

**DRAFT Pacific Fishery Management Council Letter to the Bureau of Ocean Energy
Management on Oregon Offshore Wind Call Areas**

To Whom It May Concern;

The Pacific Fishery Management Council (Council) appreciates the opportunity to comment on the Bureau of Ocean Energy Management's (BOEM) *Request for information and Nominations: Commercial Leasing for Wind Energy Development on the Outer Continental Shelf Offshore Oregon* (Call). The Council offers the following comments which describe the Council's major concerns and recommendations for future actions related to Oregon Call Areas.

On April 29, 2022, BOEM published the Call, inviting "*comments and information regarding site conditions, resources, and multiple uses in close proximity to or within the Call Areas*". The purpose of the Call is to collect information regarding several items of particular interest to the Council, including:

- Geological, geophysical, and biological conditions, activities, uses of the Outer Continental Shelf (OCS) including fishing use, fishing gear, and navigation
- Data and information concerning renewable energy resources and environmental conditions, other relevant socioeconomic, cultural, biological, and environmental information
- Information on coastal or onshore activities needed to support offshore wind development, such as port and transmission infrastructure, and associated potential impacts to recreation, scenic, cultural, historic, and natural resources, relating to those activities.
- Any other relevant information BOEM should consider during its planning and decision-making process for the purpose of identifying areas to lease in the Call Areas

The Council has been very engaged in the Pacific Coast OSW planning process and anticipates continued engagement as BOEM moves forward with OSW development planning, leasing, and related activities. The Council submitted a [comment letter](#) to BOEM on November 24, 2021, describing several areas of concern and making several recommendations for moving forward. Attached to that November 24, 2021, letter were other comment letters the Council has submitted on Pacific Coast OSW development, and we ask that it be incorporated by reference. In addition, we reiterate many of our previously expressed concerns here. Many of our concerns remain unaddressed, although we recognize and appreciate that the proposed Bandon Call Area was removed from further consideration, based on substantial concerns about high value habitat areas as well as important fishing grounds.

The Council has responsibility to manage marine commercial and recreational fisheries in a manner that:

- Ensures a sustainable and safe domestic seafood supply and cultural benefits from fisheries, by achieving and maintaining, on a continuing basis, the optimum yield from each fishery;
- Protects ecosystem health and sustainability, including protection of essential fish habitat (EFH) and ecosystem services; and.

- Minimizes long-term economic and social effects to fisheries and fishing-dependent communities, in part by improving the ability to adapt to climate change and competing ocean uses.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) guides the Council's actions and includes requirements to protect EFH to the extent practicable, from both fishing and non-fishing impacts. The MSA and implementing regulations (50 CFR §600.805 *et seq.*) include several other provisions aimed at conserving important marine habitats, for the benefit of fisheries, marine species, and the marine ecosystem. The MSA requires the establishment National Standards aimed at preventing overfishing, using best available science, the importance of fisheries to coastal communities, and safety at sea, among others. We consider the MSA, related regulations, and National Standards fundamental to our purpose and actions.

Process

According to the Call, *“the identification of the Call Areas is a result of data and information received throughout the planning effort from 2020 through 2022.”* However, not all data and information provided has been applied and significant analysis remains to be done. In proceeding toward the competitive leasing stage, BOEM will consider *“all information received in response to the Call during area identification”* including *“Task Force input, Tribal input, ocean user input, and stakeholder input.”* The Council strongly **recommends** data gathering and analysis pertaining to siting be conducted during Area Identification, prior to designation of WEAs, because appropriate siting of WEAs is crucial to avoiding and minimizing risks to natural resources and impacts on existing ocean users. To determine areas most appropriate to establish WEAs, BOEM should evaluate and address potential impacts to habitat and fisheries, including socioeconomic effects and other likely impacts resulting from OSW energy development.

