Pacific Fishery Management Council

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Marc Gorelnik, Chair | Merrick J. Burden, Executive Director

10 February 2022

Office of the Environment
Bureau of Ocean Energy Management
760 Paseo Camarillo
Camarillo, California 93010

RE: Humboldt Wind Energy Area Environmental Assessment

To Whom it May Concern;

The Pacific Fishery Management Council (PFMC, Council) appreciates the opportunity to comment on the Bureau of Ocean Energy Management's (BOEM) Draft Environmental Assessment (Draft EA) for the Humboldt Wind Energy Area (Humboldt WEA) and submits the following comments for your consideration. The stated purpose of the Draft EA is to determine if environmental and socioeconomic impacts of site assessment and site characterization activities have been adequately analyzed for future impacts from leasing activities. BOEM is requesting public comment on the adequacy of its environmental analysis and measures to avoid or reduce potential environmental impacts.

The Council is charged with sustainably managing U.S. West Coast fisheries, which includes conserving and enhancing habitats in support of sustainable fisheries and managed species. The Council is one of eight Regional Fishery Management Councils (RFMCs) established by the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSA). The Council develops management actions for Federal fisheries of Washington, Oregon, California, and Idaho, and is required to achieve optimum yield for public trust marine resources. Optimizing the yield of our nation's fisheries requires safeguarding these resources, their habitats, commercial and recreational fishery participants, and fishing-dependent communities. The Council notes that the Outer Continental Shelf Lands Act and MSA both contain mandates to responsibly manage ocean resources. We offer the following comments and recommendations, focused on habitat and ecosystem issues, followed by fisheries concerns.

We appreciate the evaluation of how the site assessment and characterization activities could be conducted while minimizing impacts to fishing. However, the scope of those activities is relatively narrow, and the actions should not be viewed in isolation. Instead, the Council's comments and the concerns of its stakeholders reach more broadly to the eventual development of the Humboldt WEA, to the effects of development in other areas along the West Coast, and in the context of the President's goal of developing 30 GW of offshore wind by 2030. We note that the request for comments solidifies the connection between planning activities described in this Draft EA, and construction/operations activities, which will depend on the information contained in the final EA: "*Site characterization activities include geophysical, geotechnical, archaeological, and biological surveys needed to develop specific project proposals*." The Council appreciates BOEM's mandate of developing offshore wind while minimizing interference with other reasonable uses of the ocean

and is grateful for the continued engagement with the Council and its advisory bodies and continued explanations of the agency's decision-making process. However, we remain concerned that some of the most important decisions have been made without a sufficient understanding of related future impacts, including how different areas in the broader Humboldt area (i.e., outside the Humboldt WEA) would compare in terms of their consequences to habitat and fisheries. The PFMC intends to remain engaged in this process and make comments in the future on fisheries, habitat, ecosystem, and research concerns broader than site assessment and site characterization, as those comment opportunities arise.

Habitat Issues

Essential Fish Habitat and Council authorities

The MSA authorizes the Council to identify, conserve, and enhance essential fish habitat (EFH) for species managed under the Council's fishery management plans (FMPs). The MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The EFH regulatory guidance (50 CFR §600.805) includes additional provisions to designate Habitat Areas of Particular Concern (HAPC) for habitats of ecological significance, sensitivity, vulnerability to degradation, or rare occurrence. The Council has identified EFH throughout the Pacific Coast region for species managed under each of its FMPs and has designated HAPCs for groundfish (rocky reefs, estuaries, canopy kelp, seagrasses, offshore banks, seamounts, canyons, and areas of interest) and salmon (estuaries, marine and estuarine submerged aquatic vegetation, and other habitat features). The Council has also designated Essential Fish Habitat Conservation Areas (EFHCAs) for groundfish species in its Groundfish FMP, which are spatially discrete areas closed to bottom trawl fishing and/or all bottom contact fishing, to protect fragile habitats from the effects of some types of bottom fishing.

The MSA further authorizes the Council to comment on any Federal or state activity that may affect the habitat, including EFH, of a marine or anadromous fishery resource under its authority. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Habitat, Fish, and the Marine Environment

The Council finds that the Draft EA has insufficient detail on the affected environment and analysis of impacts of future leasing activities, particularly as it relates to seafloor mapping, benthic habitats and associated species. Also absent from the Draft EA are measures to avoid and minimize impacts from the proposed activities, such as those recommended in the Council's comments on scoping for the Humboldt WEA (PFMC, Sept. 2021). To assist BOEM in preparing a robust EA, our comments included herein reiterate and expand upon our previous comments.

