore at this time. The additional layers recommended would be valuable and may be an area for future work, which BOEM and OR DLCD are discussing with ODFW.*
    - *Update 15-Dec-21: ODFW has provided charter and commercial fishing effort layers for albacore based on logbook data. These can be found on OROWindMap.*
- Anchovy Average Quarterly Predictions, NOAA SWFSC, 2019
  - *ODFW, 18-Aug-21: Anchovy and Sardine layers - Legends lack units, have inconsistent color use, and state 'albacore' - Data appears to come from an Albacore tuna related publication and layers displayed may also actually reflect albacore. The metadata is not as complete as it might be in terms of listing the source and publications. Southwest Fishery Science Center continues to do data modeling in association with their ongoing CPS surveys; these might be publicly available by request.*

        - *Action (in process): Reviewing metadata and source in order to update and confirm accuracy; may need to contact source provider for cartographic changes. Contacting SWFSC about additional data available.*
- Pacific Sardines Average Quarterly Predictions, NOAA SWFSC, 2019
    - *ODFW, 18-Aug-21: See comment and action under 'Anchovy,' above*
- Blue Shark Habitat Suitability, NOAA SWFSC, 2018
    - *ODFW, 18-Aug-21: The habitat suitability layers included for these species (Blue Shark, Pacific Shortfin Mako Shark, North Pacific Swordfish, Pacific Common Thresher Shark) are based on drift gillnet (DGN) data. The DGN swordfish fishery has been a California-based fishery since 2009 when the Oregon Fish and Wildlife Commission voted to stop issuing fishing permits for drift gillnet gear in waters off the Oregon coast. Therefore, these data layers are useful when representing the California fishery but they lack information for Oregon. Application of these models offshore of Oregon should be interpreted with caution.*
        - *Action (in process): Adding comment with attribution to information box for species. Working with ODFW to determine whether additional layers or data can be included for these species.*
- Pacific Shortfin Mako Shark Habitat Suitability, NOAA SWFSC, 2018
    - *ODFW, 18-Aug-32: See comment and action under 'Blue Shark,' above*
- North Pacific Swordfish Habitat Suitability, NOAA SWFSC, 2018
    - *ODFW, 18-Aug-32: See comment and action under 'Blue Shark,' above*
- Pacific Common Thresher Shark Habitat Suitability, NOAA SWFSC, 2018
    - *ODFW, 18-Aug-32: See comment and action under 'Blue Shark,' above*

Category-wide Comments (Marine Fish):

- *Goldfish Seafoods, 11-Aug-21: Are you looking at sea surface temperature charts that steer fisheries closer to shore? Squid fishery seems to be moving north, there's not a lot of data on that. You're going to want to look at squid and at sardines, which 5-6 years ago was a strong fishery in Oregon. Are you looking at federal transects? They run them every year.*
    - *Action (in process): Transects are included. ODFW and BOEM are working to complete data sets based on logbooks for squid and sardines as able.*
    - *Update 15-Dec-21: ODFW has provided a fisheries effort layer for market squid based on logbook data. This can be found on OROWindMap.*

- *ODFW, 11-Aug-21: Additional predictive maps recommended for Pacific Salmon, HMS (Highly Migratory Species), and CPS (Coastal Pelagic Species). Recommend looking at logbook data and publications from ODFW. There are four finfish species, Pacific sardine, northern anchovy, Pacific mackerel and jack mackerel that are management unit species in the federal CPS Fishery Management Plan (FMP), but there are data layers for only two of those species, Pacific sardine and northern anchovy, in OROWindMap.*
    - *NMFS, 23-Nov-21: NMFS agrees with ODFW's comment, and we note that these fisheries are not covered by VMS. While we are working with the PSMFC to improve fisheries location choice data for all federally managed fisheries, we do not anticipate completing that project before Quarter 1 of 2022 when BOEM plans to publish proposed call areas off Oregon.*

    - *Action (in process): Working with ODFW to identify appropriate data layers to fill these gaps. May require creation of new spatial data layers, an area of future work.*
- *ODFW, 18-Aug-21: Add modeled groundfish distribution layers developed by NOAA for the West Coast groundfish essential fish habitat (EFH) process. These layers were provided to OR DLCD by ODFW.*
    - *Action (in process): Contacting source provider to ensure access and ability to include in tool. Update 15-Dec-21: These data were received and prioritized by OR DLCD with the help of ODFW. Their metadata is being reviewed and priority layers will be added to server and OROWindMap.*

Marine Habitat

Marine Physical Habitats includes measures of the geologic and structural characteristics of the coast or sea floor, such as the features defined in the Geoform Component of the Coastal and Marine Ecological Classification Standard.

- CMECS Ecological Marine Units, NCCOS, 2019
    - *ODFW, 18-Aug-21: Data in this layer is difficult to interpret due to difficulty of matching map and legend colors and donut holes. A query tool is necessary for identifying polygons. Recommend that the 'West Coast Surficial Geologic Habitats' layer be the primary reference layer for information about the structure of the seafloor.*
        - *Action (in process): Service layer cartography change is needed and will require working with source provider.*
- Current and Historical Estuary Extent, PMEP, 2019
- Physiographic Habitat, ATSML, 2011
- West Coast Estuarine Biotic Habitats, PMEP, 2019
- West Coast Surficial Geologic Habitats
    - *ODFW, 4-Aug-21: Comment also listed under marine substrate where this layer also resides. This data layer is the best available, but the variables presented in OROWindMap are not the best way to look at this data. We propose an alternative grouping of the substrates that present a better overview of what the habitat conditions are on the bottom.*
        - *Action (in process): BOEM and OR DLCD are working with ODFW to derive a different version of this layer if possible.*

Category-wide Comments (Marine Habitat):

- *ODFW, 18-Aug-21: Add wetlands layer (specific layer not identified).*
    - *Action (Complete): DLCD identified an appropriate eelgrass wetlands layer from the Pacific Marine and Estuarine Fish Habitat Partnership and added that data set into OROWindMap.*

Marine Invertebrates

Invertebrate fauna, including primitive non-fishlike chordates and taxa regionally identified as shellfish.

- Clubhook Squid Average Quarterly Predictions, NOAA SWFSC, 2019
  - *ODFW, 18-Aug-21: Concerned that clubhook squid may actually occur closer to shore than depicted by this layer. Information and metadata are also absent.*
    - *Action (in process): Seeking accurate metadata to update as soon as possible. This layer represents the best available spatial data for clubhook squid at this time, but this could be an area for further research.*
- Deep Sea Corals and Sponges, NOAA, 1842-present
  - *ODFW, 18-Aug-21: As presented, these observational data are not very informative to the spatial analysis of areas for potential siting of future OSW development. More informative data are available and ODFW has provided OR DLCD with these recommended layers for inclusion (and the accompanying NOAA report). It should be noted that no systematic regional survey of biogenic species and abundance has been conducted, and differences in how data were collected among the contributing survey sources make it difficult to estimate relative abundance. It should also be understood that the data are "presence only" data, and that there are insufficient data where biogenic animals were not observed.*
    - *Action (in process): OR DLCD is seeking confirmation of appropriate metadata for the layers provided by ODFW before publishing and including them in tool.*
    - *Update 15-Dec-21: These data were received and prioritized by OR DLCD with the help of ODFW. Their metadata is being reviewed and priority layers will be added to server and OROWindMap.*

Category-wide Comments (Invertebrates):

- *ODFW, 4-Aug-21: Add predicted suitability habitat layers for different taxa, prepared for deep sea coral program in 2012.*
  - *Action (in process): Contacting source provider to ensure access and ability to include in tool.*
- *ODFW, 18-Aug-21: Add data layers used in the analysis of rocky habitat for the revision of Territorial Sea Plan Part 3, such as 'Key intertidal species present at MARINe sites (2018)'*
  - *Action (in process): Looking into harvesting these layers.*
- *ODFW, 18-Aug-21: The invertebrates in the CPS FMP (Coastal Pelagic Species Fishery Management Plan), market squid and krill species, which are also management units in the FMP, currently have no data layers in OROWindMap.*
  - *Action (in process): Working with ODFW to identify spatial data layers for these species if possible.*
  - *Update 15-Dec-21: Data for market squid fishing effort was provided by ODFW. This layer is available on OROWindMap.*

