



March 24, 2017

Ohio Power Siting Board
Docketing Division
180 East Broad Street
Columbus, Ohio 43215-3797
By email: contactOPSB@puc.state.oh.us

Re: Case# 16-1871-EL-BGN

Dear Ohio Power Siting Board:

For more than a century, Audubon has built a legacy of conservation success by mobilizing the strength of its network of one million members and supporters, 450 local chapters, 41 Audubon centers, 23 state offices, and dedicated professional staff to connect people with nature and the power to protect it. A powerful combination of science, education and policy expertise combine in efforts ranging from protection and restoration of local habitats to the implementation of policies that safeguard birds, other wildlife, and the resources that sustain us all—in the U.S. and across the Americas.

Audubon's 2014 Climate science hosted online at www.climate.audubon.org reveals that 314 species of our North American birds are seriously threatened on their breeding and wintering grounds by changes in climate suitability depending on how fast we can reduce our emissions. Transforming our energy sector to emission-free generation by wind, solar and geothermal energy is a key strategy to combat the effects of climate change on our birds while providing jobs and economic benefits to our people, and is a priority for Audubon.

At the national, state and local level in Ohio and elsewhere we have supported policies that drive a rapid deployment of renewable energy as well as the adoption of siting guidelines and other policies to avoid, minimize and mitigate effectively for impacts on birds and other wildlife of that energy.

Audubon supports the U.S. Department of Energy's (DOE) goals in funding research and development for wind energy, and specifically for demonstration projects of offshore wind. The DOE's stated goal is "leading a portfolio of market analysis, technology development, and demonstration projects that will overcome key barriers to offshore wind development, including the relatively high cost of energy, *the mitigation of*

environmental impacts, (emphasis added) the technical challenges of project installation, and grid interconnection.”

We submit the following specific comments on Application Case# 16-1871-EL-BGN (Application) from Icebreaker Wind Power, Inc. (Applicant) to construct and operate the first fresh water offshore wind project (Project) in the United States of America funded in part as a demonstration project under a \$40 million grant from the United States Department of Energy. The project proposed is a 6-turbine wind project 8-10 miles off the coast of Cleveland, Ohio in the waters of Lake Erie.

We acknowledge the progress made by Applicant in turbine design and engineering and other technical issues of offshore wind in Lake Erie in the Department of Energy’s demonstration project program, but find the Application incomplete in the data collection and analyses for mitigation of environmental impacts to birds and other wildlife.

Audubon’s interest in the Project in addition to the above is twofold:

1. The standards in addressing environmental impacts in the permitting process at the Ohio Power Siting Board are standards that will likely be adopted throughout the Great Lakes Region in the U.S. and Canada for siting of offshore freshwater wind energy.
2. The project is sited in an area designated by the National Audubon Society, as the U.S. partner for BirdLife International, as a globally significant Important Bird Area (IBA) identified as the Lake Erie Central Basin IBA.

Hereunder, we address each interest separately and provide background, comments, analysis, citations and recommendations that address our interests.

1. The standards in addressing environmental impacts in the permitting process before the Ohio Power Siting Board are standards that will likely be adopted throughout the Great Lakes Region in the U.S. and Canada for siting of offshore freshwater wind energy.

A 6-turbine offshore wind project alone is not critical for reducing our emissions nor for transforming the energy sector to emission-free renewable energy generation except as a demonstration to test the theory that the Great Lakes’ considerable wind resources could be developed successfully at scale.

In providing a grant for the development of the Project, the Department of Energy has clearly stated this goal.

“The demonstration projects will help address key challenges associated with installing *full-scale* (emphasis added) offshore wind turbines, connecting offshore turbines to the power grid, and navigating new permitting and approval processes. (<https://energy.gov/eere/wind/offshore-wind-advanced-technology-demonstration-projects>)

“Research at DOE’s demonstration projects in addition to other first-and second-generation offshore wind developments will help reduce uncertainty regarding the environmental impacts of offshore wind.”

<https://www.boem.gov/National-Offshore-Wind-Strategy/> p. 57

Other permitting authorities and businesses in the Great Lakes region have stated their intent to consider Ohio Power Siting Board’s permitting standards, including the collection of environmental data and mitigation of environmental impacts as a potential standard for deployment of wind energy throughout the Great Lakes, and its final decision as key to development of the entire Great Lakes.

“If Icebreaker proves successful, expansion of wind industry in the Great Lakes is imminent.” (Cleveland Business, January 1, 2017)

We note that the Province of Ontario on February 13, 2017 announced a continuation for two more years of a moratorium begun in 2011 on offshore wind projects in Lake Ontario, Lake Huron and Lake Erie citing lack of good science on environmental impacts.

