MAINE AUDUBON

Bureau of Ocean Energy Management
Office of Renewable Energy Programs
45600 Woodland Road
Sterling, VA 20166

June 5, 2023

Re: BOEM-2023-0031, Notice of Intent To Prepare an Environmental Assessment for a Wind Energy Research Lease on the Atlantic Outer Continental Shelf Offshore Maine

To Whom It May Concern:

Thank you for the opportunity to provide comments on the Bureau of Ocean Energy Management's (BOEM) intention to prepare an environmental assessment (EA) to consider the reasonably foreseeable environmental consequences associated with the issuance of a research lease to the State of Maine on behalf of Maine Audubon, Mass Audubon, National Audubon Society, and the Natural Resources Council of Maine. The Gulf of Maine is a unique ecological system and it is warming faster than 97% of the world's ocean surfaces due to climatic changes resulting from the combustion of fossil fuels for energy. It is fitting that the Gulf of Maine could play a significant role in reducing the generation of additional greenhouse gases that threaten the Gulf by being a source of renewable energy in the form of offshore wind energy. However, the development of renewable wind energy sources in the Gulf of Maine must be done with care to avoid and minimize the impacts to the very species and habitats that make the Gulf unique and that are of high conservation value.

The stated objective of the proposed research array is "to arrive at a set of informed best practices and standards for commercial-scale projects in a fashion that optimizes co-existence with traditional marine users and the ecosystem." With the imminent commercial development of offshore wind power projects in the Gulf of Maine, the results of research from the research array will be exceedingly timely and important as they could play a significant role in reducing potential harm to wildlife and habitats during the development and operation of subsequent commercial offshore wind projects. Additionally, with deeper water in the Gulf of Maine, floating offshore wind turbines will be required to harness wind energy, rather than fixed bottom turbines. Floating offshore wind is a nascent technology, and is completely new to the U.S. This research array would provide a unique opportunity to understand the specific challenges and

benefits of the construction and operation of a floating offshore wind array in the Gulf of Maine to wildlife, habitats, and other ocean users.

Maine Audubon and our conservation partners followed the siting process for the proposed research array from its earliest stages, and we believe this location to be one of lower significance for wildlife in the Gulf of Maine, understanding that the development of an offshore wind project of this size or larger anywhere in the Gulf of Maine will have impacts on Maine's unique assemblage of species and habitats. The site is more than 20 nm from land, avoids significant underwater topography that creates important habitat features, and is outside any fishing restricted areas for habitat protection. In addition, bird, fish, marine mammal, bat, and sea turtle data were analyzed to identify a site with a low probability of interaction with these species groups, to the greatest extent possible using available data (which is limited for some species, e.g., bats).

Collecting information on exactly what the impacts of constructing and operating a floating offshore wind array are, and developing methods to avoid or reduce those impacts, will be critically important as the nation moves forward with commercial wind power projects in the Gulf of Maine. In fact, with the large size and complex geomorphology of the Gulf of Maine, the first step must be to collect additional baseline data on the unique species assemblages and their use patterns of the Gulf, as they are still poorly understood. Therefore, we recommend that baseline wildlife and habitat data collection be required prior to site development and that potential impacts to species and their habitats be monitored throughout the life of the lease as a part of the lease agreement. Monitoring of these species should continue through site assessment, construction, and throughout the operating life of the research array in order to understand the full effect of developing floating offshore wind energy projects in the Gulf of Maine on specific wildlife species and their habitats. This is particularly important because site utilization may change over time due to climate change, in response to the presence of the array, or in response to other factors.

Of particular importance is the fact that the research array's turbines will be floating, floating wind turbine technology has different impacts on the environment compared to fixed bottom, and we know less about floating turbines' effect because the technology is so new. Potential impacts that should be studied could result from the construction and operation of the floating wind turbine array itself, and the associated transmission cables, substations, and effects of where and how the transmission cables reach landfall. Effects on wildlife to be studied should include avoidance, displacement, attraction, collision, entanglement, and habitat alteration (negative or positive).

Where environmental impacts can't be avoided or meaningfully reduced, compensatory mitigation may be necessary. Monitoring and mitigation methods should be scalable to

commercial wind energy projects, as this research array is intended to support the further commercial development of floating offshore wind in the Gulf of Maine.

POTENTIAL ENVIRONMENTAL IMPACTS

Environmental impacts to be evaluated in the EA should include, but not be limited to:

- Impacts to benthic species and benthic habitats caused by the cable anchoring technology (i.e., drag anchors vs. fixed), transmission cable placement and construction methods, and inter-array cables and their placement. Anchoring and cabling technologies should be designed to have the smallest impact on benthic and pelagic species and habitats as possible.

- Impacts to local ocean temperature and chemical and biological stratification of the water column resulting from the presence of new structures in the water column and wakes generated by the functioning wind turbines, etc.

