BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of Icebreaker Windpower, Inc., for a Certification to Construct a Wind-Powered Electric Generation Facility in Cuyahoga County, Ohio	)))))	Case No. 16-1871-EL-BGN

CUYAHOGA COUNTY AND BRATENAHL RESIDENTS' RESPONSE TO APPLICANT'S FOURTH SUPPLEMENT TO ITS APPLICATION

I. INTRODUCTION

This matter is before the Board on the Fourth Supplement to Application (the "Fourth Supplement") filed by applicant Icebreaker Windpower, Inc. ("Applicant") on March 22, 2018. The Fourth Supplement does nothing but confirm that Applicant has not yet identified a scientifically-sound methodology for a pre-construction radar study to determine the magnitude of nocturnal bird and bat migration through the proposed project (the "Project") site (including the proportion of migrants flying through the rotor-swept zone), much less has Applicant actually implemented such a study and obtained critical radar data necessary for an informed determination of the Project's risk to kill or maim those birds and bats. Thus, Applicant is not close to being able to: (1) test and validate a selected radar methodology; (2) implement its pre-construction study; (3) collect and analyze the data from its study; and (4) present its pre-construction data and analysis to the Board -- all of which are conditions precedent to the Board being able to perform its statutorily-required functions to determine, before it grants a certificate to Applicant, [1] "the nature of the probable impact" of the Project (R.C. 4906.10(A)(2)), and that

[1] R.C. 4906.10(A) provides that "[t]he Board ***shall not grant a certificate for the construction*** . . . of a major utility facility . . . ***unless it finds and determines*** . . ." *inter alia*, that the Project has met the requirements of R.C. 4906.10(A)(2) and (A)(3). This requires the Board resolve this issue "before the certificate is issued." *In re Application of Buckeye Wind, LLC,* 131 Ohio St.3d 449, 464, 2012-Ohio-878 at ¶64 (Lundberg Stratton, J., dissenting). "A legion of cases establish that the [Board] abuses its discretion if it renders an opinion on an issue without record support." *Cleveland Elec. Illuminating Co. v. Public Utilities Comm'n of Ohio*, 76 Ohio St.3d 163, 166, 1996-Ohio-296 (citations omitted).

the Project "represents the minimum adverse environmental impact." R.C. 4906.10(A)(3). The Fourth Supplement provides no new information upon which the Board can make an informed decision with regard to the factors listed in R.C. 4906.10(A).

By their February 5, 2018 "Cuyahoga County And Bratenahl Residents' Memorandum In Opposition To Icebreaker Windpower, Inc.'s Motion to Reestablish The Procedural Schedule And For Waiver Of O.A.C. 4906-3-09(A)(2)," Cuyahoga County residents Caryn and Steve Seward, and Bratenahl residents W. Susan Dempsey, Robert M. Maloney, Gregory Binford, and Leon Blazey, Jr. (together, the "Local Residents") already have pointed out to the Board the numerous ways in which Applicant's Application fails to meet applicable statutory and regulatory requirements. The Local Residents will not repeat that recitation of deficiencies here. Rather, they will limit this response to identifying the primary deficiencies and misstatements of Applicant's Fourth Supplement.

II. ARGUMENT

A. The Fourth Supplement Suggests That The U.S. Fish And Wildlife Service Has "Now Concurred" With Applicant's Still-Unspecified Methodology For Pre-Construction Bird And Bat Radar Studies Pursuant To The Diehl Report. Such Purported Concurrence Would Be Inconsistent With Prior U.S. FWS Objections To The Diehl Report.

Applicant's Fourth Supplement consists of a March 22, 2018 letter (the "Letter") to the Board and six (6) attachments. Perhaps the most troubling aspect of the Fourth Supplement is that Applicant suggests that the United States Fish and Wildlife Service ("FWS") now concurs in the propriety of Applicant's use of as-yet-unspecified pre-construction bird and bird and bat radar methodologies pursuant to Dr. Robert Diehl's December 2017 "Evaluation of Icebreaker Wind project vendor proposals for radar-based monitoring of flying animals" (the "Diehl

Report"), "Attachment 5" to the Fourth Supplement. [2] Applicant's suggestion that FWS now in some way approves of Applicant's as-yet-unspecified pre-construction bird and bat radar methodologies is troubling because as recently as December 21, 2017, in a letter to Dr. Diehl (the "FWS Letter to Diehl"), FWS outlined numerous fundamental and critical defects in the radar methodologies analyzed in the Diehl Report -- defects that would undermine the scientific validity and reliability of any data produced by use of the radar methodologies under consideration by Appellant. *See* Exhibit A attached hereto (12/21/17 FWS Letter to Diehl).