- *ODFW, 18-Aug-21: There is additional data to be added in terms of NMFS standardized catch data on corals, sponges, seapens and seawhips (in the commercial groundfish fishery). Biogenic species distribution data were prepared for the PFMC's Groundfish EFH review process in 2012-2013 using bycatch data from two fishery datasets; the NMFS annual West Coast Groundfish Bottom Trawl Survey (WCGBTS) and the West Coast Groundfish Observer Program (WCGOP). These data provide additional important information on biogenic habitat presence, depicting the spatial distribution of corals, sponges, sea pens and sea whips from standardized catch data. The WCGBTS covers the continental shelf (i.e., 30-100 ftm) and slope (i.e., 100-700 ftm) from the Canadian to Mexican maritime borders. The WCGOP covers the spatial extent of commercial groundfish fishing vessels. Data are summarized as catch density and effort density in a raster grid (500 m x 500 m cell size). Note that the downloadable data are pre-symbolized to be standardized for two time periods (2002-06 and 2006-10) for the EFH review but can be symbolized differently. We recommend downloading these layers to OROWindMap from the NOAA/NWFSC data portal: https://www.webapps.nwfsc.noaa.gov/data/efh-catalog/Biogenic.html*
    - *Action (in process): These layers were received as a download with the other Groundfish Essential Fish Habitat (EFH) Review layers. Priority layers for inclusion were identified by OR DLCD and ODFW and they are in the process of being published as web services so they can be included in OROWindMap.*

Marine Mammals

Marine Mammals includes cetacean and pinniped species for West Coast resident and migratory populations, related to density, migration, location, critical habitat, and biologically important areas.

- Biologically Important Areas for Cetaceans – Feeding, NMFS, 2015
- Biologically Important Areas for Cetaceans – Migration, NMFS, 2015
- Biologically Important Areas, CETMAP, 2015
    - Gray Whale
    - Harbor Porpoise
    - Humpback Whale
- Blue Whale Core Areas of Use, OSU Marine Mammal Institute, 2019
    - *ODFW, 18-Aug-21: We know relatively little about blue whale distribution along the West Coast and these layers (Core Areas of Use, Home Ranges) are based on short-term bio-logging data of individuals and marine mammal telemetry tags and often these data don't account for inter-seasonal or inter-annual differences. These extrapolated models lack full population representation and may either under or over represent areas of use. Home Range usually represents the 95% confidence interval of estimated locations. However, 'core area' isn't always biologically informative and often has a cut off of 50% use. This core area isn't always representative of key habitat and also doesn't represent whether the areas are high use due to foraging, resting, or both. Layers are as accurate as can be given the limited data.*

- *Action (in process): Contacting data provider and requesting a statement of limitations and model representation. Adding comment with attribution to ODFW to layer information, highlighting limitations of this data.*

- Blue Whale Home Ranges, MMI, OSU Marine Mammal Institute, 2019
  - *ODFW, 18-Aug-21: We know relatively little about blue whale distribution along the West Coast and these layers (Core Areas of Use, Home Ranges) are based on short-term bio-logging data of individuals and marine mammal telemetry tags and often these data don't account for inter-seasonal or inter-annual differences. These extrapolated models lack full population representation and may either under or over represent areas of use. Home Range usually represents the 95% confidence interval of estimated locations. However, 'core area' isn't always biologically informative and often has a cut off of 50% use. This core area isn't always representative of key habitat and also doesn't represent whether the areas are high use due to foraging, resting, or both. Layers are as accurate as can be given the limited data.*
    - *Action (in process): Contacting data provider and requesting a statement of limitations and model representation. Adding comment with attribution to ODFW to layer information, highlighting limitations of this data.*
- California Sea Lion Haulout Counts, ODFW, 2011
  - *ODFW, 18-Aug-21: Information box in map should note that haulout abundance fluctuates seasonally/monthly as animals migrate for breeding, foraging, or to move upriver to follow seasonal resources.*
    - *Action (completed): Updated layer information to reflect this comment with attribution to ODFW.*
- Gray Whale Migration Corridor, ODFW, 2011
  - *ODFW, 18-Aug-21: Information box in map should note that mothers and calves may also enter bays and estuaries on the northward migration to avoid predation.*
    - *Action (completed): Updated layer information to reflect this comment with attribution to ODFW.*
- Humpback Whale Proposed Critical Habitat, 2019
  - *ODFW, 18-Aug-21: A final rule designating this critical habitat went into effect May 2021. This updated layer should be added.*
    - *Action (completed): Replaced this layer with updated final rule. Completed as of 15-Dec-21.*
- Humpback Whale Proposed Critical Habitat Exclusions, 2019
  - *ODFW, 18-Aug-21: A final rule designating this critical habitat went into effect May 2021. This updated layer should be added.*
    - *Action (completed): Replacing this layer with updated final rule. Completed as of 15-Dec-21.*
- NOAA SWFSC Density Estimates by Species and Season, 2020
  - Baird's Beaked Whale Summer / Fall Density, 2020
  - Blue Whale Winter / Spring Density
  - Blue Whale Summer / Fall Density
  - Bottlenose Dolphin Summer / Fall Density, SWFSC, 2020
  - Dall's Porpoise Summer / Fall Density, SWFSC, 2020

    - Fin Whale Winter / Spring Density
    - Fin Whale Summer / Fall Density
    - Humpback Whale Winter / Spring Density
    - Humpback Whale Summer / Fall Density
    - Long-beaked Common Dolphin Summer / Fall Density
    - Northern Right Whale Dolphin Summer / Fall Density
    - Pacific White-sided Dolphin Summer / Fall Density
    - Risso's Dolphin Summer / Fall Density, SWFSC, 2020
    - Short-beaked Common Dolphin Summer / Fall Density
    - Small Beaked Whale Guild Summer / Fall Density
    - Sperm Whale Summer / Fall Density
    - Striped Dolphin Summer / Fall Density
  - *ODFW, 18-Aug-21: These density maps and distribution models are generally based upon observations on a transect or sampling regiment. This data was input into generalized additive models that were retrospectively tested with a subset of data to predict distributions. Visual observations are the basis for these models, and overall are good to estimate general population prevalence, but are dependent upon sampling design and actually sighting individuals, which is why they are more often used for smaller cetaceans that spend more time at the surface. Based on the fact that these models were tested for predictive capacity they are fairly reliable and possibly one of the most comprehensive spatial assessments. Habitat use is broadly modeled, and this layer is as accurate as it can be given the limited data. The Oregon State University (OSU) Whale Habitat, Ecology, and Telemetry (WHET) Lab may have additional useful information.*
    - *Action: Looking into WHET Lab for additional data.*
- Northern Elephant Seal Haulouts, ODFW, 2011
  - *ODFW, 18-Aug-21: Information box in map should note that juvenile elephant seals will rest on beaches during molting and have been seen at various locations along the coast.*
    - *Action (completed): Update layer information to reflect this comment with attribution to ODFW.*
- Pacific Harbor Seal Haulout Counts, ODFW, 2011
  - *ODFW, 18-Aug-21: More recent finalized data are available from 2014; as of 2021, our Marine Mammal Program is currently working on conducting and evaluating coastwide aerial surveys to update these counts, as well as creating a data layer that uses polygons to represent haulouts rather than line/point data. This work will take several months and should be completed by early 2022. It would be helpful to note in the information for the layer that these data are recorded during breeding/pupping season for harbor seals and represent peak abundance, with a correction factor for animals in the water.*
    - *Action (in process): Will replace with new ODFW layer when available. For current layer, will add comment with attribution to layer information.*
- Steller Sea Lion Critical Habitat, NOAA, 2016
  - *ODFW, 18-Aug-21: Information box in map should note that the critical habitat areas surround key rookeries with peak abundance/breeding and pupping seasons in early summer. They do not represent foraging habitat as very little is known on that end.*

    - *Action (completed): Update layer information to reflect this comment with attribution to ODFW.*
- Steller Sea Lion Haulout Counts, ODFW, 2011
    - *ODFW, 18-Aug-21: More recent finalized data are available from 2017; our Marine Mammal Program is currently (2021) working on conducting and evaluating coastwide aerial surveys to update these counts, as well as creating a data layer that uses polygons to represent haulouts rather than line/point data (see comment on Pacific Harbor seal haulout counts).*
        - *Action (in process): Will update layer when new spatial data is available.*
- Steller Sea Lion Haulout Use, ODFW, 2011

Category-wide Comments (Marine Mammals):