- Impacts of electromagnetic fields (EMF) on species including, but not limited to, Atlantic salmon, American eels, American lobsters, sea turtles, sharks and rays. Efforts such as mattressing and burying of cables should be utilized to reduce the release of EMF to the greatest extent possible. Cable routes should be sited away from important habitat features, such as estuaries where diadromous fish concentrate when moving into or out of freshwater systems.

- Impacts to birds through collision and/or displacement, changes to local food sources for birds associated with changes in the water column or through the creation of artificial reefs, etc. Avian groups of particular concern include seabirds and shorebirds nesting along the coast and on islands in and around the Gulf of Maine and foraging or transiting within range of the wind turbine array, as well as any migrating birds including songbirds that may interact with the turbines during migration, especially during inclement weather. Lighting systems should be limited and use the latest scientific information for what types of lighting is least disruptive for birds, as the understanding of this may change over time. Reducing impacts of lighting systems on birds may also minimize visual impacts.

- Impacts to bats through collision, particularly because little is known about which and how many bats are utilizing the Gulf of Maine, what they are doing in the Gulf of Maine when they are present, and how the presence of wind turbines might affect them. We know from onshore wind energy generation projects that bats can be attracted to turbines and this may increase their risk of collision. We also know from onshore wind projects that risk to bats can often be reduced through curtailment, so BOEM should evaluate the necessity of a curtailment scheme for the research array to reduce potential threats to bats. Lighting should

also be limited and be of the best type to reduce impacts to bats. Birds and bats react differently to different types of lighting, so continued research into the best lighting for the least impact for both taxonomic groups should be pursued.

- Impacts to marine mammals and sea turtles, including secondary entanglement from marine debris (such as fishing gear) getting hung up on anchor cables or other in-water structures. Increased vessel activity in the research array area could also increase risk of vessel strikes which can be reduced through strict speed limits. Noise from site assessment, project construction and operation can also impact marine mammals, sea turtles, fish, and other species. Fortunately, site assessment for wind projects is significantly less noisy than fossil fuel investigative and extractive procedures, and construction of floating offshore wind turbines is much less noisy than that of fixed bottom turbine construction. However, potential noise associated with these activities and with general operation should still be evaluated in relation to the potential impacts on local wildlife and reduced where ever possible.

- Impacts associated with the creation of the transmission system, including landfall and connection to the onshore grid, need to be better understood. The route selected for the transmission cables should avoid sensitive habitats in the marine, coastal, and onshore environments. Additionally, careful consideration should be given to this first offshore wind array cable route as it may become the foundation for a larger transmission backbone to reduce the amount and variety of locations of transmission cables developed over time. While we strongly support the development of a comprehensive and efficient transmission backbone system, the location of such a system is critically important, and the development of it must be done with due care. Additional precautions such as development and construction timing restrictions may be necessary to avoid important shorebird breeding seasons, marine mammal migration periods, etc. Where the transmission cable(s) connect to the existing energy grid, efforts should be made to reduce harm to the coastal environments—both inshore and terrestrial—such as utilizing existing developed areas for landfall, timing construction to avoid sensitive breeding and feeding seasons, and using low-impact cabling techniques such as directional drilling where appropriate.

RESEARCH

One of the overwhelmingly beneficial aspects of this proposal is that the wind energy array is to be designed for research to better understand strategies to reduce the impact of commercial floating offshore wind energy projects on the environment and other ocean users within the Gulf of Maine. By developing a research array before the development of large-scale commercial floating offshore wind energy projects, we can better understand the potential impacts of floating offshore wind energy projects on wildlife and habitats within the Gulf of Maine, and develop technologies and methodologies to avoid and reduce those impacts.

However, because the time span between when any research results would be available and when commercial wind projects could be brought online in the Gulf of Maine is tight, we recommend that subsequent commercial wind energy projects in the Gulf of Maine be developed with the full understanding that they may be required to incorporate new information, technologies, and operating procedures into their development and operations plans even after the traditional window for such requirements, where applicable. The value of the research array is in both understanding the impacts of floating offshore wind energy projects on wildlife and habitats, but also in developing tools to reduce or even eliminate those impacts. To understand the impacts and to have the tools to reduce them, but to not be able to use those tools to reduce harm would nullify much of the value of the research array effort.

Some of the research we recommend the State pursue with this floating offshore wind research array include:

- Evaluations into the impacts of different anchors and mooring cable types and configurations on the benthic and pelagic environment. The effects of the "footprint" of the different anchoring systems should also be evaluated. It may not be possible or beneficial to compare different anchoring or mooring cable types, such as if one type clearly has a significantly smaller impact, but monitoring the effects of the anchoring and mooring cable systems should still be required including conducting baseline surveys before development begins. Monitoring of benthic systems should occur during construction and throughout operation through the life of the lease.