Applicant states in its Letter that "The Ohio Department of Natural Resources ("ODNR") and the Applicant have agreed to baseline radar and other monitoring studies, ***and the United States Fish and Wildlife Service ("USFWS") has now concurred with the Applicant's approach to pre-construction radar*** and has stated that the Project's size and location minimize it risk"; [3] and "Based on the conclusions in the Diehl Report ***and with the support of the*** state and ***federal wildlife agencies***, the Applicant is submitting the Diehl Report in support of its determination to commence radar monitoring prior to construction in order to provide a baseline for the post-construction monitoring as **Attachment 5** to this supplemental filing." (Bold and italics added). Letter at 1-2, 3-4. These assertions of FWS support for the Diehl Report and the radar methodologies reviewed therein is inconsistent with the detailed, technical criticisms of the

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[2] FWS has not filed a response to the Fourth Supplement in this proceeding, so the Local Residents do not know whether Applicant's characterizations of FWS's current position with respect to various aspects of pre-construction bird and bat radar methodologies for the Project accurately and fully reflect FWS's views.

[3] Applicant attaches as Attachment 6 to its Fourth Supplement a March 12, 2018 letter from FWS to the Ohio Department of Natural Resources ("ODNR") in support of its assertion of recent FWS concurrence. In contrast to the FWS Letter to Diehl -- which contains a detailed, specific itemization of the substantive deficiencies in the pre-construction radar methodologies reviewed in the Diehl Report -- the March 12, 2018 FWS letter is replete with vague, genial aphorisms such as: "We appreciate that LEEDCo is working with the vendor to address concerns and incorporate recommendations from Dr. Diehl and the Service to increase the reliability of the monitoring program."; "The Service is encouraged that there is progress in this realm of technological development."; and "We recognize that for an off-shore project such as Icebreaker, any pre- and post-construction monitoring strategies will have technological challenges and uncertainties as a result of the environmental conditions under which this project will operate."

Diehl Report and the proffered radar methodologies set forth in the 12/21/17 FWS Letter to Diehl.

FWS begins its Letter to Diehl by noting that is was given less than a week to provide comments concerning the Diehl Report, and therefore, the Letter just summarizes FHW's "major concerns" concerning the Report:

> . . . We received the [Diehl] draft report on December 14, 2017 and comments were requested by December 20, 2017. Given the short time-frame, this is a summary of ***our major concerns*** with the report along with some specific examples. (Emphasis added).

Exhibit A at 1.

FWS notes that it has been advising LEEDCo/Icebreaker for years to conduct a proper pre-construction bird and bat radar study at the Project site, but an early (2010) attempt to gather radar data from a Cleveland water intake crib approximately five (5) miles from the site was a failure:

> . . . Radar was included as a pre-construction tool for the proposed project as early as 2010, when a biological consultant deployed a radar system on the Cleveland water intake crib. ***Multiple problems associated with the setup and operation of the radar unit resulted in data that both the Service and the developer consider largely uninformative.*** (Emphasis added).

Id.

Next, FWS reminds Dr. Diehl that it has been advising Applicant for years that it must use a fixed platform for radar equipment at the Project site to obtain data that is accurate and complete. Nonetheless, Applicant continues to propose to station the radar equipment on a moving platform -- a methodology that is likely to result in unreliable data and data omissions:

> . . . Although many aspects of the study's design have been discussed, ***one of the main topics of investigation has been how to situate a radar unit within the project area on a platform that would allow for successful operation and data collection. The Service has recommended that a fixed platform be considered***

because it would provide the highest probability of any radar system successfully tracking migrants.

* * *

The draft report is an insightful and detailed comparison of the options provided by three respondents to LEEDCo's request for information. ***It also highlights several areas of concern related to operating an avian radar unit on a moving platform. LEEDCo has settled on a plan to use a four-point anchored barge***, and has solicited responses from radar vendors for that type of deployment. ***The three proposals received by LEEDCo represent a limited set of options with known problems related to design, support, and lack of experience in the offshore environment. Unfortunately, the scope of the evaluation is limited to relative comparisons among proposals solicited by LEEDCo.***

Chief among our concerns is that the evaluation was limited to options using a non-stable platform. This technique has not been used in long-duration study and, based on years of experience operating avian radar units in the Great Lakes region, we are concerned about high rate of failure, resulting in collection of poor data. The draft report identified the rolling and pitching barge as one of the major limitations for all systems evaluated. It is likely that any of these systems would perform better on a stable platform, but this option was not considered. A compounding factor is that windy weather, known to be associated with high numbers of migrants, will likely be especially destabilizing to a barge-based system. ***This may cause loss of critical data at times when capturing that data is most important. For that reason, the Service finds it critically important that a system capable of capturing accurate data reliably, even during periods of high wind and waves, be used for the study. The Service is unaware of radar studies that successfully used a floating platform for offshore studies.***

The draft report, while stating concerns about a moving platform and weather, has not fully described the ramifications to a radar study. . . .

