Pacific Fishery Management Council
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Michael Hahn
Technical Project Officer
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RE: RFI DE-FOA-0000911: Researching the Environmental Effects of Offshore Wind at the First U.S. Facilities

Dear Mr. Hahn,

The Pacific Fishery Management Council (Council) has become aware of recent developments in the Government's wind energy program for the U.S. Outer Continental Shelf (OCS). Of particular interest to the Council are actions intended for the Pacific OCS. As you may know, the Council is one of eight Regional Fishery Management Councils established by the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSA), and recommends management actions for Federal fisheries off Washington, Oregon, and California. The MSA includes provisions to identify, conserve, and enhance Essential Fish Habitat (EFH) for species regulated under a Council fishery management plan. The MSA defines EFH as "*those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.*" Each Council is authorized under MSA to comment on any Federal or state activity that may affect the habitat, including EFH, of a fishery resource under its authority.

The Council was recently briefed by its Habitat Committee on the Department of Energy's (DOE) April 17, 2013, Request for Information (RFI): DE-FOA-0000911 - "Environmental Research and Observations at the First U.S. Offshore Wind Facilities." The Council appreciates DOE's efforts to reach out to the public and affected entities for input on their future research strategy. There is concern that initial research and research priorities have focused on East Coast environments where offshore wind projects have already been permitted, and may not necessarily meet the research needs of West Coast environments. According to the Bureau of Ocean Energy Management (BOEM), ideal wind speeds for generating wind energy off Oregon (and possibly California and Washington) are located off the continental shelf, farther and deeper than is needed for East Coast projects. Consequently, wind energy installations may have substantial subsurface structure in both the water column and on the seafloor (floating devices, more cabling, extensive mooring), and thus may introduce unforeseen impacts and related research needs not yet defined in the RFI. Surface structures are expected to be more massive than East Coast structures and will be subjected to the harsh conditions of the Pacific Ocean.

Given the anticipated risks associated with offshore development in the Pacific Ocean, it is necessary to consider West Coast conditions and facility design factors when developing a template for research and study of offshore facility construction, deployment, and operation.

Additionally, marine habitat protections differ across the U.S. and suggest a regional approach to establishing research priorities. For instance, MSA requires regional Councils to designate Habitat Areas of Particular Concern (HAPC) within their region. HAPCs are specific habitat types or areas within EFH that are of particular ecological importance in the fish life cycle or are especially sensitive, rare, or vulnerable. For the Pacific region, this includes all rocky reefs, estuaries, kelp forests, eelgrass beds, and seagrass beds, and unique geologic features such as deep water seamounts. EFH in the Pacific region is currently undergoing a periodic review process, as required under MSA, and may result in the designation of additional HAPCs.

The Council was unable to provide comments to DOE on the RFI prior to the May 30, 2013 deadline. However, in response to our request for an extension, Mr. Hahn offered to accept input at any time. The Council agrees with and supports the comments submitted by the state of Oregon (May 30, 2013) in response to the RFI, as well as the sample research questions provided by DOE in the RFI. In addition to those specific research topics and questions already provided, we offer the following for your consideration:

Consultation with the Fishing Industry

- It is imperative that wind energy developers consult with the local fishing industry before projects are sited, in order to avoid important fishing grounds and reduce other impacts to fishermen. For example, a project may block access to fishing grounds even if it is not sited in those fishing grounds. Such impacts could be avoided through advance discussion with fishery stakeholders.

Underwater Acoustics

- What acoustic variables (e.g., sound, pressure, vibration) should be measured to assess acoustic effects on fish? How can the *in-situ* COWRIE [1] studies of the UK be improved upon and designed for the Pacific Northwest to answer additional questions about fish responses to acoustics and EMF (e.g., attract vs. repel)?
- In addition to behavioral responses of fish to acoustic stressors, what are their physiological responses (e.g., injury, reproductive stress, feeding stress)? What potential consequences should be measured (i.e., displacement from spawning/fishing grounds, increased exposure to predation)?
- What are the migration/movement patterns of species likely to be affected by acoustics generated during construction and maintenance? How might knowledge of these patterns lead to the establishment of "in-water work periods" to minimize impacts?