The Council's overarching opinion is that the process should include much more analysis of potential impacts resulting from the development and operations of OSW facilities, prior to establishing WEAs, rather than waiting until energy companies have bid on and won the rights to develop portions of the ocean. Once WEAs are designated, BOEM has stated it will conduct an Environmental Assessment (EA). However, we are concerned that the resulting EA may not provide the kinds of analyses necessary to characterize the potential impacts and mitigation strategies for offshore wind site assessment. An Environmental Impact Statement (EIS) may be a more appropriate approach under the National Environmental Policy Act (NEPA).

In a letter related to OSW in the Gulf of Maine, Conservation Law Foundation attorney Nick Krakoff states, *“It's simply flawed to choose areas for offshore wind development before doing a full environmental analysis,”* and *“It is critical to advance the development of offshore wind to respond to the climate crisis and clean up our electric grid, but it must be done responsibly. BOEM must improve its processes and consider the full environmental and socioeconomic impacts of wind development before areas in the Gulf of Maine are chosen.”* The Council agrees with this statement, as it relates to offshore wind siting on the West Coast.

Engagement

The Council appreciates and values the efforts that BOEM staff have made to participate in Council meetings, coordination calls, and engagement. However, the BOEM process fall short in terms of

meaningful engagement with the fishing community¹. While we acknowledge there have been more opportunities for engagement for some community members, others continue to feel unheard. Regardless, all agree that what engagement has taken place does not amount to meaningful engagement. The Council anticipates continued and more meaningful engagement, and we are willing to assist in finding a structure that offers an improved process for the fishing industry, and results in vital information that would benefit BOEM's OSW planning process. We are fully supportive of BOEM's plans for sector-specific engagement, including recreational, tribal and subsistence fisheries, at the regional and local levels. For example, the albacore fishery includes participants from San Diego, California to the most northern reaches of Washington state. Limiting engagement to the albacore fleet(s) based in Southern Oregon will leave a significant portion of the fishery without a meaningful way to communicate their ideas and/or concerns.

To the extent the Council, through its Ad Hoc Marine Planning Committee (MPC), can assist in facilitating those conversations and/or connecting BOEM with other institutions (e.g., Sea Grant, West Coast Oceans Alliance, etc.) or fishing associations, we stand ready to provide that assistance. However, BOEM must be cognizant that there are state-managed fisheries such as Dungeness crab, pink shrimp, and market squid that also make use of the Call Areas but are managed outside of the Council process. A revised engagement approach may slow the overall process, but the result would benefit both BOEM and fishing stakeholders, and there would be greater likelihood of producing information that would improve decision-making.

The Council **recommends** that BOEM continue to emphasize the importance of meaningful engagement throughout OSW leasing and development, including:

- Lease stipulations and authorizations to construct OSW projects should require engagement plans for entire life of project;
- Leases should include requirement to establish cable routes and landing sites in accordance with state policy and the priorities of local communities;
- Include plans for meaningful, ongoing engagement related to monitoring, reporting results, and adaptive management, throughout the life of the project.

Effects and potential impacts

The Council appreciates BOEM's mandate of developing offshore wind while minimizing interference with other reasonable uses of the ocean, however the Council remains concerned that potential future impacts on fish, their habitats, and fishing activities are not fully understood or evaluated by BOEM. It is important to identify potential impacts of OSW now, so that research, monitoring, and OWS siting can proceed according to BOEM's OSW planning goal of minimizing impacts to the ocean and its other users. As stated above, more analysis should be completed before establishing WEAs, consistent with principles of avoidance and minimization of the impacts of WEAs on habitats, fisheries, and

¹ Magnuson-Stevens Act (MSA) defines a fishing community as " ...a community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community." In interpreting this definition, National Marine Fisheries Service has stated that "A fishing community is a social or economic group whose members reside in a specific location." This interpretation means that a fishing community exists in a specific place.

ocean ecosystems. These additional analyses may necessitate extending the timeline between call areas and WEAs.