- *WA Dungeness Crab Association, 4-Aug-21: Concerned about interruption of humpback migration corridors by any federally permitted activity. What data do we have to look at in terms of potential for interruption of migration corridors?*
    - *Action (in process): A spatial data layer for this does not currently exist, but may be an area for future work.*
- *Whale and Dolphin Conservation, 4-Aug-21: Suggestions for additions to the OROWindMap catalog and data layers to include additional species or populations that are already vulnerable or may co-occur with OSW projects off the Oregon Coast: (1) Include the final critical habitat designations for humpback whales and the Southern Resident killer whale DPS, (2) Include data on harbor porpoise distribution and discrete populations, (3) Differentiate the distribution and seasonality of the Pacific Coast Feeding Group of gray whales from the larger Pacific population, who have a unique use of the Oregon coastal environment. Data is available from Cascadia Research Collective and from Oregon State University, (4) Include Northern and Guadalupe (listed as ESA threatened) fur seal distribution.*
    - *Action (in process): Following up with data sources provided to add these recommendations as available.*
    - *Update 15-Dec-21: Final critical habitat designations for humpback and SRKW DPS have been added to OROWindMap.*
- *WA Dungeness Crab Association, 4-Aug-21: For the critical habitat description, there was a change in critical habitat geographical descriptions and an inclusion of orca and humpback whale critical habitat. Will that be updated?*
    - *Action (completed): Adding orca and updating humpback critical habitat layers. Completed as of 15-Dec-21.*
- *OSU Marine Mammal Institute, 4-Aug-21: Metadata and associated information is not adequate and should be updated. Forward looking, in regard to biologically important areas, NMFS is in the process of revising the data and an update is coming for humpback, blue, and fin whales. The home range for blue whales is being substantially updated. Home ranges for pacific coastal feeding group grey whales will now be created and updated. There are coastal killer whale datasets that are finalized and posted.*
    - *Action (in process): Reviewing metadata and information for all marine mammal layers and updating where applicable. Will update BIA layers as available and add killer whale datasets.*

- *ODFW, 18-Aug-21: Please add Southern Resident Killer Whale critical habitat layer.*
    - *Action (completed): Layer will be added. Completed as of 15-Dec-21.*
- *ODFW, 18-Aug-21: Consider additional layers used in the analysis of rocky habitat for the revision of Territorial Sea Plan Part 3 such as BIA for Cetaceans – Reproduction and BIA for Cetaceans – Small and Resident. Please include all the available cetacean BIAs that have areas off Oregon, and update BIAs with revised layers when available.*
    - *Action (in process): Looking into harvesting these additional layers.*

Turtles

- Leatherback Sea Turtle Critical Habitat, NOAA, 2012

Marine Plants and Algae

Marine Plants and Algae includes vascular plants, macroalgae, phytoplankton, or microbial communities.

- West Coast Canopy-Forming Kelp, WCODP, 1989-2014
    - *ODFW, 18-Aug-21: This layer contains two different data features - one feature is the dissolved kelp canopy layer from all the surveys, shown in green, and the other feature is the survey area, shown in varying grey shades. The grey shading occupies the entire state waters and is distracting when viewing other layers at the same time. The kelp should be viewable separately from the survey area so that other layers can be seen more clearly (without the grey survey area). The metadata should list the surveys (years and sources) included in this layer and the OROWindMap information window is cut off mid-sentence at the end of the statement. Finally, it appears the data do not show at zoomed-in scales; we recommend that the data be visible at all scales.*
        - *Action (in process): Updating information and metadata for completeness. Discussing best way to approach cartographic changes (grey shading, zoom issues).*
- Kelp Surveys, ODFW, 1990, 1996 - 1999, 2010
- Eelgrass Maximum Extent, PMEP, 2020
    - *ODFW, 4-Aug-21: Original seagrass layer does not load.*
        - *Action (completed): Upon assessing original seagrass layer, decided to change to 'Eelgrass Maximum Extent, PMEP, 2020.'*

Appendix 8.2a BOEM Oregon Offshore Renewable Energy Fact Sheet

Oregon Offshore Renewable Energy

BOEM-OREGON OFFSHORE WIND PLANNING EFFORTS

Offshore Wind Energy Planning in Oregon

The Bureau of Ocean Energy Management (BOEM) and the State of Oregon (the State) are committed to offshore wind energy planning with a meaningful and effective data-gathering and engagement process to inform potential offshore wind energy leasing decisions.

This effort includes outreach and engagement with research organizations and potentially interested and affected parties to gather data and information to inform leasing decisions. BOEM and the State, led by the Oregon Department of Land Conservation and Development (DLCD), are seeking to identify potential areas in federal waters offshore Oregon that may be suitable for offshore wind energy development. In partnership with the BOEM Oregon Intergovernmental Renewable Energy Task Force (Task Force), BOEM and DLCD developed the *Data Gathering and Engagement Plan for Offshore Wind Energy in Oregon*, which outlines the activities BOEM and the State will conduct for the outreach and engagement effort. The plan can be found at: www.boem.gov/Oregon.

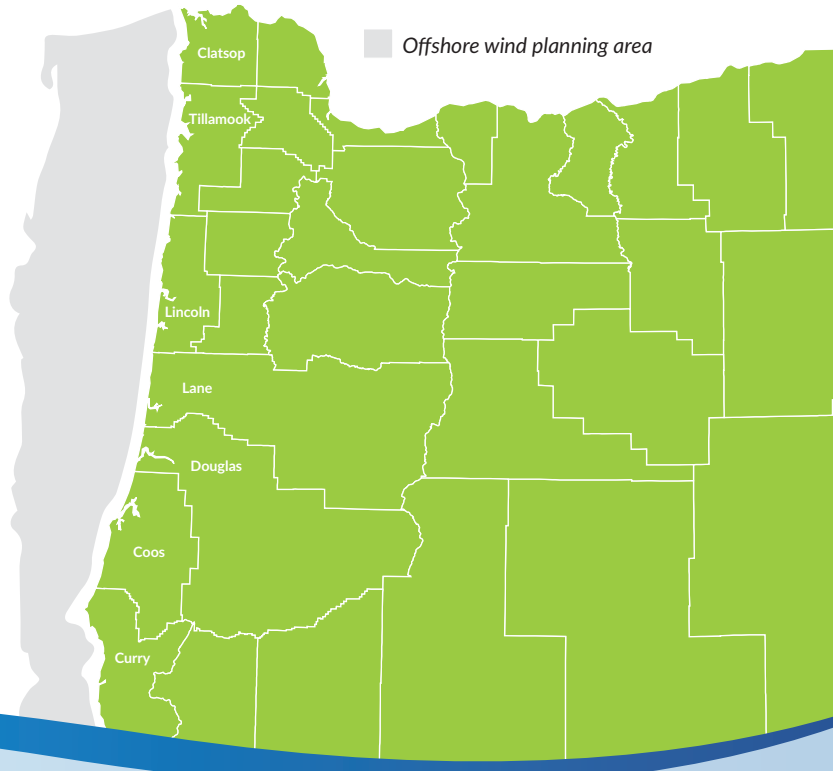
BOEM Oregon Intergovernmental Renewable Energy Task Force

The Task Force provides coordination among federal, Tribal, state, and local governmental bodies regarding potential renewable energy activities in federal waters offshore Oregon. It serves as a forum to:

- Discuss stakeholder issues and concerns.
- Exchange data and information about biological and physical resources, ocean uses and priorities.
- Facilitate early and continual dialogue and collaboration opportunities.

Planning Area

BOEM is responsible for regulating offshore energy and mineral uses in federal waters, extending from 3 nautical miles (nm) offshore to the edge of the Exclusive Economic Zone ending at 200 nm offshore Oregon. The planning area for potential leasing offshore Oregon extends to water depths of 1,300 meters (4,265 feet), where the average wind speed is at least 7 meters per second (13.6 knots). However, data-gathering efforts will include environmental information, ocean uses, and other pertinent information along the entire coast, in both federal and state waters, as it relates to offshore wind energy development in Oregon. Relevant onshore data, such as transmission cable routes and landfall, points of interconnection, and access to ports for installation and operation will also be included.



DID YOU KNOW?