* * *

Poor quality data has important downstream effects on the decision made for this and other projects, including project siting and mitigation. Poor data resulting from a faulty deployment may be interpreted as low migratory activity. ***All systems proposed by LEEDCO's respondents were engineered for use on land or a stable platform.*** . . . (Emphasis added).

Id. at 1 - 3.

FWS also points out that the Diehl Report is deficient because it fails to evaluate the computer software that will be necessary to operate the bird radar system, and to accurately detect and record radar data to enable scientifically-sound analyses to be performed on the data:

> In addition, software associated with these systems plays an integral role in suppressing false signals (clutter), and with accurate reporting (including sampling corrections for airspace). ***However, the report does not evaluate the software, especially under the circumstances of a moving platform. This lack of evaluation makes it impossible to gauge the likely limitations of any system and difficult to anticipate circumstances when the system may be failing to detect or track migrants***. (Emphasis added).

Id. at 3.

Finally, the Diehl Report fails to verify that the vendor radar methodologies that Diehl analyzed have sufficient capability to remotely monitor the operation of the radar system (located 7 to 10 miles from the shore) and quickly remedy any problems that occur:

> Finally, because the radar is placed offshore in a remote area, it is critically important to be able to monitor the system without people on site. While two of the vendors stated that they had remote capabilities, they did not clarify the full extent of what they could monitor and the extent to which they could resolve issues remotely. ***The Service has repeatedly suggested having remote troubleshooting and monitoring to quickly rectify issues with the system.*** This measure will save time and money and ***is crucial for an effective system*** (in our opinion, based on seven years of experience conducting radar studies around the Great Lakes). Commercial avian radar systems are available that can be monitored and often repaired remotely, send electronic notifications when problems occur, include integrated power supplies, and have been used successfully on fixed platforms in an off-shore environment. ***However, these were not considered in the draft report***. (Emphasis added).

Id.

In short, Applicant has not yet identified and obtained -- much less implemented -- a scientifically-sound pre-construction bird and bat radar methodology. [4] Applicant's Application

[4] FWS stated in its October 4, 2017 letter to the U.S. Department of Energy (filed by FWS as a public comment in this proceeding): "Also note that the MOU [between Applicant and ODNR] and sampling protocol do not provide detailed methods for several critical components of the pre- and most components of the post- construction monitoring." *Id.* at 2.

fails to provide the Board with any valid pre-construction radar study data by which the Board can make its statutorily-required findings and determinations as to the "probable environmental impact" of the Project, and that the Project "represents the minimum adverse environmental impact." R.C. 4906.10(A)(2) and (3).

B. The Fourth Supplement's Assertion That The Required Pre-Construction Bird And Bat Radar Studies Are Not Intended To Inform As To The Project's Collision Risks To Bird's And Bats Is Refuted By Applicant's Own Application, And FWS's And OPSB's Statements Concerning The Studies -- And Is Nonsensical

Applicant asserts in its Letter that the required pre-construction bird and bat radar studies are not intended to provide information that is material to determining the collision risk that the Project presents to birds and bats:

> . . . As noted above, during the extensive discussions the Applicant engaged in with USFWS and ODNR, commencing in August 2016, ***the wildlife agencies have agreed*** that any pre-construction radar would be used to collect baseline data, and ***were not needed to inform the question of risk***. (Emphasis added).

This incredible assertion is refuted by Applicant's own February 1, 2017 Application in this proceeding:

> While ***federal and state agencies*** have agreed that the information regarding the impact to fish and wildlife supports a finding that the permitting processes at the state and federal levels can move forward, ***they have requested that the Applicant conduct additional field surveys prior to construction*** in order to provide a direct comparison with postconstruction survey information, ***as a means to assess the level of wildlife impact during the operation phase of the project.*** . . . (Emphasis added).

Application at 90.