Impacts to Fishing Activities

Excepting albacore and other highly migratory species, most Council-managed fishing activity takes place in waters shallower than 1300 meters. The Council is concerned that the areas identified for siting wind energy infrastructure may overlap significantly with important fishing areas. If overlap is substantial and fishing effort is restricted in proximity to wind energy facilities, then fishing activity will be displaced, effort will be constricted potentially into less desirable areas, gear and fishery conflicts will increase in nearshore areas, and fishing impacts on habitat may increase in the reduced areas available to fishing. Recreational fishing activity, and therefore the economic benefits derived from such, may be reduced in southern Oregon ports if OSW areas limit transit. We also note that direct impacts on fishing activities have indirect carry-on effects to fishing-dependent communities, including seafood processing facilities and other marine-related businesses due to decreased fishing activity.

For example, the call areas encompass historically important Pacific whiting (hake) grounds at all depths. It is important to note that due to bycatch constraints, whiting fishermen may seek out areas that are less productive for whiting but for which they will encounter less bycatch of other species. Therefore, it is critical to identify areas that may not necessarily include fishing grounds of high productivity for target species, but grounds that also afford vessels to avoid bycatch of constraining species. BOEM should explore this facet of the call areas in greater detail with groundfish and coastal pelagic fishing fleets.

Spatial displacement of fisheries and the economic value they provide to coastal ports and communities is not easy to quantify but a range of potential economic losses should be part of a cumulative analysis completed before WEAs are identified in order to minimize those losses. The Council's Ecosystem Working Group notes in its [March 2022 C.2.a Supplemental EWG Report 2](#) that "simply quantifying where fishing is occurring today or has occurred in recent years may underestimate the socioeconomic effects of any closures due to: 1) eroding the portfolio of fishing location choices, and 2) potential additional effects of moving and concentrating fishing effort outside closed areas."

For Oregon, much of the fishing effort displaced from the call areas would, by necessity of fish congregations or regulatory actions, increase in the nearshore areas. Conflicts between various fishing sectors, such as sport and commercial, groundfish and Dungeness crab, etc., would be exacerbated. These kinds of conflicts and changes reduce operational flexibility. The Groundfish Advisory Panel's [March 2022 C.2.a Supplemental Report 1](#) indicates that, "forcing fisheries into less productive grounds increases operational costs because more time is spent catching fewer fish. More time on the grounds increases safety risks, which are already heightened because of the navigational obstacles presented by [offshore wind] placements."

It is incumbent on BOEM to explore these deeper socioeconomic relationships in coastal ports beyond the revenues paid directly to fishermen. As the Council has stated in prior correspondence (most recently in a January 2022 [letter](#) regarding Morro Bay wind energy area), ex-vessel revenue totals fail to capture the true economic impact of fisheries to coastal communities. Processors, buyers, fuel

docks, marine equipment suppliers, employees specializing in marine work to fishing vessels and processors are also negatively affected. BOEM should carefully consider not only the displacement of fishermen, but also the potential effects the businesses in nearby ports and communities that may be located in Oregon or California.

Seafood processors and buying stations are located on docks and in ports to offload fresh seafood; they cannot move. Buying stations and processors will face closure or increased costs to obtain the kinds of seafood needed to supply their market demands if fishermen are displaced. These brick-and-mortar businesses have evolved to serve the communities and, by proxy, provide the public at large access to a publicly-held resource managed by the Council and NMFS.

Recreational fishing activity, and therefore the economic benefits derived from such, may be reduced in southern Oregon ports if OSW areas limit transit. Specifically, the Coos Bay call area represents a significant safety risk (and greater potential economic harm) to sport and commercial fishing albacore vessels fishing out of Winchester Bay. It's roughly 20 nautical miles (23 statute miles) from the mouth of the Umpqua River at Winchester Bay to the northeastern corner of the Coos Bay call area; it's roughly 33.8 nautical miles (39 statute miles) to the southeastern corner of the Coos Bay call area. Private and charter albacore fishermen will have to travel miles out of their way – either north or south – to access the tuna fishing grounds typically found in deeper waters. With no transit lanes through the call area, these vessels have a greater chance of encountering inclement weather, especially during the spring and fall weather transitions. This represents a serious safety risk.