The Humboldt WEA is located in designated EFH for Pacific Coast groundfish, coastal pelagic species, salmon, and highly migratory species, and overlaps designated HAPC (rocky reefs and rocky banks). Additionally, the Humboldt WEA is located in a significant portion of the Samoa Deepwater EFHCA and within 2 nautical miles of the Mad River Rough Patch EFHCA (which may be relevant for cable routes). Within both EFHCAs are known hotspots of deep-sea corals and sponges. EFHCA and HAPC designations indicate the ecological significance and sensitivity in this portion of the Humboldt WEA and the need for protective measures from activities that can damage the habitats of Council-managed species and structure-forming invertebrates (e.g., fragile

deep-sea corals and sponges). It is the Council's opinion that wind energy planning and development may not be compatible with the physical and biogenic habitats in EFHCAs, as well as HAPC and coral/sponge habitats elsewhere in the Humboldt WEA and cable corridors.

In that same Section, the Draft EA addresses Impact to Critical Habitat (see page 36). On August 2, 2021, National Marine Fisheries Service issued "*a final rule to revise the critical habitat designation for the Southern Resident killer whale (SRKW)(Orcinus orca) distinct population segment (DPS) under the Endangered Species Act (ESA) by designating six additional coastal critical habitat areas along the U.S. West Coast.*[1]" One of these areas includes "*U.S. marine waters from the OR/CA border (42°00'00" N) south to Cape Mendocino, CA (40°26'19" N), between the 6.1-m and 200-m isobath contours. This area covers 1,606.8 mi2 (4,161.5 km2) and includes waters off Del Norte and Humboldt counties in California. The primary essential feature of this area is prey*." While the Humboldt WEA may be situated entirely outside the newly established critical habitat, it is reasonably foreseeable that site characterization and site assessment activities, as well as future cable installation may take place within that critical habitat. We are concerned the impact producing factors (IPF)[2] may impede the ability of SRKW to access prey.

The Council reiterates its previous recommendations that BOEM conduct a careful impacts analysis relative to EFHCAs and HAPCs and provide demonstration that offshore wind (OSW) projects will not cause significant harm to these designated areas.

The Council recommends that BOEM include in the final EA a map of the EFHCAs designated in 2019 and HAPCs to inform site assessment/characterization activities and effects analyses.

The Council recommends that BOEM evaluate buffer zones around HAPC, EFHCAs, and deep-sea coral/sponge habitats throughout the Humboldt WEA 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 determine the size and nature of such buffers.

The Council recommends including evaluation of the recent critical habitat designations for SRKW, and potential impacts to prey availability. This evaluation is important for potential lease sales and development activities.

Ocean Processes

The Humboldt WEA may be particularly susceptible to changes in oceanographic processes, as the Humboldt WEA is located within the oxygen minimum zone of the upper slope of the continental shelf (600-1200 m), a unique area where oxygen concentrations are naturally and consistently low. 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,

[1] https://www.govinfo.gov/content/pkg/FR-2021-08-02/pdf/2021-16094.pdf

[2] Impact-producing factors (IPFs) associated with the various activities in the Proposed Action that could affect resources include the following: noise, bottom disturbance, entanglements, vessel traffic and routine discharges, economic impacts, changes in coastal viewsheds, equipment, generator, and vessel air emissions, lighting.

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 Humboldt WEA, 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.

Seafloor mapping

Comprehensive high-resolution seafloor mapping and habitat classification is needed throughout the Humboldt WEA and cable corridors to identify where fragile habitats are located 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.

The information and references on seafloor mapping presented in the Draft EA confirm that BOEM either has not acquired or not utilized all available seafloor mapping data that would inform site assessment/characterization. In particular, 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). 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 Strait of Juan de Fuca to Cape Mendocino. This includes bubble streams along the center-most rocky outcrop in the Humboldt WEA. This network of methane seeps is the focus of ongoing oceanographic and climate research.

The Council designated methane seeps as groundfish essential fish habitat for the ability of methane seeps and underlying methane hydrates to form carbonate hardgrounds (i.e., fish habitat) and support diverse biological communities (PFMC 2019). 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 the National Oceanic & Atmospheric Administration's (NOAA) Pacific Marine Environmental Laboratory (PMEL) since the publication of data in Merle et al. (2021) that may be relevant to the Humboldt WEA 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.

