Possible Best Management Practices and Mitigation Measures to Reduce Conflicts between Fishing and Wind Industries

1. Safety, Liability and Insurance during Operations

Safety Procedures

What types of safety measures can be implemented to protect fisherman and wind project equipment?

- Sequence activities to minimize impacts during construction. Examples include scheduling construction when fisheries are inactive and reducing the amount of time needed to construct a project.
- Design operational requirements and procedures for wind farm shutdown during search and rescue or salvage operations.
- Implement methods (inspection and maintenance) to ensure cables remain buried (IALA 2008).

Marking, Charts, and Education

How can fishermen be notified about wind turbine and cable locations and other hazards through navigational aids, nautical charts, and other methods? For example:

- Marking of offshore wind turbine foundations with the lights and other navigation aids required by the U.S. Coast Guard. Would radar reflectors on the base of the wind turbine support structure provide any benefit?
- Update navigational charts to ensure safe passage in the vicinity of the offshore renewable energy projects and illustrate any traffic routes, safety areas, and other navigational requirements.
- Outreach to the fishing community to inform mariners traveling in the vicinity of offshore renewable energy projects ways to identify and avoid hazards. Should education be conducted through stakeholder groups, classes, publications, etc.? Other methods?
- Other methods to communicate the location and routing of offshore wind facilities and associated cables?

Gear

Could fishing gear used near turbines be modified to reduce potential conflicts?

- Can gear be modified?
- Can pot strings be shortened or net size or trawl length modified to improve fishing performance and minimize interference within wind farms?
- Should studies be considered in coordination with fishermen to design and test new gear or gear modifications?

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Contingency Funds

Internationally, there are examples of funding mechanisms that have been established to compensate fishermen for gear lost or damaged as a result of wind energy projects, and for related purposes. Recognizing the BOEM does not currently have the authority to establish or manage fishing mitigation or compensation funds related to offshore wind energy facilities, should such an approach be considered in the U.S.? For example:

- Within the U.S. offshore oil and gas industry, the federal Fishermen's Contingency Fund (FCF) has been established. FCF is a revolving fund paid for by assessments on oil and gas interests, and was established in 1978 by an amendment to the Outer Continental Shelf Lands Act. It compensates fishermen for property and economic loss caused by obstructions related to oil and gas development on the OCS. NMFS processes FCF claims, while BOEM coordinates communications with OCS lease holders. Could a similar approach work for the U.S. offshore wind industry? NOTE: BOEM does not have legal authority to implement or require such an approach for offshore renewable energy facilities under current law.
- Within the offshore subsea communication cable business, there are examples of agreements between undersea fiber-optic cable companies and fishing associations that release participating fishermen from any possible civil liability for "ordinary negligence to a fiber optic cable company" and provide compensation for gear that becomes snagged on a cable. Could similar agreements between fishermen and offshore wind developers work in the U.S.?
- Should other approaches to compensating fishermen for lost gear or fishing opportunities related to offshore wind energy development be considered?

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2. Natural Resources

Are there specific measures that can be implemented to lessen the impact on fisheries and the environment? For example:

- Avoiding the siting of offshore renewable energy facilities in high-use fishing grounds.
- Site offshore facilities in areas that are already off-limits to fishermen.
- Use technologies to reduce impacts to resources and habitats (e.g., bubble curtains to minimize noise impacts from pile driving), and schedule activities outside of known breeding seasons for target commercial fisheries.

  Source: BOEM 2012-083, Identification of Outer Continental Shelf Renewable Energy Space-Use Conflicts & Analysis of Potential Mitigation Measures, OCS Study, and feedback from stakeholders.

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3. Communication and Engagement

Are there specific methods of communication that can be used to keep fishermen informed? For example:

- Use of a dedicated very high frequency (VHF) channel for the transmission of any warnings related to local renewable energy projects.
- Use of a vessel monitoring system, such as Boatracs in the Northeast Atlantic that can send and receive emails to notify fishermen of important issues.
- Direct mailings, letters and emails, and announcements in fisheries trade publications.
- Radio Navigational Warnings and Notices to Mariners can be issued before and during offshore wind farm construction.

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4. Project Design, Navigation, and Access

Studies and Analysis

Are there specific studies that should be prepared?

- Would navigational risk assessments for proposed wind farms help to consider existing vessel traffic patterns (including fishing vessel use) and measures to minimize conflicts with existing waterway users?
- Any other suggestions for the content of the risk assessment or other ideas for navigation conflicts?

Spacing of Turbines

Is there a way to space individual turbines that would be more compatible with fishing?

- Space turbines at distances to allow safe passage of boats between the structures. How much space is needed between turbines to promote safe navigation of fishing vessels within a wind farm?
- Should wind turbines be spaced closer together to minimize the footprint of the overall affected area.
- If exclusion zones around turbines are determined necessary to promote safety, should they be kept small in size or include exemptions for small vessels that would not be endangered by the turbine blade sweep?

Navigational Safety

Some examples of different navigational safety measures are listed below. Should specific navigational precautions be implemented? Would any of these be useful?

- "No-Anchoring Areas" – These areas would have defined boundaries where anchoring is hazardous or could result in damage to the marine environment.
- "Precautionary Area" – An area with defined limits where ships navigate with particular caution and where the direction of traffic flow may be recommended.
- "Recommended Route" – A route of undefined width, for the convenience of ships in transit, which is often marked by centerline buoys.
- "Recommended Track" – A route that has been specifically examined to ensure, as much as possible, that it is free of dangers and along which ships are advised to navigate.
- "Traffic Lane" – An area within defined width in which one-way traffic is established.
- "Safety or Buffer Zone" – An area established around vessels, around each turbine and substation (post-construction), around the corridor during cable installation, and a post-construction anchorage exclusion zone. Sizes of buffer areas and safety zones can be changed during various phases of the project.

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Cabling

Are there specific cable burial methods that can be implemented to help to avoid conflicts with specific types of fishing gear? Discuss the implications of cable burial depths on recreational and commercial fishing. Burial depths and fishing gear types established for site-specific project in the UK and Cape Wind are listed for reference.

- Bury submarine cables 1-3 meters deep in water shallower than 2,000 meters to minimize interactions with fishing gear and anchors. Cape Wind subsea cables will be buried a minimum of 6 feet below the seabed.
- Cables may be buried as deep as 10 meters under the seabed, depending on the local hazards, water depth, and seabed conditions.
- Different size cables can be buried at various depths depending on local conditions and use within the wind farm. For example, subsea cables which connect the wind turbines together can sometimes be buried to a minimum depth of 1 m; subsea cables which connect each row of turbines to the substation platform can be buried to a minimum depth of 2 m; and the subsea cable which delivers the electricity from the offshore substation platform to shore can sometimes be buried to a depth of 1-3 m depending on localized seabed conditions.
- In some cases, working groups were created that includes cable owners and fishermen who collaboratively discuss underwater cables and ways to minimize lost fishing gear and prevent damage to cables. Do you think such a group could be useful in your area?

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