Additionally, both private and charter fisheries are important components of Oregon fishing communities, but the data is, currently, insufficient. Some Oregon Department of Fish and Wildlife (ODFW) recreational fishing data is included in the OROWindMap resource; that is, albacore charter fishing and recreational bottomfish (see: <https://bit.ly/315XHvu>). Charter fishing for albacore is evident throughout most of the Coos Bay call area and in the northern part of the Brookings call area. Therefore, we **recommend** BOEM engage with Southern Oregon sport and commercial fishermen to determine how best to accommodate fishermen's safe transit to fishing grounds through the Coos Bay and Brookings call areas and for reducing economic harm to the fleet and communities.

The analysis under Subsection 2 (Marine Navigation) begins with the statement that the “majority of commercial vessels that traverse the Call Area carry automated identification system (AIS) transmitters. BOEM conducted a review of 2011 and 2017 AIS vessel information provided to BOEM from the United States Coast Guard (USCG).” Beginning in 2016, commercial fishing vessels 65 feet or greater were required to have AIS. However, most commercial fishing vessels operating in and around the WEA are under 65 feet, and thus not required to use AIS. BOEM **should** include all commercial and recreational fishing vessels in this subsection, not just those with AIS. BOEM should consult the [Pacific Fisheries Information Network \(PacFIN\)](#) APEX Reporting System, the [Recreational Fisheries Information Network \(RecFIN\)](#), and fishing communities for data on major navigation routes for these vessels. In addition, the Council **recommends** that BOEM conduct participatory mapping or similar activity in partnership with industry and the recreational sector to better understand the spatial overlap of fishing activity from multiple fisheries and sectors in the Oregon OSW Call Areas. We also recommend that BOEM utilize predictive analyses with regard to displacement of fishing sectors and ripple effects on other factors such as increased risk resulting from displacement and additional costs (fuel, labor, etc).

Impacts to Habitat and Ocean Processes

Essential Fish Habitat Conservation Areas (EFHCAs) are spatially discrete areas closed to bottom trawling and, in some cases, other types of bottom contact gear, are designed to protect important habitat features, and tend to be highly productive and biodiverse areas. Habitat areas of particular concern (HAPCs) are specific habitat features or spatially discrete areas representing high priority habitats for conservation, management, or research and are important for healthy ecosystems and sustainable fisheries. EFHCA and HAPC designations exist in parts of both the Coos Bay and Brookings Call Areas. The Council **recommends** that these unique geographic features designated as EFHCA and/or HAPC be excluded from further consideration.

The Coos Bay Call Area overlaps unique features of Heceta Bank, including both rocky habitat and a unique recirculation pattern that intensifies during summer upwelling and affects nutrient and dissolved oxygen concentrations and temperatures. As wind wakes created by a cluster of wind farms might profoundly reduce wind speeds in the region, this may impact ocean conditions in the Heceta Bank region and affect the productivity of the system. Heceta Bank is one of the most productive upwelling systems on the entire Oregon coast.

The Brookings Call Area overlaps the Rogue River Reef EFHCA and rock habitat found therein, and is situated between Rogue Canyon and Rogue River Reef. Here too, wind wakes created by clusters of wind farms could potentially reduce wind speeds enough to impede upwelling across Rogue River reef. It is the Council's opinion that wind energy planning and development may not be compatible with the presence of these important physical and biogenic habitat features, including EFHCAs, HAPCs, major rocky structures, methane seeps, and important upwelling zones in the area. These habitats may be particularly sensitive wind energy activities (seismic testing, drilling or other site characterization activities, wind energy implementation and maintenance), and should be avoided. The Council **recommends** that BOEM conduct a careful impacts analysis relative to EFHCAs and HAPCs to ensure that offshore wind (OSW) projects will not negatively impact these designated areas. BOEM should consider the use of buffer zones to avoid HAPCs and EFHCAs and to minimize impacts to these areas, including from cable routing, construction, and maintenance activities.