- BOEM manages nearly 2.5 billion acres of offshore energy and mineral resources in federal waters.
- Oregon HB 2021 (2021) requires the state's investor-owned utilities and electricity service suppliers to supply 100% greenhouse gas free electricity by 2040.
- Oregon HB 3375 (2021), without committing to specific deployment targets, requires the Oregon Department of Energy to identify the benefits and challenges of integrating up to 3 gigawatts (GW) of floating offshore wind by 2030 (https://tinyurl.com/ODOE-FOSW).
- According to the National Renewable Energy Laboratory, more than 84,600 megawatts of technically available offshore wind energy resource exist in federal waters offshore Oregon.

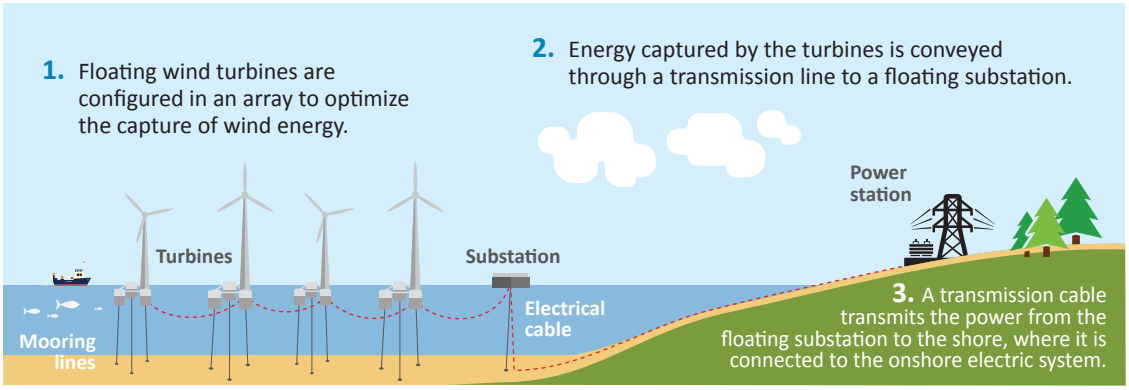
About Offshore Wind Technology

Countries in Europe and Asia have many offshore wind farms installed providing electricity to millions of people. In the U.S., the 30-megawatt, five-turbine Block Island Wind Farm began producing energy in state waters off Rhode Island in 2016. In 2020, two wind turbines were installed in federal waters offshore Virginia with the Coastal Virginia Offshore Wind Project. On the U.S. West Coast, including Oregon, floating wind energy technology is gaining interest because the Outer Continental Shelf drops off rapidly and is too deep for fixed, bottom-mounted turbines in federal waters. An example floating offshore wind facility is illustrated below.

How Offshore Floating Wind Farms Work

A project in federal waters must pass through state waters with its electrical cable to get to a land-based substation, requiring federal and state permits in addition to a BOEM lease.

A project in federal waters must pass through state waters with its electrical cable to get to a land-based power substation, requiring federal and state permits in addition to a BOEM lease.



Data Catalog and Oregon Offshore Wind Mapping Tool (OROWindMap)

The DLCD, in partnership with BOEM, is developing a data catalog and map viewer within the West Coast Ocean Data Portal to provide public access to the best available data throughout the planning process. The Oregon Offshore Wind Mapping Tool (OROWindMap, **https://offshorewind.westcoastoceans.org**) is an easy-to-use mapping tool that provides visualization capabilities and includes relevant datasets such as wind speed, bathymetry, bird and marine mammal distribution and density, vessel traffic patterns, military-use areas, subsea cables, and commercial fishing datasets. The OROWindMap Catalog (**https://portal.westcoastoceans.org/OROWindMap-data-themes**) documents the data records incorporated into OROWindMap. OROWindMap will be used to inform leasing decisions offshore Oregon in the context of existing ocean resources and uses. The State and BOEM are seeking additional existing datasets during this planning and invite interested parties to participate in a Data Review group to help document gaps and priority resources.

How Can I Become Involved?

- Sign up to stay informed at **www.boem.gov/OregonUpdates**.
- Explore OROWindMap at **https://offshorewind.westcoastoceans.org** and OROWindMap Catalog (**https://portal.westcoastoceans.org/OROWindMap-data-themes**).
- Participate and provide comments in public meetings that are open to everyone and announced when scheduled.
- Stay informed about Oregon offshore wind energy activities and scheduled Task Force meetings at **www.boem.gov/Oregon**.
- Contact Whitney Hauer (**whitney.hauer@boem.gov**) or Andy Lanier (**andy.lanier@state.or.us**) if you have questions or if your organization would like a presentation about the offshore wind planning effort.
- Contact John Romero (**john.romero@boem.gov**) for public media inquiries.

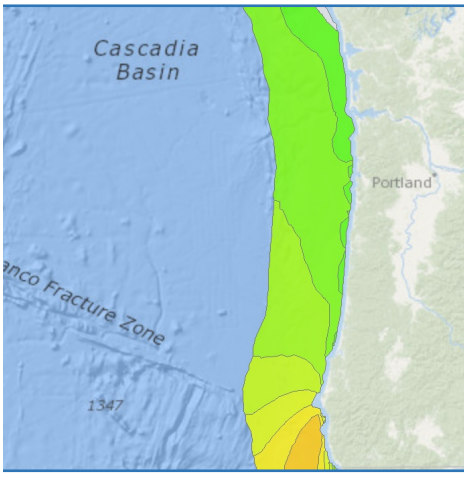
Appendix 8.2b BOEM DLCD OROWindMap Fact Sheet

Data Sharing for Oregon Offshore Wind Planning

The Bureau of Ocean Energy Management (BOEM) and the State of Oregon (the State), led by the Oregon Department of Land Conservation and Development (DLCD), are committed to offshore wind energy planning with a data gathering process to inform potential leasing decisions. In partnership with the BOEM Oregon Intergovernmental Renewable Energy Task Force (Task Force), BOEM and DLCD developed the *Data Gathering and Engagement Plan for Offshore Wind Energy in Oregon*, which outlines the activities BOEM and the State will conduct to gather information to inform the Task Force and offshore wind energy leasing decisions. The plan can be found at: **www.boem.gov/Oregon.**

The DLCD, in partnership with BOEM, is developing a data catalog and map viewer within the West Coast Ocean Data Portal to provide public access to the best available data throughout the planning process. The Oregon Offshore Wind Mapping Tool (OROWindMap), which can be found at **https://offshorewind.westcoastoceans.org**, has been developed to compile the collected data and information. This powerful planning tool accesses relevant datasets and provides visualization capabilities to inform the planning process for offshore wind energy leasing in federal waters offshore Oregon. The inclusion of new data sets will help inform the public, the State, and the Bureau of Ocean Energy Management during the planning process. Below are the criteria for inclusion of new data sets in OROWindMap.

- Data sets depict coastal and ocean characteristics (e.g., biological, physical) or human uses that are relevant to planning for offshore wind energy development in federal waters offshore Oregon.
- Data sets include the State (and its Territorial Sea) or federal waters offshore Oregon; however, data that encompasses the entire West Coast are ideal.
- Data sets are geospatial, ideally in a GIS format, but may be in a tabular format with coordinates.
- Data sets include standards-compliant metadata. The basic information required for metadata is outlined below, and more information can be found at **http://wcodp.readthedocs.io/**.



If there is an information product that is relevant to this process but is not geospatial or tabular, please contact the West Coast Ocean Data Portal (WCODP) Administrator at portal.westcoastoceans@sccwrp.org.

Metadata help document the details of data sets, including who created it, when it was created, and why it was created. All data in OROWindMap have, at a minimum, the following metadata associated with them:

- Title
- Abstract / Description
- Use Limitations / Constraints
- Bounding Box Coordinates in Latitude/Longitude (decimal degrees)
- Keywords
- Date Published
- Contacts
  - Originator
  - Publisher
  - Distributor
- URLs for data download, web services, kml, web application, documentation

If the metadata meet the requirements of the Federal Geographic Data Committee (FGDC) endorsed standards (https://www.fgdc.gov/metadata/geospatial-metadata-standards), then it will meet the WCODP requirements.