For the Final EA, the Council recommends that BOEM incorporate seafloor mapping and methane seeps/methane hydrates/carbonate deposits research information not currently included in the Draft EA. Where high-resolution data gaps exist, the Council recommends BOEM conduct seafloor mapping surveys in those areas and produce a comprehensive habitat

classification map for the Humboldt WEA and shoreward in cable corridors, prior to lease sales. This habitat map should be included in the Final EA.

The Council recommends avoiding or minimizing site assessment/characterization activities that could damage methane seep sites and underlying methane hydrates (e.g., grab sampling, benthic sleds, drilling, borings, large buoy anchoring, cables, etc.).

Biological Site Characterization

The Draft EA lacks sufficient detail describing site assessment/characterization activities and the effects analysis required for these activities, particularly for biological resources (fish and benthic species). Habitat-forming corals and sponges and other macroinvertebrates provide important habitat functions (shelter, cover, forage, breeding areas, nurseries) to many Council-managed species. Characterization of the macrofaunal community is foundational to analyzing the effects of activities and developing measures to avoid or minimize those effects.

Prior to leasing, broad-scale rapid assessment surveys are needed throughout the Humboldt WEA and cable corridors to map and identify unique benthic habitats that have not been previously mapped (seep communities, corals, high-relief rock). Subsequent, fine-scale surveys are needed to precisely identify areas to avoid during site assessment/characterization activities (grab sampling, benthic sleds, drilling, borings, large buoy anchoring). The information from these surveys may identify large areas of fragile habitats within lease blocks that may warrant the exclusion of one or more lease blocks, thus the need for acquiring this information ahead of leasing.

BOEM has funded region-wide habitat suitability modeling studies of benthic macrofauna, corals, and sponges that are not reflected in the Draft EA (Henkel et al, 2020; Poti et al, 2020). These models should be used to inform survey efforts and site characterization for the Humboldt WEA and associated cable routes. Additional fish habitat modeling information was developed as part of the Council's Groundfish EFH periodic review process and should be used to inform this phase of BOEM's process. This information is available upon request by contacting Pacific Council staff (contact information below).

The Council recommends that BOEM conduct broad-scale and fine-scale comprehensive biological site characterization surveys with emphasis on identifying fragile habitats (deep-sea corals and sponges, seeps, rocky habitats) in the Humboldt WEA and shoreward in cable corridors and include a map of these habitats in the Final EA, prior to leasing.

The Council recommends that BOEM update the Draft EA with habitat suitability models for benthic species as well as other relevant information from the Council's recent groundfish EFH review on species distributions and newly designated EFHCAs not currently included in the Draft EA (e.g., Samoa Deepwater EFHCA and Mad River Rough Patch EFHCA). These should be incorporated into the Final EA.

Cumulative Effects

Each phase of BOEM's process for the Humboldt WEA will add compounding adverse effects to Council-managed species, habitats, and fisheries, and can exacerbate other factors in the region affecting these resources (e.g., fishery management measures, climate-related ocean conditions). The Council believes these factors are within the scope of the cumulative effects analysis required

at this stage (as described in Appendix A, Section D) but does not find the analysis in the Draft EA. Transmission cables and other offshore wind infrastructure continue to be a primary concern of the Council due to a myriad of potential impacts to EFH, benthic species, and sound-sensitive species. To name a few, potential adverse effects during installation of infrastructure include vibration and noise generated by subterranean drilling, destruction of habitat features, destruction of deep-sea corals, impacts to fish and marine mammals, scouring and plume caused by seafloor trenching and transmission cable burial, habitat damage during installation of mooring anchors, damage from mooring chain sweep, potential acoustic impacts, and impacts of electromagnetic fields from suspended midwater cables.

The Council recommends that the final EA should include a cumulative effects analysis of activities that will occur throughout the multi-year process and should describe measures to minimize those effects. Efforts should also be focused on developing a regional cumulative impacts study that considers the impacts of various numbers of wind farms off the West Coast. It is reasonable and pragmatic to gain the best understanding of the total impacts for the California Current and our West Coast fishing communities.

Fisheries Issues

In our September 13, 2021 letter (referenced above), the Council encouraged BOEM to prioritize engagement with the fishing industry as it moves forward with site characterization and lease issuance activities. Unfortunately, that does not appear to have happened. While some community members may have been contacted, many leaders in the local fishing community have not. By and large, these are individuals/businesses participating in fisheries, or dependent upon those individuals/businesses, which may be directly impacted by placement of turbines within the Humboldt WEA.