In addition to the physical presence, the installation activities and potential maintenance of infrastructure that can impact sensitive habitats. For example, because of shifting sediments at the Block Island OSW facility (East Coast) cables had to be reburied from a depth of 4-6 feet to a depth of 25 - 50 feet. It is likely that cables in the Oregon Call Areas would need to be buried at similar depths. We **recommend** that any EA should account for core samples being taken from that depth - as opposed to a preferred shallower cable depth.

The Council is concerned about cumulative impacts to habitats and ocean processes during the siting assessment, installation, and maintenance of many potential wind farms. Impacts to the seafloor (anchors, cables) and water column (mooring lines, floating turbine structures, support vessels) affect physical and biogenic habitats, while wind wakes (decreased upwelling, slowed currents, reduced larval and juvenile transport) could potentially affect the productivity of the system. The Council **recommends** that a comprehensive cumulative impacts assessment be conducted, evaluating the effects of multiple wind farms on ocean processes and habitats on the Oregon Coast and the California Current Ecosystem, prior to identifying WEAs off the Oregon Coast. We further **recommend** that

prior to designating WEAs, BOEM conduct a comprehensive suitability analysis to winnow down Call Areas to WEAs.

Impacts to Research, Monitoring, and Management

NOAA Fisheries West Coast Region, through the Northwest and Southwest Fisheries Science Centers and in collaboration with the Canadian government, conducts regular coast-wide fishery surveys, in areas which overlap with the current Oregon OSW Call Areas. These include the Joint U.S.-Canada Integrated Ecosystem and Pacific Hake Acoustic Trawl Survey, the West Coast Groundfish Bottom Trawl survey, and the NWFSC/SWFSC "Pre-recruit" groundfish survey. The dataset for these surveys spans decades of sampling. Exclusion of scientific survey vessels from OSW lease areas would directly impact these extensive sampling time series. These multi-decadal data streams feed directly into the assessment and management of some of the region's most valuable fisheries, and disruptions of these data streams will directly impact the Council's ability to sustainably manage those fisheries, including international management. As data uncertainty increases, management becomes more precautionary if there is less confidence in the stock assessments, leading to decreased harvest potential and the economic impacts that conveys. The Council **recommends** that BOEM ensure that these critical NOAA surveys, as well as other scientific surveys implemented by universities and non-governmental organizations can continue. This implies working with survey Principals to identify WEAs (and eventually lease areas) that will avoid impacts to scientific surveys.

Data and Information

Given the need for additional analysis of impacts, the Council **recommends** that BOEM consider the following habitat, fishery, and other information. Specific data needs and gaps should be rectified before WEAs are established.

Geological, geophysical, and biological conditions

Amendment 28 to the Pacific Coast Groundfish FMP increased protections for high valued benthic habitats, by prohibiting bottom trawling in additional known areas of rocky reefs, undersea canyons, and biogenic habitats. While most of the specific potential impacts to marine habitats will be considered on a project-specific basis, the potential impacts of site characterization, surveys, and transmission cables should be considered as part of the site assessment and characterization activities. Data on HAPC, EFHCAs, and deep-sea coral/sponge habitats are available at the FRAM data warehouse website (<https://www.webapps.nwfsc.noaa.gov/data/map>).

In addition, comprehensive high-resolution seafloor mapping and habitat classification is needed throughout Oregon Call Areas and cable corridors to locate and avoid fragile habitats and to support biological community characterization surveys. Seafloor data and maps should be provided in advance of the leasing process to identify lease blocks that are incompatible for wind energy development. For example, extensive multibeam sonar surveys and mapping of methane seeps and carbonate deposits were conducted off Washington, Oregon and northern California in 2011, 2016, 2017 and 2018 (Merle et al 2021).² When taken together, analyses of these surveys led to the discovery of over 1,000 new methane emission sites and over 3,000 associated bubble streams on the Cascadia Margin from the

² Merle et al. 2021. *Distribution of Methane Plumes on Cascadia Margin and Implications for the Landward Limit of Methane Hydrate Stability*. Earth Sci., 24 March 2021.