Marine Power Systems

Once geospatial data sets and associated metadata are organized, there are two ways that the data sets can be included in Oregon Offshore Wind Mapping Tool (OROWindMap):

A. The data are already published as a GIS web service.

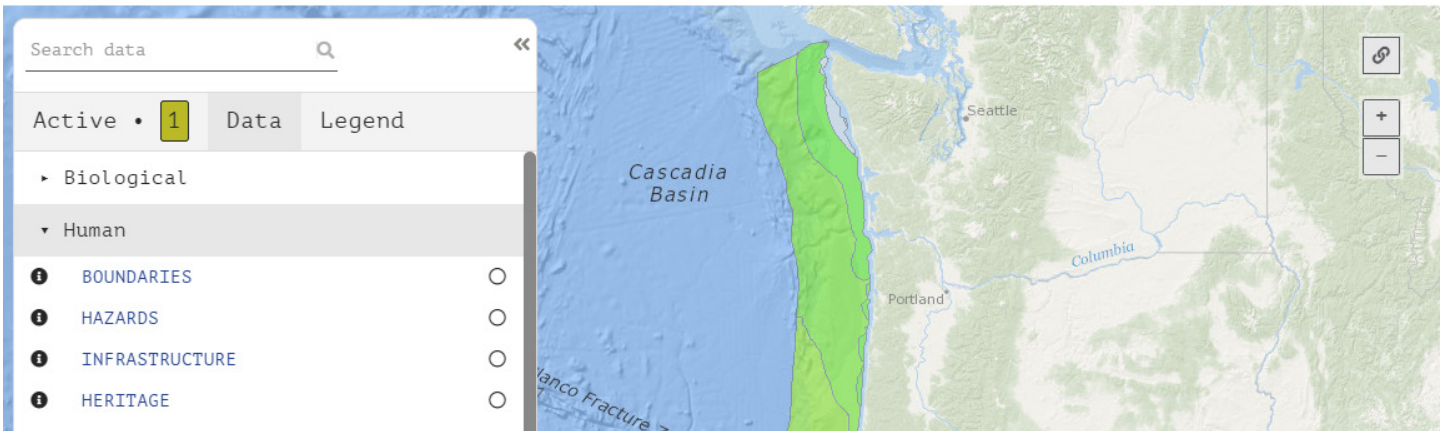
This is the preferred and easiest way to include the data. It is highly recommended that web services be OGC-compliant or exist as an ArcGIS version 10.x REST service. Follow the steps below:

- Identify the specific geospatial data and web mapping services to share.
- If not done already, create standards-compliant metadata for the geospatial data or web mapping services.
- Publish the metadata via a Web Accessible Folder (WAF), a Catalog Service (CSW), or through a regional portal or clearinghouse.
- Contact the WCODP Administrator at portal.westcoastoceans@sccwrp.org with the above information, and the data sets will be harvested and included.

B. If data are not published, then the State will publish them.

If the data sets are not published, then share them via a web service with the State. The State will host them and the author will be given credit for its creation. Follow the steps below:

- Identify the specific geospatial data sets to share.
- Create standards-compliant metadata for the geospatial data sets.
- Send the data sets and metadata to the WCODP Administrator at portal.westcoastoceans@sccwrp.org.



Contact the WCODP Administrator at portal.westcoastoceans@sccwrp.org for further questions on including your data in OROWindMap

Learn more about the Oregon offshore wind energy planning process by visiting www.boem.gov/Oregon

Sign up to stay informed about offshore wind energy planning in Oregon and future BOEM activities in Oregon at www.boem.gov/OregonUpdates

Appendix 8.3 Potentially Interested and Affected Parties Engaged with for Offshore Wind Planning

Below is the contact list of potentially interested and affected parties identified in the appendix of the Engagement Plan. Additional parties were added throughout the engagement process as they were identified, participated in meetings available to the public, or contacted BOEM directly and are shown in green.

Governmental Bodies and Tribes

Federal Agencies

- Bonneville Power Administration
- Department of Defense
- Federal Aviation Administration
- Federal Communications Commission
- Federal Energy Regulatory Commission
- National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- U.S. Department of Energy
- John S. McCain III National Center for Environmental Conflict Resolution
- U.S. Department of the Interior and Bureaus
    - Bureau of Indian Affairs
    - Bureau of Land Management
    - Bureau of Ocean Energy Management
    - Bureau of Safety and Environmental Enforcement
    - National Park Service
    - U.S. Fish and Wildlife Service
    - U.S. Geological Survey
- U.S. Environmental Protection Agency

Tribes

- Oregon
    - Burns Paiute Tribe
    - Confederated Tribes of Siletz Indians of Oregon
    - Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians (CTCLUSI)
    - Confederated Tribes of the Grand Ronde Community of Oregon
    - Confederated Tribes of the Umatilla Indian Reservation
    - Confederated Tribes of the Warm Springs Reservation of Oregon
    - Coquille Indian Tribe
    - Cow Creek Band of Umpqua Tribe of Indians
    - Klamath Tribes
- Washington
    - Makah Tribe
    - Shoalwater Bay Indian Tribe of the Shoalwater Bay Indian Reservation
    - Hoh Indian Tribe
    - Quileute Tribe
    - Quinault Indian Nation
- California
    - Elk Valley Rancheria
    - Tolowa Dee-ni' Nation
- Tribal Organizations
    - Columbia River Inter-Tribal Fish Commission **forthcoming*
    - West Coast Ocean Tribal Caucus
    - Affiliated Tribes of the Northwest Indians
    - Pacific Northwest Tribal Climate Change Project **forthcoming*
    - Northwest Indian Fisheries Commission **forthcoming*

State Agencies

- Business Oregon
- Oregon Department of Energy
- Oregon Department of Environmental Quality
- Oregon Department of Fish and Wildlife
- Oregon Department of Geology and Mineral Industries
- Oregon Department of Land Conservation and Development
- Oregon Department of Justice
- Oregon Department of State Lands
- Oregon Governor's Office
- Oregon Parks and Recreation Department
- Oregon Public Utility Commission (PUC)
- California Energy Commission
- California State Lands Commission
- California State Parks
- Delaware Department of Natural Resources and Environmental Control
- Florida Department of Environmental Protection
- State of Delaware
- California Environmental Protection Agency: State Water Resources Control Board
- Washington Department of Ecology
- Washington Department of Fish & Wildlife

Federal Elected Officials

- Sen. Jeff Merkley
- Sen. Ron Wyden
- Rep. Suzanne Bonamici (1st District)
- Rep. Peter DeFazio (4th District)
- Rep. Kurt Schrader (5th District)

State Elected Officials

- Governor Kate Brown
- Sen. Dallas Heard (1st District)
- Sen. Arnie Roblan (5th District) **left office in January 2021*
- Sen. Betsy Johnson (16th District)
- Rep. David Smith (1st District)
- Rep. David Gomberg (10th District)
- Rep. Caddy McKeown (9th District) **left office in January 2021*
- Oregon Legislative Coastal Caucus Members
- Maine Governor's Energy Office
- Rep. Boomer Wright (9th District)
- Rep. Suzanne Weber (32nd District)
- Sen. Dick Anderson (5th District)

County Commissioners

- Clatsop County
- Coos County
- Curry County
- Lincoln County
- Tillamook County
- Western Douglas County
- Western Lane County
- Columbia County
- Morrow County

City Government Councilmembers

- Astoria
- Brookings
- Cannon Beach
- Coos Bay
- Florence
- Lincoln City
- Newport
- Port Orford

- Seaside **could not find email address*
- Tillamook
- Warrenton
- Reedsport City Council

Public Utility Districts

- Central Lincoln PUD
- Clatskanie PUD
- Columbia River PUD
- Pacific Utility District
- Tillamook PUD
- Portland General Electric

Research Organizations and Academia

- Alpine Ocean Seismic Survey
- MIT Technology Review
- National Renewable Energy Laboratory (NREL)
- Oregon Natural Heritage Program **now known as the Oregon Biodiversity Information Center*
- Oregon State University:
    - Pacific Marine Energy Center (PMEC)
    - College of Earth, Ocean, and Atmospheric Sciences
    - Institute for Natural Resources
    - Hatfield Marine Science Center
    - Oregon Sea Grant
    - College of Engineering
    - Extension Coastal Community
    - Hinsdale Wave Research
    - Marine Resource Management Program
- Pacific Northwest National Laboratory (PNNL)
- Pew Research Center
- Portland State University
- University of Oregon: Oregon Institute of Marine Biology
- California Polytechnic State University
- California State University: California Sea Grant
- Coastal Oregon Marine Experiment Station
- European Marine Energy Centre
- Markrich Research
- National Offshore Wind Research & Development
- Responsible Offshore Science Alliance
- Smultea Sciences
- South Slough National Estuarine Research Reserve
- West Coast Ocean Data Portal