Section 3.5.2 discusses potential impacts of the proposed action to marine mammals. The Council suggests that placing wind energy installations in this location may alter migratory patterns of certain marine mammal species in such a way that co-occurrence with fishing gear is more likely. This could have impacts on the California commercial Dungeness crab fishery and other fixed gear fisheries which operate in, or adjacent to, the Humboldt WEA. Under regulations implementing the State of California's Risk Assessment and Mitigation Program (RAMP), if humpback or blue whales are forced to migrate closer to shore, or if foraging grounds for these whale stocks are moved closer to shore as a result of activities undertaken for site characterization or site assessment purposes, it is likely one of the State's most valuable fishery may be delayed or forced to close early due to elevated risk of entanglement due to co-occurrence. As noted in the Draft EA, "Dungeness crab dominates the value of landings" in the ports of Eureka, Trinidad, and Crescent City.

Section 3.7 discusses potential impacts to commercial fishing (see pages 53-54). The Draft EA correctly highlights the importance of the Eureka Port Complex to the State's seafood economy – representing almost 20 percent of ALL ex-vessel revenues landings by into California. The Draft EA places great importance on data provided by vessel monitoring system (VMS) and California Department of Fish and Wildlife (CDFW) landing receipts/fish tickets. The Council reminds BOEM that not all fisheries which operate in the area are required to use VMS. CDFW fish tickets require catch to be recorded by Department origin block number. The blocks encompassing the

Humboldt WEA represent 10nm x 10nm areas[3]. Knowing that fish were harvested within a 100 square nautical mile area should not be characterized as "spatially explicit information" upon which impacts can be judged. We agree that bottom trawling for groundfish shows the most current activity. However, there are other fisheries which will be impacted, for example, the albacore fishery, which has historically used the area. To fully understand the data that BOEM uses, direct discussions with experienced members of the fishing community are needed. In addition, the Draft EA should include reference the NOAA Northwest Fisheries Science Center's Fishery Resource Analysis and Monitoring (FRAM) Data Warehouse fishing effort data. The FRAM data is the most recent and comprehensive (i.e., best available information) on the spatial distribution of fishing effort and yet the Draft EA shows the distribution of effort using CDFW block data from 1931 - 2005. The best available information on fishing effort distribution should be included in the final EA to inform site assessment/characterization activities.

The Council recommends that BOEM broaden its analysis to account for other fishing activities in the area, including fisheries that were active in the area in the past, and may use the area in the future, if not for the future presence of OSW energy facilities. There are current efforts underway in California that will help establish an accurate baseline of past and current fishing fleet activities for use by BOEM, and the Council encourages BOEM to carefully consider the mapping products in the context of leasing and future development.

The Council recommends including reference and inclusion of the FRAM Data Warehouse information in the final EA to inform site assessment/characterization activities.

Section 3.7.1 of the EA states "*fishing effort and economic productivity reflect biological productivity and is highest in shallower waters near the coast, generally declining as depth increases*." We caution against such a vast oversimplification of how fisheries operate. Important fisheries like tuna (hook-and-line, seine), swordfish (drift gill net, deep-set buoy gear), spot prawn (trap), and sablefish (trawl, fixed gear) have increased economic productivity in deeper waters which tend to be further from shore. Given that most fisheries operating off the West Coast have some form of limited entry, there are impacts which cannot be measured by simply looking at loss of fishing revenues. Permits may lose value based on a loss of access or potential reduction in quota due to stock assessment uncertainty resulting from offshore wind facilities. Most commercial fishing vessels are designed to fish a specific gear type and cannot freely shift effort to another fishery, assuming a permit for that fishery is available. For example, a trawl vessel participating in the groundfish fishery could not switch to the salmon troll fishery and operate in an economically viable fashion.

Additionally, many fishermen and almost all processors have portfolios of fisheries designed to fit their vessel's or plant's capacities for fishing or processing. This is in part a hedge against one fishery having an off year. But the main construct behind this strategy is to provide multiple income streams that in total are commensurate with their investment profile and the needs of their staff for employment. Depending on the investment profile and operational size of the plant or vessel a reduction of production of one or several product lines may be the "straw that breaks the camel's back". This is not a linear equation. A reduction of 20 percent to 30 percent of annual income may mean a business has to close. Newer operations or those carrying a large debt load

[3] north_fishing_blocks.jpg (2550×3300) (ca.gov)

are most at risk. As pointed out in the previous paragraph it is not that easy to pack up and go elsewhere. If this is severe enough the working waterfronts on the West Coast in many communities will be a memory.