“Offshore wind on freshwater lakes is a recent concept that requires a cautious approach until the science of environmental impact is clear. In contrast, the science concerning land based wind is extensive.”

John Wilkinson, Minister of the Environment, Province of Ontario

In order to make the Project truly successful the most controversial aspect of the Project – its potential impact on birds and bats – must be approached with the most rigorous standardized and scientifically defensible protocol and methodology for collecting data and performing analysis available.

The collection of data on the site of the Project itself on birds and bats is critical.

What we find in the Application are two analyses – one an analysis of NEXRAD radar to predict impacts to nocturnal migratory birds, and the other a Risk Assessment for Birds and Bats that includes a literature search and citations from European studies on European species of birds and comparisons to mortality data from a sample of land-based wind projects to conclude that the Project is “low risk.” These analyses are prepared by a wind energy consulting firm, the third or fourth such consulting firm hired by Applicant since 2008. We found in our research that with each consultant came a different approach, methodology and protocol, including a white paper in 2013 which was withdrawn by Applicant following review by stakeholders, scientists and agencies. We find no data collected at the Project site itself in a standardized protocol and methodology that follows federal or state wind industry guidelines for land-based turbines, nor the industry standard.

Therefore, we submit that now is the time for Applicant and the Ohio Power Siting Board, wildlife agencies and stakeholders to set a standard for data collection, analysis and planning for the first offshore wind project in the Great Lakes Region before consideration of issuing a Certificate. We ask that the Ohio Power Siting Board consider holding Applicant to that standard in commitments in writing while considering the Application and the decision to issue a Certificate for the Project.

As a stakeholder, we find the Application incomplete in the following specific data collection, analyses and planning processes:

- a. Risk Assessment and baseline data;
- b. Post-construction monitoring;
- c. Adaptive management.

a. Risk Assessment

USFWS voluntary Land-based Wind Turbine Guidelines

(https://www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf) take a “tiered” approach to wind project siting. Tier 3 is summarized as “field studies to document site wildlife and habitat and predict project impacts.”

These predictions should be site-specific and quantitative (number of birds or bats flying through project area, relative abundance of species populations, percentage of total birds at risk flying through the rotor swept zone of the turbines, collection during seasonal and temporal periods in a scientifically defensible sample size) rather than qualitative (“low” or “lower” in comparison to a sample of some other land-based wind projects). This quantitative data is critical to assess risk of the Project to species of birds and bats and populations of birds and bats, and as a baseline for further comparisons during operations.

Setting a protocol and methodology for collection of site-specific data at this time will set a standard for all future proposed Great Lakes wind projects and Applicant’s specific commitments to those standards in writing must be secured prior to consideration of a Certificate.

Recent advances in technologies for on-site data collection on birds to inform risk assessment models have been made at offshore wind projects in Europe that could be used at the Project site in order to insure thorough environmental review. In fact, some new technologies have been funded, in part, by the Department of Energy with Audubon’s support, and some, but not all, are listed in an inventory of technologies in Applicant’s Appendix J.

We submit one standard of data collection and analysis which may be helpful:

Assessing the impacts of avian collisions with wind turbines requires reliable estimates of avian flight intensities and altitudes, to enable accurate estimation of collision rates, avoidance rates and related effects on populations. At sea,

obtaining such estimates visually is limited not only by weather conditions but, more importantly, because a high proportion of birds fly at night and at heights above the range of visual observation. We used vertical radar with automated bird-tracking software to overcome these limitations and obtain data on the magnitude, timing and altitude of local bird movements and seasonal migration measured continuously at a Dutch offshore wind farm. An estimated 1.6 million radar echoes representing individual birds or flocks were recorded crossing the wind farm annually at altitudes between 25 and 115 m (the rotor-swept zone). The majority of these fluxes consisted of gull species during the day and migrating passerines at night. We demonstrate daily, monthly and seasonal patterns in fluxes at rotor heights and the influence of wind direction on flight intensity. These data are among the first to show the magnitude and variation of low-altitude flight activity across the North Sea, and are valuable for assessing the consequences of developments such as offshore wind farms for birds. (Fijn et al, Bird movements at rotor heights measured continuously with vertical radar at a Dutch offshore wind farm, 2015)

Knowledge of species composition is essential in determining the impacts of offshore wind farms on birds. Unfortunately, identification of radar echoes to species level was not possible with the radar used in this study (NEXRAD). Local species composition could, however, be derived from visual and auditory field observations and horizontal radar data (Krijgsveld et al. 2011), as well as ship-based surveys in the area where the radar was located (Leopold et al. 2011).