- Surveys into the changes brought to the physical parameters of the ocean (temperature, stratification, chemical properties, etc.) as a direct result of the creation and operation of floating offshore wind energy projects. Again, baseline data should be collected first and efforts should be made to differentiate between effects of the floating offshore wind array and other causes such as climate change.

- Research into the effects of EMF on local species and the environment. Associated with this, evaluations into the impacts of different embedment materials or techniques or other factors on the amount of EMF released into the surrounding environment should be made. Best practices should be developed for future commercial floating offshore wind energy projects to reduce EMF being released into the ocean environment.

- Bird and bat detection and monitoring techniques should be developed and evaluated for effectiveness in order to help us understand how birds and bats of different species in different circumstances (i.e., in transit vs. foraging vs. migration, during inclement weather, etc.) interact with floating offshore wind turbines. These types of data can help us understand the collision and displacement risks of floating offshore wind turbines and how best to reduce

these threats. Deterrence technologies or methodologies should also be analyzed to help reduce the threat of collision, and other techniques should be evaluated to reduce the threat or harm of displacement. This may include simple techniques such as creating travel corridors through floating offshore wind turbine arrays to reduce displacement, or curtailment to reduce collisions. After initial baseline data collection for birds and bats, monitoring should be continued through the life of the lease. These studies should include federally and state listed species, and should also include any species that may be vulnerable to impacts from floating offshore wind energy projects, whether listed or not. Research into whether and why bats may be attracted to turbines would be invaluable to help reduce the possible risks to these species, based on a better understanding of their behaviors. In addition, research into lighting options that reduce impacts to both birds and bats while providing the safety necessary could lead to new standards for many industries where lighting can be a problem for wildlife.

- A number of different factors to reduce impacts to marine mammals and sea turtles. First, improvements in detection would help proactively avoid harm, so the development of detection devices could be useful. This could help understand if the presence of the array and its configuration affect movement patterns and other behaviors. For example, if travel corridors are created within the array, will marine mammals and sea turtles and other wildlife use those corridors? If so, and those corridors are also used by increased vessel traffic, will there be an increase in vessel strikes? If so, how can those risks be reduced? To reduce the potential for secondary entanglements, methods should be developed for regularly scanning the mooring and other cables for marine debris and for regularly removing debris that could lead to entanglements. This type of monitoring could help understand what the existing risk level is and how best to address it. As it stands, with floating offshore wind being such a new technology, there is little knowledge on how great a risk secondary entanglements are. And it may be that risks vary by season, or are associated with weather, etc., which should all be investigated. Additionally, noise impacts associated with site assessment, construction, and operation should be evaluated for impacts to fish and wildlife and techniques for reducing noise.

- Impacts to pelagic species including commercial and non-commercial fish species and their associated food webs should be investigated, starting with collecting baseline data. There is some evidence that fixed bottom turbines provide substrate for the development of invertebrate communities, which attract fish and other species creating an “artificial reef” effect. Because floating offshore wind energy technology is so new, it is not clear if the same will happen with floating offshore wind structures, which could create a beneficial new food source for some species. Alternatively, the presence of the active turbines and the underwater structures may impact the stratification of the water column leading to negative impacts to prey species. Monitoring a variety of commercial and non-commercial species through all

stages of the project—development, construction, and operation—and for the duration of the lease can help us understand some of the impacts of floating offshore wind on fish species and their habitats.

- Finally, a system for evaluating the cumulative effects of offshore wind power development along the eastern seaboard should be developed. The creation of a data repository, standardized sampling methodologies, and access to the data for research and collaboration across projects and over time is critical for our ability to develop this important renewable energy source with the least negative impact to the environment. We must remember that each project is being developed within a network of other projects, and the impacts of all these projects accumulate over time and space and species. With the research array potentially creating a large amount of new data, it could be the catalyst to establish the standards and structures needed to detect and study cumulative impacts.

The surveys and research recommended above should begin with baseline monitoring data, for several years before the development begins, where possible, and monitoring should continue through all the steps of the development of the research array and throughout the life of the lease. Some impacts may be immediately detectable, but other impacts may accrue over time to detectable levels. Additionally, only through consistent long-term monitoring will we be able to detect and differentiate between changes caused by the development of floating offshore wind energy projects in the Gulf of Maine, or by climate change, or by other ecological stressors, or other factors.

Thank you again for your efforts to balance our nation's offshore wind energy needs and goals with the Gulf of Maine's many, diverse, and unique natural resource values. We also support the State of Maine in their efforts to lead in the face of climate change by undertaking this necessary challenge to understand the impacts of floating offshore wind energy projects on the environment, and working to reduce the potential associated harm to the environment.

Sincerely,

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