Potentially Interested and Affected Parties

Commissions, Councils, and Associations

- Depoe Bay Nearshore Action Team (NSAT) **could not find contact information*
- Northwest Power and Conservation Council
- Oregon Coastal Zone Management Association (OCZMA)
- Oregon Ocean Policy Advisory Council
- Oregon Coordinating Council on Ocean Acidification and Hypoxia (OAH Council)
- Oregon Regional Solutions
- West Coast Ocean Alliance
- Pacific Fishery Management Council
- Association of Oregon Counties
- Gulf States Marine Fisheries Commission (GSMFC)
- Marine Mammal Commission

- Oregon Public Ports Association
- Oregon Restaurant & Lodging Association (ORLA)
- West Coast Regional Planning Body

Environmental, Environmental Justice, NGOs, and Interest Groups

- American Bird Conservancy
- Asian Pacific American Network of Oregon
- Audubon Society (state office and local chapters)
- Coalition of Communities of Color
- Latino Network
- Lower Columbia Hispanic Council **now known as Consejo Hispano*
- Nature Conservancy
- Native American Youth and Family Center
- Northwest Environmental Defense Center
- Ocean Conservancy
- Opal Environmental Justice
- Pacific Seabird Group
- Oregon Coast Alliance
- Oregon Environmental Council
- Pew Charitable Trust
- Sierra Club-Oregon Chapter
- Surfrider Foundation
- The Nature Conservancy
- Whale and Dolphin Conservation Center
- Wild Rivers Coast Alliance
- Natural Resources Defense Council, Inc
- American Clean Power
- Clean Ocean Action
- Climate Solutions
- Coastal Coordination Program, The Ocean Foundation
- Columbia Riverkeeper
- Communities for a Better Environment
- Defenders of Wildlife
- Earthjustice
- Electrify Now
- Environment Oregon
- Environmental Defense Center
- Friends of Cape Falcon Marine Reserve
- Northwest Environmental
- Oceana
- Oregon League of Conservation Voters (OLCV)
- Oregon Shores Conservation Coalition
- Oregon Wild
- Partnership for Coastal Watersheds
- Rogue Climate
- Southern Oregon Climate Action Now (SOCAN)
- Southern Oregon Workforce Investment Board (SOWIB)
- The Climate Reality Project: Portland, OR Chapter: The Columbia-Pacific Economic Development District (Col-Pac)
- The Northwest Association of Environmental Professionals
- Northwest Energy Coalition: Unite Oregon

Offshore Wind Industry and Interest Groups

- ABS Group
- Aker Solutions
- American Wind Energy Association (AWEA)
- American Wind Wildlife Institute
- Avangrid Renewables
- Business Network for Offshore Wind (BNOW)
- CIERCO Wind Energy
- Cobra Industrial Plans and Energy
- DB Western Engineering
- EDF Renewables
- EDP Renewables
- Equinor
- InterMorr Inc.
- Invenergy
- Kleinschmidt Associates
- Logan Industries
- Magellan Wind

- Mainstream Renewables
- Orsted
- Pacific Ocean Energy Trust (POET)
- Principle Power, Inc.
- RWE Renewables
- SolCoast Energy
- South Coast Development Council
- Zimmer Partners, LP **permanently closed*
- 4C Offshore
- Acteon Group
- Advisian
- AECOM
- Aker Offshore wind
- Alcoa
- Atargis Energy
- Atkins Global: Houston Offshore Engineering
- Bechtel
- Blue Latitudes
- BP
- CalWave Power Technologies, Inc.
- Columbia River Steamship Operators' Association
- Conbit
- Coos Bay Pilots Association
- Crowley Maritime Corporation
- Diamond Generating Corporation
- DNV GL Energy Inc.
- Driltek Inc.
- Enbridge
- EnBW North America
- Epsilon Systems Solutions, Inc.
- Fugro
- Global Marine Group
- HDR
- Hecate Energy LLC
- Humboldt Eastern Railroad LLC
- MDA
- Vestas Offshore Wind
- National Hydropower Association
- OCEAN Winds
- Oil Spill Response Limited
- Oregon Building Trades
- Renewable Northwest
- SBM Offshore
- Sea Risk Solutions LLC
- Seaways Engineering International Inc.
- Shell Renewables and Energy Solutions
- Simply Blue Energy
- Skipjack Offshore Energy, LLC
- SNC-Lavalin
- Society for Underwater Technology
- Stantec
- TerraSond
- TRG Systems
- W&T Offshore
- Windpower Monthly
- Worley
- WPD Group
- Xodus Group

Labor

- LiUNA
- Northwest Lecet
- Northwest Carpenters Union
- International Brotherhood of Electric Workers

Ocean Users and Interest Groups

- Association of Northwest Steelheaders
- At-sea Processors Association (APA)
- Betty Kay Charters
- Bornstein Seafood
- Brookings Fishing Charters
- C-Food International **could not find contact information*
- Captain's Reel Deep Sea Fishing
- Charlton Charters **could not find contact information*
- Chinook Guide Service

- Consolidated Ocean Charters **could not find contact information*
- David Johnson's Guide Service
- Depoe Bay Fish Company **could not find updated contact information*
- Dockside Charters
- Double G Guide Service
- Eagle Charters
- EcoTours of Oregon
- Eureka Fisheries
- Ground Fish Forum
- Fin Addictions Guide Service
- Fisherman in Natural Energy (FINE)
- Fishermen Advisory Committee for Tillamook (FACT)
- Fishermen Direct
- Fishermen's Information Service for Housing Confidential Release and Essential Distribution (FISHCRED) **organization dissolved*
- Fishing Vessel Owners Association
- Five Star Charters
- Gale Force Guides
- Garibaldi Charters
- Gimme A Go Fishing Adventures **could not find contact information*
- Grant Rilette Fishing **could not find email address*
- Halibut Association of North America **could not find contact information*
- Hallmark Fisheries **could not find contact information*
- International Law Offices of San Diego
- J.B. Water Sport Fishing
- Keri Lyn Charters
- Lance Fisher Fishing
- Lewis & Clark Guide Service
- Linda Sue III Charters
- Lucky Luckett Guide Service & Charters **could not find email address*
- Marine Alliances Consulting
- Marine Discovery Tours
- Midwater Trawlers Cooperative
- Mikey's Fishing Adventures
- Mulkey's Guide Services
- Newport Marina Charters
- Newport Marina Store and Charters **could not find contact information*
- NOAA Marine Fisheries Advisory Committee (MAFAC)
- North American Submarine Cable Association (NASCA)
- Northwest Environmental Defense Center
- Northwest Fisheries Association
- Northwest Sportfishing Industry Association
- Ocean Beauty Seafoods
- Ocean Crystal Seafood
- Oregon Albacore Tuna Commission
- Oregon Coast Tours
- Oregon Coast Visitors Association
- Oregon Dungeness Crab Commission
- Oregon Fish and Wildlife Commission
- Oregon Fisherman's Cable Committee
- Oregon Salmon Commission
- Oregon South Coast Regional Tourism Network (OSCRTN)
- Oregon Trawl Commission
- Pacific Coast Federation of Fishermen's Associations (PCFFA)
- Pacific Coast Shellfish Growers Association
- Pacific Fishery Management Council (PFMC)
- PFMC Advisory Groups
- Pacific Seafood
- Pacific Seafood Processors Association (PSPA)
- Pacific States Marine Fisheries Commission
- Pacific Whiting Conservation Cooperative
- Point Adams Packing Company **could not find email address*
- Port of Alsea in Waldport
- Port of Astoria
- Port of Bandon