[1] COWRIE (Collaborative Offshore Wind Research into the Environment) is an independent body in the UK set up to carry out research into the impact of offshore wind farm development on the environment

Water Column Disturbance

- Does project operation alter (by dampening or increasing) surface, midwater, or bottom currents? And at what distances from the source are these effects detectable? How would changes in current intensity affect demersal and bottom fish species? How would a response be measured?
- To what extent (duration, intensity) does construction affect water turbidity or other water quality characteristics, both in the estuary and in the ocean?
- How does increased turbidity affect fish behavior? Predation? Feeding?

Seafloor Disturbance

- In addition to affecting benthic communities, to what extent, if any, is the structure of soft-bottom substrate altered (e.g., building or eroding sand waves, hills) by project-generated bottom currents?
- What are the recovery times for habitat and benthic organisms subjected to sustained or repetitive injury from anchor chains?
- What methodologies would be used to measure seafloor disturbance?
- What methods can be used to bury electrical cables in deepwater, soft-bottom habitat with minimal disturbance to the sea floor?
- For connecting to the land-based grid, are there methods proven successful at drilling under rocky seafloor, with limited or no impact to the rock habitat?
- What methods will be employed to assess impacts to rocky reef habitat, including associated fish and invertebrate communities?
- Are there alternate methods for setting cable that avoid impacting rocky reef altogether?

Fish Aggregation, Attraction, Biofouling

- How would vertical and horizontal structural components (moorings, cables, towers, etc.), both in the water column and on the bottom, interact with or engage fish species or their prey (e.g., entanglement, collision, attraction)? What are the potential consequences of such interactions at both the species and population level (e.g., increased mortality, predation, geographic transference in population)?
- Are there alternative design/construction considerations that could minimize such interactions?
- Should biofouling of structures be allowed or prevented? How should this issue be assessed?
- Will biofouling increase the potential for equipment failure?
- What options would be considered for reducing biofouling on structural components?
- How do anti-biofouling agents, paint, etc., when applied to device components in port, affect estuarine water quality and habitats? How could impacts be prevented or minimized?

Electromagnetic Frequency EMF (new topic)

- What EMF signatures (frequency and amplitude) from cables or other project components are emitted and possibly sensed by federally-managed fish species and their prey (particularly elasmobranchs, salmonids, and other electro-sensitive species (e.g., sturgeon) during construction? During operation? And at what spatial distances?

- How can EMF signals be dampened to minimize detection by and responses of fish species?
- In addition to behavioral responses of fish to EMF emissions, what are their physiological responses (e.g., injury, reproductive stress, feeding stress)? What are the broader consequences that should be measured (e.g., displacement from spawning/fishing grounds, increased exposure to predation)?

Fishery Interactions/ Collision Potential (new topic)

- Are there design and construction considerations (e.g., depth of cable burial, device array configuration, orientation) that could be compatible with commercial fishing, or that could minimize impacts to commercial fishing?

As described in the RFI, the focus of this initial research strategy is to measure the characteristics of the project that cause impacts. The Council has focused its comments primarily on environmental research topics, but concerns regarding human-use impacts are of equal significance in the development of this new industry, particularly for the fishing industry and West Coast fisheries in general. We look forward to working alongside DOE and BOEM to identify, avoid, and minimize these conflicts, and to achieve the long-term goal of responsible development of this new and promising industry.

Sincerely,

D. O. McIsaac, Ph.D.
Executive Director

JDG:kam

Cc: Council Members
Habitat Committee Members
Groundfish Advisory Subpanel Members
Groundfish Management Team Members
Mr. Chuck Tracy
Ms. Jennifer Gilden