Strait of Juan de Fuca to Cape Mendocino. This network of methane seeps is the focus of ongoing oceanographic and climate research.

The Council designated methane seeps as groundfish essential fish habitat due to the ability of methane seeps and underlying methane hydrates to form carbonate hardgrounds (i.e., fish habitat) and support diverse biological communities (PFMC 2020). While there can be benefits gained from additional data collection at methane seep sites during site assessment, some survey activities could potentially damage seep sites or interfere with ongoing research and must be carefully considered. Additionally, the potential for slope instability around methane seep areas is discussed in Merle et al (2021) and may be relevant to site assessment and effects analysis.

Additional seafloor mapping data have become available from NOAA Pacific Marine Environmental Laboratory (PMEL) since the publication of data in Merle et al. (2021) that may be relevant to Oregon call areas and cable corridors (NOAA PMEL Ocean Environment Division). BOEM should consult with NOAA PMEL to evaluate existing gaps in the mapping of these features, and coordinate with PMEL and other researchers on additional mapping needs to identify where unmapped seeps, hydrates and carbonate deposits are located in the Humboldt WEA and shoreward.

The Council **recommends** that BOEM conduct a careful impacts analysis relative to EFHCAs and HAPCs to ensure that offshore wind (OSW) projects will not cause significant harm to these designated areas. The Council **recommends** that BOEM include consideration of impacts to EFHCAs and HAPCs in approving site assessment/characterization activities and effects analyses.

The Council **recommends** that BOEM evaluate buffer zones around HAPCs, EFHCAs, deep-sea coral/sponge, and methane seep habitats within Oregon Call Areas and cable corridors to avoid or minimize impacts from site assessment/characterization activities that may damage these habitats (e.g., grab sampling, benthic sleds, drilling, borings, large buoy anchoring). Modeling and/or survey efforts may be necessary to determine the size and nature of such buffers.

Information regarding recreational and commercial fisheries

As noted above, better data on commercial and recreational fishing areas is needed to both plan locations of WEAs as well as determine impacts of WEAs on commercial and recreational fisheries. The Council advocates working with Pacific States Marine Fisheries Commission, NOAA Fisheries, and fisheries stakeholders to identify current, historical and potential future fishing areas.

The Council advocates for ongoing coordination with BOEM on matters of OSW planning and development. As stated in the Call, “*Coordination with the National Marine Fisheries Service, the Pacific Fishery Management Council, the Oregon Department of Fish and Wildlife, the fishing industry and individual members of the fishing community is ongoing and will assist in further reduction of existing space-use conflicts during the planning and leasing process.*” (pages 9-10). The Pacific Fishing Effort Mapping (PacFEM) Project is led by NOAA Fisheries and the Pacific States Marine Fisheries Commission in partnership with BOEM, west coast states, and the NMFS West Coast Region. The goal of the PacFEM project is to develop spatial data to support ecosystem management initiatives and marine planning in the West Coast region. A database is being developed to comprehensively join confidential fishery data from multiple sources, such as observer data, fish tickets, electronic trip reports, VMS, logbook data, and fishing revenue. A publicly-accessible fishing

effort mapping tool is being developed which utilizes the underlying confidential database that incorporates information from each data source available. The project is designed to inform socioeconomic impact discussions and to be used in siting discussions and decisions about WEAs, cable routes and landing sites. The Council strongly **recommends** that the PacFEM data be analyzed during the siting of WEAs off Oregon and that area identification of those WEAs not be considered complete until PacFEM products are available and applied to inform responsible siting of WEAs off Oregon.