- Port of Brookings-Harbor
- Port of Charleston Marina in Coos Bay
- Port of Coos Bay
- Port of Garibaldi
- Port of Gold Beach
- Port of Newport
- Port of Port Orford
- Port of Siuslaw in Florence
- Port of Tillamook Bay
- Port of Toledo
- Port of Umpqua in Reedsport
- Premier Pacific Seafoods **could not find contact information*
- Purse Seine Vessel Owners Association
- Renew Oregon
- Responsible Offshore Development Alliance (RODA) Pacific Advisory Committee
- Salmon For All **contact information outdated*
- Salmon Harbor Charter Fishing Co **could not find email address*
- Sause Brothers
- Seafood Products Association **could not find contact information*
- Seaside Museum & Historical Society
- Shrimp Producers Marketing Cooperative
- Smith's Pacific Shrimp **could not find contact information*
- South Coast Tours
- Southern Oregon Ocean Resource Coalition (SOORC)
- Sportsmen's Cannery **could not find contact information*
- S&S Seafood **closed*
- Strike Zone *Charters *company dissolved*
- Tillamook County Smoker
- United Catcher Boats Association
- Verizon
- Washington Fish Growers Association
- Wavewalker Charters
- West Coast Fisheries Consultants
- West Coast Seafood Processors Association
- Western and Central Pacific Fisheries Commission
- Wild Rivers Coast Alliance
- Yaquina Bay Charters
- American Albacore Fishing Association
- American Seafoods Company LLC
- California Shellfish Co.
- California Wetfish Producers Association
- Coastal Conservation Association (CCA)
- CCA Columbia County Chapter
- CCA Tillamook Chapter
- Charleston Fishing Families
- Coalition of Coastal Fisheries
- Cooper Fishing Inc.
- DaYang Seafoods
- F/V Seeker and F/V Miss Sue
- Global Ocean Center Services
- Great West Seafoods LLC
- Groundfish Advisory Subpanel
- Morro Bay Commercial Fisherman's Organization
- Newport Fishermen's Wives
- Northwest Aquaculture Alliance (NWAA)
- Ocean Gold Seafoods
- Oregon Board of Maritime Pilots
- Oregon Coast Crab Association
- Oregon Shrimp Commission
- Pacific City Dorymen's Association
- Phoenix Processor Limited Partnership
- Port of Everett
- Shoreside Whiting By-catch Coop
- Trident Seafoods Corporation
- Washington Dungeness Crab Fishermen's Association
- Washington Trollers Association
- West Coast Pelagic Conservation Group
- Western Fishboat Owners Association (WFOA)
- Winona S

Coastal Communities and Interest Groups

- Astoria Warrenton Area Chamber of Commerce
- Bandon Chamber of Commerce
- Bandon Historical Society Museum
- Bay Area Chamber of Commerce
- Boost Southern Oregon
- Brookings-Harbor Chamber of Commerce
- Cannon Beach Chamber of Commerce
- Cannon Beach History Center & Museum
- Central Coast Economic Development Alliance
- Central Oregon Coast Board of Realtors
- Chetco Valley Historical Society Museum **could not find email address*
- Clatsop Association of Realtors
- Clatsop Economic Development Resources
- Columbia River Maritime Museum
- Coos County Board of Realtors
- Crescent City and Del Norte County Chamber of Commerce
- Curry County Board of Realtors
- Curry Historical Society Museum
- Depoe Bay Chamber of Commerce
- Economic Development Council of Tillamook County
- Florence Area Chamber of Commerce Visitor Center
- Greater Newport Chamber of Commerce
- Lakeside Chamber of Commerce
- Lincoln City Chamber of Commerce
- Lincoln County Board of Realtors
- Lincoln County Historical Society
- Long Beach Peninsula Visitors Bureau **could not find email address*
- North Coast Labor Federation
- Oregon Coast Aquarium
- Oregon Coastal Energy Alliance Network (OCEAN)
- Ocean Park Area Chamber of Commerce
- Oregon Historical Society
- Oregon Rental Housing Association
- Pacific City-Nestucca Valley Chamber of Commerce
- Port Orford Chamber of Commerce
- Reedsport/Winchester Bay Chamber of Commerce
- Renew Oregon
- Rockaway Beach Chamber of Commerce
- Seaside Aquarium
- Seaside Chamber of Commerce
- Seattle Chamber of Commerce
- South Coast Development Council
- Tillamook Area Chamber of Commerce
- Tillamook County Board of Realtors
- Toledo Chamber of Commerce
- Waldport Chamber of Commerce
- Yachats Chamber of Commerce
- California Coastal Trail Association
- Economic Development Alliance of Lincoln County
- Oregon State Historic Preservation Office
- Redfish Rocks Community Team
- The Northwest Seaport Alliance

Other Groups

Law Firms

- Brownstein Hyatt Farber Schreck
- Conservation Law Foundation
- Crag Law Center
- Davis Wright Tremaine
- Liskow & Lewis
- Morgan, Lewis & Bockius LLP
- Perkins Coie
- Siff & Associates, PLLC

- Stoel Rives LLP
- Waarvick & Waarvick
- Winalski Law LLC

News/Media

- CBS News
- Greentech Media
- Inframation Group
- Portland Hispanic News/Brilliant Media
- Sunset Bay Media
- The Log

Consulting Firms

- 48 North Solutions, Inc.
- Anchor QEA
- Arctic Storm Management Group
- CSA Ocean Sciences Inc.
- David Evans and Associates
- Dempsey Public Affairs
- e4sciences, LLC
- Eastern Research Group, Inc.
- Ecology & Environment, Inc.
- Energy Trade Advisor
- Environmental Management and Planning Solutions, Inc. (EMPSi)
- Environmental Solutions & Innovations, Inc.
- ERM: Environmental Resources Management
- Farallon Consulting
- FTI Consulting
- H.T. Harvey & Associates
- Hart Crowser
- HBW Resources
- ICF
- InfoGain Consulting
- Innovium Marine & Associates
- Integral Consulting Inc.
- J Connor Consulting
- John Wood Group
- Moffat & Nichol
- Parametrix
- Project Consulting Services, Inc.
- RPS Group
- SeaJay Environmental LLC
- Steve Black Strategies
- SWCA Environmental Consultants
- Tetra Tech
- Vysus Group
- W.F. Baird & Associates
- West Inc

Other

- Circle Faith Future
- Citizens Against LNG
- Climate Clean
- Columbia Basin Helicopters Inc.
- Crosswater Strategies
- EarthLink
- Fred Olsen Crevalle Management Services
- GFS
- Hans and Cassady
- NV5 Geospatial
- Oregon Coast Humane Society
- Rockefeller Brothers Fund
- Santa Barbara District Office
- Slavic Coalition of Oregon
- The Energy Coalition
- Transportation Research Board

Appendix 8.4 Outreach and Engagement Meeting Summary Table

	Meeting	Date	Host	Meeting interest	Meeting Type	Participants	Public?
1	Surfrider Webinar*	10/19/2020	Surfrider	Environmental	Presentation	35	Yes
2	Meeting with Commissioner Kaety Jacobson ‡	11/16/2020	Lincoln County	Elected Official	One on one	N/A	No
3	Oregon Coastal Zone Management Association (OCZMA) Meeting	11/18/2020	OCZMA	Coastal Community	Presentation	45	Yes
4	Ocean Coastal Energy Alliance Network (OCEAN) Monthly Meeting	11/19/2020	OCEAN	Coastal Community	Presentation	21	Yes
5	Meeting with Rep. Caddy McKeown	11/20/2020	BOEM, DLCD	Elected Official	One on one	N/A	No
6	Meeting with Commissioner Lianne Thompson	11/25/2020	BOEM, DLCD	Elected Official	One on one	N/A	No
7	Meeting with Commissioner Bob Main	11/30/2020	BOEM, DLCD	Elected Official	One on one	N/A	No
8	Meeting with Commissioner Court Boice	12/3/2020	BOEM, DLCD	Elected Official	One on one	N/A	No
9	Meeting with Commissioner David Yamamoto	12/9/2020	BOEM, DLCD	Elected Official	One on one	N/A	No
10	Oregon Ocean Policy Advisory Council (OPAC) Meeting	12/18/2020	OPAC	Coastal Community	Presentation	Unknown	Yes
11	Meeting with United States Coast Guard	2/3/2021	BOEM, DLCD	Ocean User	One on one	N/A	No
12	Meeting with Oregon Fishermen's Cable Committee	2/4/2021	BOEM, DLCD	Ocean User	One on one	N/A	No
13	Meeting with Commissioner Chris Boice	2/4/2021	BOEM, DLCD	Elected Official	One on one	N/A	No
14	Meeting with Oregon Department of Fish and Wildlife‡	2/17/2021	BOEM, ODFW	Ocean User	Presentation	Unknown	Yes
15	Meeting with NOAA National Marine Fisheries	2/18/2021	BOEM, NMFS	Ocean User	Presentation	Unknown	Yes

