MARINE MAMMAL COMMISSION

25 May 2012

Ms. Maureen Bornholdt, Chief
Office of Renewable Energy Programs (MS 4090)
Bureau of Ocean Energy Management
381 Elden Street
Herndon, Virginia 20170–4817

Dear Ms. Bornholdt:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Bureau of Ocean Energy Management's draft environmental assessment on Lease Issuance for Marine Hydrokinetic Testing Technology on the Outer Continental Shelf Offshore Florida and the associated 25 April 2012 notice (77 Fed. Reg. 24734). If issued, the lease would grant Florida Atlantic University's Southeast National Marine Renewable Energy Center (Renewable Energy Center) the exclusive right, subject to the terms and conditions of the lease, to collect data and test marine hydrokinetic turbines in the Florida Current offshore of Ft. Lauderdale, Florida. The purpose of the turbines would be to convert the hydrokinetic energy in the Florida Current to electricity. The Commission offers the following recommendations on the proposed lease and rationale for those recommendations.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the Bureau of Ocean Energy Management revise the proposed lease and amend the associated environmental assessment as necessary to require the Renewable Energy Center to—

- notify the National Marine Fisheries Service immediately if any injured or dead marine mammal is encountered, and to provide the Bureau with annual reports and a final report summarizing all marine mammal sightings and actions taken in response to those sightings;
- cease all activities involving an acoustic source, moving or operating turbines, or other mechanical equipment when any portion of the exclusion zone is obscured by poor visibility; and
- deploy an underwater video camera, or system of cameras to assess the nature and outcome of underwater interactions with marine mammals and other marine species.

RATIONALE

The lease in question would allow the Renewable Energy Center to (1) evaluate environmental effects of operating marine hydrokinetic devices, (2) identify technology needed for further marine hydrokinetic development, (3) develop and evaluate methods and procedures for safe and responsible testing of experimental commercial devices, and (4) develop and refine tools to characterize performance and effects of the involved technologies. Activities to be conducted under the lease include site-characterization surveys; installation, relocation, and removal of mooring systems; and testing activities for various types of equipment, which would involve turbine deployment, maintenance, operation, and recovery.

The Bureau's environmental assessment includes three alternatives. It prefers alternative A, which would authorize the Renewable Energy Center to test its hydrokinetic turbines in an area approximately 16.7 to 27.8 km offshore of Ft. Lauderdale, Florida, in waters ranging in depth from 262 m to 336 m. The Center would secure the turbines using three single-anchor mooring systems attached to mooring and telemetry buoys. The environmental assessment assumes that, over the five-year lease, the Renewable Energy Center would deploy one of the buoys in four to five different locations and the two additional buoys in three to four different locations, for a total of 10-13 deployments. The Center would require between 273 and 472 vessel trips between the shore and deployment sites to install, maintain, and remove the turbines. The Bureau would require all vessels to abide by vessel strike avoidance measures similar to those outlined in the Bureau's Notice to Lessees on "Vessel Strike Avoidance and Injured/Dead Protected Species Reporting" (NTL 2012-JOINT-G01).

The Renewable Energy Center would conduct site characterization surveys using acoustic sources (echosounder and/or side-scan sonar) operating at frequencies less than 200 kHz. To avoid adverse impacts to marine mammals, the Bureau would require the applicant to establish a 200-m or larger radius exclusion zone, calculated for the acoustic source with the highest source level, to encompass the 160-dB isopleth (the isopleth used by the National Marine Fisheries Service to delineate Level B harassment of marine mammals). The authorization would require the Center to place protected species observers onboard vessels towing acoustic gear to monitor the exclusion zone before, during, and after operation of the sound source. Sighting of a marine mammal within or about to enter the exclusion zone would require shutdown of the acoustic source. Observers also would monitor the area around the turbine once it is deployed and call for its shutdown if a marine mammal is seen within 50 feet (15 m).

Alternative B in the assessment is similar to Alternative A, but would exclude the northernmost portion (about 25 percent) of the proposed lease area where cargo and passenger vessel traffic is greatest. Alternative C is the no action alternative.