The Council strongly recommends that BOEM consider impacts to specific fisheries when analyzing potential impacts. In addition, we encourage BOEM to expand its analysis to describe the changing conditions and regulatory constraints affecting where and how fisheries operate.

Section 3.7.2 of the Draft EA lists three potential space use conflicts that may interfere with fishing operations as a result of the proposed action, including de facto exclusion from fishing grounds, reduced fishing efficiency, or gear entanglement in data collection buoys deployed for site assessment purposes. "*Fishers may suffer decreased efficiency when trying to avoid buoys during their operations. If fishers fail to avoid buoys, subsequent entanglement may result in damage to or loss of fishing gear. If damage to a data collection buoy or its scientific instrumentation occurs because of fishing operations, the fishing vessel captain could be held financially responsible*." The Council notes that fishing vessel interactions with scientific (or any) buoys can result in gear loss, vessel damage, and risk to crewmembers, and there is a strong incentive to avoid such interactions.

We further note that other marine traffic such as NOAA survey vessels and other ongoing monitoring[4] activities that follow long-established transects during certain parts of the year, also have potential for interactions with buoys and equipment, with the same potential risks to vessels, scientific equipment, and human safety. In addition, there is potential interaction between site assessment survey vessels and commercial or recreational fishing vessels. These interactions can be minimized with careful advanced planning and communication.

The Council recommends that BOEM as well as future lessees work with local fishermen and the NOAA Northwest and Southwest Fisheries Science Centers to find suitable locations for buoys (or other installations) to minimize the chance of interactions. Buoy placement in areas that vessels already avoid (e.g., near existing known hazards or areas closed to fishing) is one way to minimize potential conflicts between the scientific collection instruments, fishing vessels, and gear. In addition, we recommend advanced communication and coordination if site assessment survey vessels are utilized. Potential impacts resulting from the interactions described here should be analyzed and included in the Final EA.

Any description of potential impacts of the proposed action to commercial fishing and seafood processing should necessarily include an analysis of impacts to those dependent upon the products harvested. The Draft EA references ex-vessel revenues which represent revenues paid to those harvesting the seafood. It does not reflect the true economic benefit and multipliers of that seafood. It also does not reflect impacts to buyers and processors. It is likely that installation of up to three weather buoys in the Humboldt WEA may limit the trawl fleet's ability to operate within the Humboldt WEA. If this is the case, then it is likely that the buyers and processors in the Eureka Port Complex will be deprived of that product as well, which may result in closure of their

[4] For example, local Dungeness crab fishermen collect samples before the scheduled opening of the season to test for domoic acid and for quality purposes. Activities allowed under the lease should not interfere with collecting those samples.

operations in the area as they rely on a portfolio of fisheries to maintain economic viability. The loss of a buyer/processor will have domino impacts to fishermen in the area and possibly result in the loss of important infrastructure in the area. Section 3.9.1.1 describes the population and demographics of the region. "*As of 2018, ocean-related jobs within Del Norte, Humboldt, and Mendocino counties make up 7–13 percent of employment at the county level, … .*" The breakdown of the types of jobs within that grouping is missing from the Draft EA. For example, how many ocean-related jobs within those counties are commercial fishing or dependent businesses? Will these businesses and their employees, many of whom come from or reside in disadvantaged communities, be disproportionately burdened? While not a major focus of our comments on this EA, the Council is concerned about the potential differential impacts on people of color and historically underrepresented workers.

The Council recommends BOEM broaden the economic analysis to encompass potential effects to these fishing and seafood-dependent businesses, and in turn how those impacts may negatively affect fishermen in the area.

The Council looks forward to the final EA incorporating the Council's recommendations and measures that avoid and minimize impacts to the ecological and fisheries resources in the region of the Humboldt WEA while identifying habitat-compatible and fishing-compatible lease areas and cable routes. We thank BOEM for the opportunity to provide comments on the Draft EA and look forward to future opportunities to comment on our concerns outside of the scope of this narrow call for comment (on site assessment and site characterization). Our concerns extend to broader impacts of offshore wind siting impacts including fisheries generally, habitat, ecosystem, and research survey integrity (especially our ability to continue adding to long-term data sets that inform our management and ecosystem response to climate and ocean change). Please contact Kerry Griffin at the Council staff office (Kerry.griffin@noaa.gov; 503-820-2409) if you have any questions.

Sincerely,

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Council Chairman

KFG:ael

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