	Service (NMFS) West Coast‡						
16	Meeting with City Councilor Carmen Matthews	2/19/2021	BOEM, DLCD	Elected Official	One on one	N/A	No
17	Pacific Fishery Management Council (PFMC) Habitat Committee Meeting	2/24/2021	PFMC	Ocean User	Presentation	103	Yes
18	Oregon Public Ports Association (OPPA) Meeting	3/4/2021	Business Oregon	Ocean User	Presentation	12	No
19	PFMC Marine Planning Update Meeting	3/5/2021	PFMC	Ocean User	Presentation	Unknown	Yes
20	BOEM-State OROWindMap Webinar	3/11/2021	BOEM, DLCD	Research	Presentation	138	Yes
21	Lincoln County Board of Commissioners Meeting	3/15/2021	Lincoln County	Coastal Community	Presentation	21	Yes
22	Audubon Educational Webinar	3/23/2021	Portland Audubon	Environmental	Presentation	73	Yes
23	West Coast Ocean Alliance (WCOA) Ocean Energy Roundtable	3/24/2021	WCOA	Coastal Community	Presentation	Unknown	No
24	Oregon Dungeness Crab Commission (ODCC) meeting	3/29/2021	ODCC	Ocean User	Presentation	17	Yes
25	Meeting with Sen. Wyden and Sen. Merkley staff†	3/30/2021	BOEM, Sen Staff	Elected Official	One on one	N/A	No
26	Tillamook County Board of Commissioners Meeting	3/31/2021	Tillamook County	Coastal Community	Presentation	29+	Yes
27	Meeting with PFMC‡	4/2/2021	BOEM, PFMC	Ocean User	One on one	N/A	No
28	Columbia River Steamship Operators' Association Virtual Industry Event	4/8/2021	CRSOA	Industry	Presentation	21	No
29	Oregon Offshore Wind Environmental NGO Meeting -	4/14/2021	BOEM, DLCD	Environmental	Presentation	14	No

	American Bird Conservancy, American Wind Wildlife Institute, Environment Oregon, The Nature Conservancy, Natural Resource Defense Council, Oregon Coast Alliance, OCEAN, Oregon Shores Conservation Coalition, Whale and Dolphin Conservancy, and Wild Rivers Coast Alliance were in attendance.						
30	Follow-up Meeting with Oregon Audubon[†‡]	4/14/2021	BOEM, Audubon	Environmental	One on one	N/A	No
31	Meeting with OR Trawl Commission Director	4/15/2021	BOEM, DLCD	Ocean User	One on one	N/A	No
32	Meeting with Simply Blue Group[†‡]	4/15/2021	BOEM, Simply Blue	Industry	One on one	N/A	No
33	Business Network for Offshore Wind (BNOW)[†]	4/27/2021	BOEM, BNOW	Industry	One on one	Unknown	Unknown
34	Reedsport City Council Meeting	5/3/2021	City of Reedsport	Coastal Community	Presentation	14+	Yes
35	BOEM-State Public Webinar	5/12/2021	BOEM, DLCD	General Public	Presentation	113	Yes
36	BOEM-State Public Webinar	5/13/2021	BOEM, DLCD	General Public	Presentation	80	Yes
37	BOEM-State Public Webinar	5/13/2021	BOEM, DLCD	General Public	Presentation	23	Yes
38	Meeting with Laborers' International Union of North America (LiUNA)	5/19/2021	BOEM, LiUNA	Industry	One on one	N/A	No
39	Oregon Trawl Commission Meeting	5/24/2021	OTC	Ocean User	Presentation	29	Yes

40	Coquille Indian Tribe, BOEM, DLCD Staff-to-Staff Meeting	5/25/2021	Coquille Indian Tribe	Tribe	One on one	11	No
41	Meeting with West Coast Pelagic Conservation Group	6/1/2021	BOEM, WCPCG	Ocean User	One on one	N/A	No
42	Port of Port Orford Commission Meeting	6/15/2021	Port of Port Orford	Ocean User	Presentation	8	Yes
43	Florence City Council Meeting	6/21/2021	City of Florence	Coastal Community	Presentation	27+	Yes
44	Meeting with Pew Charitable Trust†	6/22/2021	BOEM, Pew	Environmental	One on one	N/A	No
45	Curry County Commissioner Meeting	6/23/2021	Curry County	Coastal Community	Presentation	Unknown	Yes
46	Meeting with Renewable Northwest†	6/25/2021	RWE, BOEM	Coastal Community	Unknown	Unknown	Unknown
47	Meeting with Oregon Governor's Office	7/8/2021	Governor's Office	Coastal Community	Presentation	N/A	No
48	PFMC Marine Planning and Offshore Development Meeting†	7/22-23/2021	BOEM, PFMC	Ocean User	Unknown	Unknown	Unknown
49	BOEM-State Data Review Workshop	8/4/2021	BOEM, DLCD	Research	Presentation	129	Yes
50	BOEM-State Fisheries Data Review Workshop	8/11/2021	BOEM, DLCD	Research	Presentation	123	Yes
51	Makah Tribe-BOEM Ocean Energy Staff Meeting	8/24/2021	Makah Tribe	Tribe	One on one	13	No
52	PFMC Ad Hoc Marine Planning Committee Meeting	9/1/2021	PFMC	Ocean User	Presentation	78	Yes
53	Pacific Ocean Energy Trust (POET) Industry Advisory Group Meeting	9/8/21	POET	Ocean User	Presentation	12	Unknown
54	Oregon Infrastructure Summit*	9/14/21	DLCD	Research	Presentation	Unknown	Yes

55	Representative Schrader Offshore Wind Forum: Update and Roundtable Discussion	9/17/21	Congressman Kurt Schrader	Elected Official	Presentation	30	No
56	American Waterways Operators Offshore Wind Discussion[†]	9/20/21	BOEM, AWO	Industry	One on one	Unknown	No
57	Coos County Board of Commissioners Meeting	9/21/21	Coos County	Coastal Community	Presentation	24	Yes
58	Follow-up Meeting with Portland Audubon	9/29/21	BOEM, Audubon	Environmental	One on one	N/A	No
59	Meeting with Oregon Public Utility Commission (OPUC)	9/30/21	BOEM, OPUC	Elected Official	One on one	N/A	No
60	Follow-up Meeting with ODFW	10/6/21	BOEM, ODFW	Ocean User	One on One	N/A	No
61	Meeting with Hecate Independent Power Limited	10/18/21	Hecate, BOEM	Industry	One-on-one	N/A	No
62	Meeting with Oregon Department of Energy (ODOE)	10/19/21	ODOE, BOEM	Ocean User	One-on-one	N/A	No
63	Meeting with Representative. Kurt Schrader	10/19/21	BOEM	Elected Official	One-on-one	N/A	No
64	Meeting with OPUC	10/22/21	BOEM, DLCD, OPUC, POET	Elected Official	One-on-one	N/A	No
65	Meeting with OPAC	11/4/21	OPAC	Coastal Community	One-on-one	51	Yes
66	Meeting with Shell	11/05/21	Shell, BOEM	Industry	One-on-one	N/A	No
67	Consultation Meeting with the Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians (CTCLUSI)	11/09/21	CTCLUSI	Tribe	One-on-one	12	No
68	PFMC Ad Hoc Marine Planning Committee Meeting	11/10/21	PFMC	Ocean User	One-on-one	≥60	Yes
69	Meeting with PFMC	11/17/21	PFMC	Ocean User	One-on-one	N/A	Yes

70	Meeting with USCG	11/17/21	USCG, BOEM	Ocean User	One-on-one	N/A	No
71	Rotary Club of Florence Presentation	11/23/21	Rotary	Coastal Community	Presentation	≥44	Yes
72	Meeting with Environmental NGOs – *American Bird Conservancy, Oceana, Oregon Shores Conservation Coalition, Portland Audubon Society, Redwood Region Audubon Society, Surfrider Foundation, Whale and Dolphin Conservancy were in attendance.*	11/30/21	Audubon	Environmental	One-on-one	10	No
73	Meeting with Equinor and BP	12/06/21	Equinor, BP	Industry	Small group	N/A	No
74	Floating Offshore Renewables Workgroup to Advance Regional Development (FORWARD) Forum	11/30/21	FORWARD	Ocean User	Presentation	10	Yes
75	FORWARD Forum	12/08/21	FORWARD	Ocean User	Presentation	11	Yes

*DLCD represented BOEM-State planning team

†BOEM represented BOEM-State planning team

‡Multiple follow-up discussions followed