When considering potential impacts of Call Areas on fisheries, the assessment of impacts should be broken out by fishery and gear type and be done in such a way to show trends over time. To accurately reflect potential impacts, BOEM should look beyond the last decade for information regarding fisheries in the area, as the recent ten-year period has been a time of tremendous change for many West Coast fisheries and future years should be quite different from this time period. For example, Amendment 28 to our Pacific Coast Groundfish Fishery Management Plan, adopted in 2019, implemented changes to the groundfish fishery by providing increased access to productive fishing grounds where fish populations have rebounded in recent years. Incorporating fishery-data from years earlier than the recent ten-year period could be used to estimate potential impacts post-Amendment 28.

Recreational fisheries for highly migratory species such as tuna take place in waters deeper than 200 meters and recreational fishermen and women have historic reliance on albacore tuna. This means that the recreational fishery for highly migratory species will likely be negatively impacted by call areas at these depths. These impacts will be felt by charter boat owners and operators, sportfishing landings, live bait providers, fuel docks and local hotels and restaurants. Hence, analyses of potential impacts of the WEA need to integrate both spatial information of lost recreational fishing grounds and larger socioeconomic impacts of the fishery. Providing ex-vessel revenues is useful in determining the potential economic loss to commercial harvesters; but fails to capture the true economic impact. Members of the dependent fishing community – buyers and processors, fuel docks, marine mechanics, restaurants, etc., could all be negatively impacted. As part of the planning and site characterization evaluation, potential impacts to commercial and recreational fisheries as well as associated industries should be evaluated.

Other relevant information and analysis

Oregon Call Areas may be susceptible to wind-energy induced changes in oceanographic processes, as these areas are subject to upwelling and hypoxia events. Periodically, these low oxygen waters move onto the shelf and contribute to widespread hypoxic events. Wind-driven coastal upwelling is a primary driver of productivity in the California Current. As documented in Europe, wind power generation can reduce wind speed downwind of turbine arrays. Disruption of upwelling could also exacerbate deepwater hypoxia since upwelling (and downwelling) processes are a major driver of renewal of oxygen conditions in coastal environments. Reduced wind speed downwind of turbine arrays could inhibit upwelling, which is a primary driver of productivity in the California Current. The potential effects of altered wind speeds on ocean processes in an area as large as the Oregon call areas, in a region dominated by and dependent on upwelling have not been studied. The Council **recommends** that BOEM conduct scientific analyses and/or modeling to assess potential wind-generated effects on ocean processes in this region of the California Current, and to build sufficient time into the leasing schedule to accomplish these tasks. Data products related to upwelling and

associated environmental aspects such as primary production and hypoxia are available through PMEL.

Additional data and analysis are needed on cable routes, landing sites and onshore infrastructure needs. The Council **recommends** that BOEM integrate outcomes from the United States Coast Guard Pacific Coast Port Access Route Study, when completed. According to the Call, BOEM considered transmission availability in the development of the Call Areas. If only two (Wendson and Fairview) of the five interconnection points are accessible to future WEAs sighted off the southern Oregon coast, then far less energy produced by offshore wind could be integrated into Oregon’s power system without infrastructure upgrades or new installations. We **recommend** BOEM evaluate potential cable routes and landing sites and compare offshore WEAs with onshore infrastructure needs to decipher between higher and lower risk options for offshore siting of WEAs.

The Council urges BOEM to consider waters deeper than 1300 meters for OSW development, which would greatly reduce the potential impacts to fisheries. We note that some Call Areas on the East Coast include waters up to 2500 meters. We realize that the bathymetry, slope, and other seafloor characteristics are very different on the West Coast. Nonetheless, BOEM should consider the potential for OSW to occur in waters deeper than are currently being considered. Similarly, when BOEM establishes WEAs and lease sites, shallower areas where most sensitive habitats and much of the fishing effort takes place **should** be eliminated from consideration.

Summary

This section will summarize the recommendations in the letter.

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