Although the Bureau does not anticipate adverse effects on marine mammals from the proposed activities, it is proposing to stipulate in its lease that protected species observers monitor for the presence of marine mammals and that activities be shutdown as necessary. Information on sightings of marine mammals and actions taken to minimize interactions would be useful for verifying that the proposed activities are having no more than negligible impacts on marine mammals, for determining the effectiveness of the mitigation and monitoring requirements, and for making adjustments to those requirements if needed. To help meet those objectives, the Marine Mammal Commission recommends that the Bureau of Ocean Energy Management require the Renewable Energy Center to notify the National Marine Fisheries Service immediately if any injured or dead marine mammal is encountered, and to provide the Bureau with annual reports and a final report summarizing all marine mammal sightings and actions taken in response to those sightings.

The Commission also believes additional measures would be useful in this case. Although visual monitoring may be effective in many circumstances, its value is limited in others. Addressing those other situations is important because the effectiveness of visual monitoring would determine the extent to which exclusion zones and shutdown requirements avoid or reduce acoustic disturbance of marine mammals and direct interactions with the turbine (or other equipment). As

the Commission has noted in previous correspondence to the Bureau, the effectiveness of visual monitoring of exclusion zones can be significantly reduced during periods of poor visibility (e.g., nighttime, inclement weather, rough sea state). Nevertheless, the Bureau has not proposed prohibiting operations at such times and has not identified alternative mitigation and monitoring measures that would be effective under these conditions. To address this potential problem, the Marine Mammal Commission recommends that the Bureau of Ocean Energy Management require the Renewable Energy Center to cease all activities involving an acoustic source, moving or operating turbines, or other mechanical equipment when any portion of the exclusion zone is obscured by poor visibility.

Marine hydrokinetic technology is relatively new in U.S. waters, and little is known about the behavior of marine mammals around the turbines. However, the turbine blade or other moving parts have the potential to strike a marine mammal (Ortega-Achury et al. 2010, U.S. Department of Energy 2009). If a marine mammal were to approach the turbine, the effectiveness of a 50-foot (15 m) exclusion zone would likely be limited as any marine mammal that close to the turbine could be injured or killed before the turbine could be shut down. The ability of operators to stop the turbine is an important mitigation measure, and would still be warranted if a marine mammal that enters the exclusion zone remains near the turbine.

Depending on how marine mammals interact with turbines, it may be necessary to equip them with warning devices in much the same way that pingers are used on fishing gear. However, at least during the initial testing of this equipment, it seems essential to characterize the risk that a turbine poses to marine mammals to determine what type of mitigation measures would be necessary or most effective. Marine mammals should be able to detect and avoid the turbine, but this assumption has not been tested. Depending on water clarity and light levels, an underwater video camera, or system of cameras, may provide the best means of monitoring underwater interactions that are not visible to observers on the surface. To provide a basis for judging the risk to marine mammals from the turbine, the Marine Mammal Commission recommends that the Bureau of Ocean Energy Management require the Renewable Energy Center to deploy an underwater video camera, or system of cameras, to assess the nature and outcome of underwater interactions with marine mammals and other marine species.

Please contact me if you have questions concerning our recommendations or if the Commission can be of assistance as you consider these matters.

Sincerely,

Timothy J. Ragen

Timothy J. Ragen, Ph.D.
Executive Director

cc: Mr. Michael Payne, National Marine Fisheries Service
Mr. David Bernhart, National Marine Fisheries Service

Literature Cited

Ortega-Achury, S.L., W.H. McAnally, T.E. Davis, and J.L. Martin. 2010. Hydrokinetic power review. Prepared for the U.S. Army Corps of Engineers Research and Development Center, Vicksburg, Mississippi, 46 pages.

U.S. Department of Energy. 2009. Report to Congress on the potential environmental effects of marine and hydrokinetic energy technologies. DOE/GO-102009-2955, 143 pages.