Recommendation: We recommend that the Board consider a requirement that Applicant provide a written plan that provides specific methodology and protocol for on-site data collection as well as a risk assessment approved by U.S. Fish & Wildlife Service (USFWS) and Ohio Department of Natural Resources (ODNR) that includes fatality estimate models on key species and species groups at risk, and that U.S. Fish & Wildlife Service (USFWS) approve that risk assessment as complete and acceptable before Applicant can proceed with the Project.

The plan should include collection of data over at least a year including migratory seasons using current technologies in use at offshore wind facilities in Europe such as vertical radar, acoustic identification technologies, and field observations and should be developed in collaboration with local scientists and institutions in Ohio. A priori a literature search could provide some relevant data and summarize past ad hoc efforts, but this is not the same as on-site data. We found many NEXRAD radar analyses conducted on Lake Erie and the Great Lakes from weather stations based on land around the lakes that provided analysis on magnitude and timing of nocturnal migrants, but these data alone are not sufficient to determine risk of collision with the turbines to species of birds or bats without additional data such as species flight behaviors, altitudes, seasonality, disturbance vulnerability, and time spent in the rotor swept zone. We note that only Applicant's NEXRAD radar analysis characterized the risk of wind energy to nocturnal migratory birds as "low". Others estimate tens or hundreds of millions of birds in migration over Lake Erie.

b. Post-construction monitoring

Critical to understanding impacts, informing future risk assessments for future offshore fresh water wind projects, and informing operational reactions to unexpected impacts in order to minimize them is an effective post-construction monitoring program. At land-based projects, this is a standard required program with methodology and protocols prepared in advance, and data collection is achieved by carcass searches, adjusted for scavenger rate and searcher bias. This is standard for land-based wind project permitting. There is currently no standard post-construction monitoring protocol and methodology for freshwater offshore wind projects in North America. Therefore, the monitoring protocol and methodology for the Project will surely set a standard for freshwater offshore wind development in the U.S. This should be embodied in a written protocol and methodology approved by the U.S. Fish & Wildlife Service and ODNR and filed with the Application or provided to the public during the judicial process to allow public comment. In any case, a final decision should not be made on a Certificate without these specific commitments to a monitoring protocol and methodology that includes duration and effort, and we recommend 3 years of monitoring at a minimum for this demonstration project due to the fluctuation in migratory activities of birds.

There are new technologies that can be applied to the Project in post-construction monitoring, and Applicant has listed some potential technologies in Appendix J, but the final monitoring plan and level of effort in terms of time and spatial area is not provided.

Recommendation: We recommend that The Board require Applicant to submit a post-construction monitoring program approved by the U.S. Fish & Wildlife Service and ODNR with methodology and protocol clearly defined in duration and effort before Application is deemed complete or before a decision is made on a Certificate for the Project. We further recommend that the protocols and methodology of the post-construction monitoring program be included in a document currently known as Bird Bat Conservation Strategy (BBCS) prepared in consultation with the U.S. Fish & Wildlife Service before the Application is deemed complete or prior to a decision on a Certificate for the Project. The preparation of and adherence to a BBCS is a standard land-based wind industry practice.

We also recommend that since the Project is a demonstration project that data collection continue in periods over time and in intervals that are statistically significant to represent the impacts of the project over the life of the project, and that are collected by an independent third party reporting directly to the U.S. Fish & Wildlife Service in the same manner as new rules for permits for “take” under the Bald and Golden Eagle Protection Act require.

c. Adaptive Management

Uncertainties are heightened in a demonstration project that is first generation, as the Project is. As post-construction data is collected, operations management may find that

risk assessments and other assumptions about species of birds or bats in pre-construction analyses based on collected data are not accurate, that predicted risk has been exceeded, or unexpected events of mortality or disturbance may occur. It is critical for operations management to describe these uncertainties and possibilities beforehand with the best available input from agencies, scientists and stakeholders, and plan in advance for known steps in adaptive management approaches to adjust operations and monitor the results of the adjustments in order to increase effectiveness in minimizing these unexpected impacts. The Department of Interior outlines an approach to Adaptive Management (<https://www.doi.gov/sites/doi.gov/files/migrated/ppa/upload/Chapter1.pdf>)

Recommendation: We recommend that the Board consider a requirement that Applicant submit a written Adaptive Management plan created in consultation with and approved by USFWS and ODNR before Application is deemed complete or prior to a decision on a Certificate for the Project. We further recommend that the Adaptive Management Plan be included in a Bird Bat Conservation Strategy (BBCS) prepared in consultation with the U.S. Fish & Wildlife Service. The preparation of a BBCS is a standard land-based wind industry practice.

2. The project is sited in an area designated by the National Audubon Society and BirdLife International as a globally significant Important Bird Area (IBA) identified as the Lake Erie Central Basin IBA. <http://www.audubon.org/important-bird-areas/lake-erie-central-basin>.

The Important Bird Areas program, administered by the National Audubon Society in the United States, is part of an international effort to identify, prioritize, and support conservation efforts at sites that provide significant breeding, wintering, or migratory habitats for specific species or concentrations of birds. Sites are designated based on specific and standardized criteria and supporting data. Lake Erie Central Basin was labeled as “globally significant” because of the presence of a significant portion of the U.S. population of Red-breasted merganser – nearly a quarter million birds - in the fall and winter in the lake, as well as significant concentrations of other waterfowl and gulls, and the importance to migrating land birds as they pass between Canada and Ohio as documented by substantial data gathered at shore-based sites and through NEXRAD radar data during major migration events.

While Important Bird Areas are not regulatory, they are relevant to conservation planning and are recognized as areas for higher analysis on impacts on birds by many countries worldwide, and by federal, state and local agencies throughout the U.S. Some states have passed legislation that highlight a heightened awareness of IBAs in environmental analysis and conservation planning.

We provide the following citations to justify prioritization collection of data on the species of birds that led to the designation of the IBA as globally significant:

Millions of pelagic birds move through Lake Erie during migration, including a globally significant proportion of North America’s red-breasted merganser population. Flocks of over 210,000 red-breasted mergansers have been observed

on a single day near Sandusky, Ohio (Peterjohn 2001). (Lott, et al, Mapping Pelagic Bird Distribution and Abundance as a Decision-making Tool for Offshore Wind Turbine Development and Conservation Planning, Ohio Department of Natural Resources, Division of Wildlife, U.S. Fish & Wildlife Service, January 31, 2011).

The waters around Cleveland provide important overwintering habitat for gulls (herring, ring-billed, Bonaparte's, great black-backed, etc) ducks (greater and lesser scaup, red-breasted and common mergansers, goldeneye, bufflehead, redhead, canvasback), common loons and horned grebes. During winter flocks of over 10,000 birds are not uncommon near Cleveland and the maximum daily counts for red-breasted merganser in some years has reached 250,000 (Ritzenthaler 2008)

A large percentage of land birds confront the Great Lakes as they migrate through North America. As a consequence, millions of land birds find themselves aloft over the surface of the Great Lakes.(emphasis added) For birds stranded over water near sunrise, the coasts of the Great Lakes represent first landfall. Reorientation and lake avoidance will tend to direct more birds along the near (or departing) shores of lakes whereas nonreoriented crossing will tend to direct birds toward the far shore. (Diehl et al, Radar Observations of Bird Migration over the Great Lakes, The Auk, 2013)

LEEDCo's Environmental Assessment states that between 4-13% of migrants fly within the height of modern wind turbine rotors, and that tens- to hundreds of millions of birds migrate over Lake Erie. Based upon these numbers it would mean that between 400,000-13,000,000 songbirds fly at rotor swept height when flying over Lake Erie. (U.S. Fish & Wildlife Service comment letter to Ohio Power Siting Board, March 24, 2014).

Recommendation: We recommend that the Board consider a requirement that Applicant prioritize analysis on the species and species groups (migratory birds, ducks, waterbirds, red-breasted Merganser, etc) above in writing due to the proposed location of the Project in an Audubon globally significant Important Bird Area before Application is deemed complete or prior to the decision on a Certificate.

As an example of a prioritized species-level analysis, the Mid-Atlantic Baseline Studies (MABS) project (2012-2015) was funded by the U.S. Department of Energy and a wide range of other partners. "Project activities included boat surveys, high resolution digital video aerial surveys, tracking of focal species, nocturnal avian migration monitoring, and development of analytical and modeling approaches for studying wildlife in the offshore mid-Atlantic." (<http://www.briloon.org/mabs>.) The programmatic study featured case studies highlighting prioritized species or species guilds (wintering seabirds) on flight behavior and data collected on those species as well as data from other sources.

In closing, since the deployment of offshore wind energy in the Great Lakes is of great interest to all of the stakeholders in the mid-Atlantic region, we recommend that the Ohio Power Siting Board consider initiating a joint agency and government process with other international, federal, state and local permitting authorities with jurisdiction over energy development in the waters of the Great Lakes in order to establish a goal and process to lead a transparent programmatic effort to identify “least conflict” areas, if any, suitable for wind development in the Great Lakes to direct and perhaps incentivize development of wind energy to those areas. A highly useful tool for this effort could be an online web-based GIS map sharing portal where stakeholders and stakeholder committees could provide and analyze data privately and publicly in the process.

This joint agency and government process could also set standards for protocols and methodology for collecting and analyzing data, especially on environmental impacts including impacts to birds and bats and other wildlife.

Audubon appreciates the opportunity to comment on the Application.

Sincerely,

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