FWS has made it clear that the purpose of Applicant's required pre-construction bird and bat radar studies is to provide data that is crucial to assessing the Project's collision risk to birds and bats. FWS reiterated this basic fact in its October 4, 2014 letter to the U.S. Department of Energy:

> . . . ***Because of the potential risk of bird and bat mortality***, and because this project is designed to be a demonstration project to evaluate offshore wind installation in the Great Lakes, ***pre-construction monitoring to inform risk*** and post-construction monitoring to assess actual impacts ***are necessary components of the project that must be implemented. Should the finding of the pre-construction monitoring*** yield results that contradict the assumptions of the Draft EA, the findings of the draft EA should be revisited to ensure that ***accurate information on risk to birds and bats is publicly available.*** . . . (Emphasis added).

Id. at 3.

Similarly, OPSB staff and the Board have stated their understanding that the purpose of Applicant's required pre-construction bird and bat radar studies is to inform the Board's findings and determinations as to the Project's collision risk to birds and bats. In their October 23, 2017 motion to suspend the procedural schedule in this case, OPSB staff stated:

> Construction and operation of off-shore wind turbines presents a very different set of challenges than land-based turbines in terms of wildlife impact measurement. The Great Lakes has unique ecological properties compared to land installations. Due to the fact that this project is precedent-setting, since it is the first proposed off-shore wind facility in Lake Erie, ***Staff requires more information on the radar technology monitoring protocol it selected for this small demonstration project and whether it can reliably measure the effect of off-shore turbines on birds and bats*** and ***inform of the risk levels*** for future development projects in Lake Erie. The pre-construction radar monitoring protocol is important to Staff's investigation because it establishes baseline conditions using methodologies that will be duplicated during the operational phase to provide robust pre- vs. post-construction comparisons for impact assessment. (Emphasis added).

Motion to Suspend at 2-3 (emphasis added).

Like, the Board acknowledged in its October 23, 2017 Entry granting OPSB staff's motion that the purpose of Applicant's required pre-construction bird and bat radar studies is to inform of the collision risk presented by the Project:

> . . . Applicant[] need[s] to submit, and staff[] need[s] to consider, supplemental information relating to the radar monitoring monitoring protocol selected for this project and whether it can reliably measure the effect of offshore turbines on birds and bats and ***inform of the risk levels*** for future development projects in Lake Erie. . . . (Emphasis added).

10/23/17 Entry at ¶7.

Finally, it is simply nonsensical to assert that accurate pre-construction radar data as to the concentration of migratory birds in bats in the rotor-swept zone of the Project is not necessary to inform the Board of the Project's collision risk to birds and bats. If, hypothetically, scientifically-valid radar studies were to establish that no birds or bats migrated through the rotor-swept zone of the Project, then the Project's collision risk to bats would be virtually nonexistent. If, however, scientifically-valid pre-construction radar studies at the Project site establish that millions of migratory birds and bats fly through the rotor-swept zone of the Project during each spring and fall migratory season -- as suggested by FWS's existing onshore bird and bat radar studies [5] -- then the Project's collision risk to birds and bats is enormous. Applicant simply has failed to provide the Board with the scientifically-valid pre-construction bird and bat radar data necessary for the Board to make informed findings and determinations of the Project's "probable environmental impact" and that it "represents the minimum environmental impact."

C. Attachment 2 Of The Fourth Supplement Renews Applicant's Erroneous, And Misleading, Assertion That There Are Greater Concentrations Of Migratory Birds Along The Shoreline Than In The Project Area

Applicant has repeatedly made the erroneous and misleading assertion that scientifically-valid data establish that greater concentrations of migratory birds are found along the Lake Erie shoreline than in the Project area. Applicant renews that false assertion in Attachment 2 to its Fourth Supplement, the March 20, 2018 "Summary of November 2016 Avian and Bat Risk Assessment for the Icebreaker Wind Project":

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[5] For example, FWS's Spring 2012 "Great Lakes Avian Radar Technical Report, Lake Erie Shoreline: Erie County, Ohio and Erie County, Pennsylvania" establishes that upwards of 17,000 birds per hour and 5,315,991 birds per spring migration season migrate over Lake Erie. *Id.* at 16, 18.

3 CONLCUSION

The Risk Assessment concluded that the Project poses low risk of adverse impacts to birds and bats based on 1) the Project is small in scale, consisting of six turbines; and 2) site-specific and other studies have documented that the level of use of this area by birds and bats is low compared to bird and bat use of terrestrial or nearshore environments. Subsequent studies for Icebreaker further support this assessment. [6]

Just as Applicant has repeated this false assertion, FWS repeatedly has admonished Applicant that the assertion is both false and misleading. The existing Lake Erie bird and bat radar studies -- including FWS's own bird and bat radar studies -- establish that migratory birds stop on the Cleveland area shoreline before flying through the Project area on their way north during the spring migration and fly through the Project area before stopping on the shore on their way south during the fall migration. As FWS stated in its October 4, 2017 letter to DOE:

> Section 3.4.1.3 of the Draft DA describes the Affected Environment relative to birds and bats. Pages 3-29 and 3-32 describe a NEXRAD weather radar analysis of bird and bat use of the project area . . . . Page 3-32 states, "Several recent studies employing marine radar in shoreline environments have demonstrated relatively high densities of nocturnal migrant birds along the shorelines of Lake Erie and Lake Ontario, ***reinforcing the understanding that such migrants tend to concentrate along coastlines and avoid flying over large water bodies, such as Lake Erie, if possible*** . . . ." Page 3-51 includes a similar statement. ***These statements are misleading . . . . These [cited] publications instead state that migrants concentrate on the shoreline during dawn and daytime when they land to rest and refuel. During the actual nocturnal migration, however, migrants commonly cross Lake Erie and all of the other Great Lakes***. . . . (Emphasis added).

Id. at 3.

In its December 21, 2017 FWS Letter to Diehl, FWS emphasized that its fall 2017 bird radar study again confirms that migratory birds congregating on the shores of Lake Erie have arrived there after crossing the Lake in fall migration:

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[6] Applicant's repetition of this false assertion itself constitutes an acknowledgement that the magnitude of the concentration of migratory birds in the Project area -- which has not yet been determined by implementation of a scientifically valid, pre-construction, on-site radar study -- is relevant to inform the Board's necessary assessment of the Project's "risk of adverse impacts to birds and bats."

> The Service collected data with one of its avian radar units placed on-shore in the City of Cleveland this fall [2017]. Both the southward direction of flight and the delayed arrival times indicated that ***high numbers of migrants arriving in Cleveland were crossing Lake Erie.*** (See attachment 2 of USFWS letter "Draft Assessment for Lake Erie Energy Corporation's Project Icebreaker, Offshore Cleveland, OH (DOE/EA-2045)" sent 4-October-2017, attached). While the location we utilized cannot tell us flight altitude over the site of the proposed project or be able to serve as a basis for detecting attraction or avoidance of turbines post-construction, ***we have documented that large numbers of nocturnal migrants cross Lake Erie during fall migration.*** (Emphasis added).

Id. at 4.

III. CONCLUSION

For the foregoing reasons, the information submitted by Applicant as its Fourth Supplement to its Application does not cure the fatal deficiencies in the Application. The Application is insufficient to enable the Board to enter valid findings and determinations as to the "probable environmental impact" of the Project, much less to enable the Board to accurately conclude that the Project "represents the minimum adverse environmental impact."

Respectfully submitted,

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CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to this case. In addition, the undersigned certifies that a copy of the foregoing document also is being served upon the persons below via electronic mail on April 6, 2018.

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United States Department of the Interior

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IN REPLY REFER TO:

FWS/AES

DEC 21 2017

Dr. Robert Diehl
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Dear Dr. Diehl:

Following are the U.S. Fish and Wildlife Service's (Service) comments on the Evaluation of Icebreaker Wind project vendor proposals for radar-based monitoring of flying animals. We received the draft report on December 14, 2017 and comments were requested by December 20, 2017. Given the short time-frame, this is a summary of our major concerns with the report along with some specific examples.

The Service's Ohio Field Office and Region 3 Avian Radar Team have been involved in discussions with the developer, LEEDCo, over nearly two years to establish appropriate pre- and post-construction studies for assessing risks and impacts of the Icebreaker project to migrating birds and bats. Radar has been proposed as a tool for monitoring bird and bat use of project airspace, due to its ability to monitor nocturnal flight activity over a large area and because the majority of birds and all bats migrate nocturnally. Radar was included as a pre-construction tool for the proposed project as early as 2010, when a biological consultant deployed a radar system on the Cleveland water intake crib. Multiple problems associated with the setup and operation of the radar unit resulted in data that both the Service and the developer consider largely uninformative. The Service began recommending an on-site avian radar study for the LEEDCo project in August 2016. The primary objectives of a radar study would be to 1) document the magnitude of nocturnal migration at the proposed site, 2) determine the proportion of migrants flying within or near the rotor-swept zone, and 3) examine if birds or bats exhibit turbine avoidance or attraction to turbines in a before-after comparison.

For this pilot project, the Service has requested on multiple occasions that all commercial-available options of avian radar be considered to expeditiously and cost-effectively obtain data that address the three study objective. Although many aspects of the study's design have been discussed, one of the main topics of investigation has been how to situate a radar unit within the project area on a platform that would allow for successful operation and data collection. The

Service has recommended that a fixed platform be considered because it would provide the highest probability of any radar system successfully tracking migrants.

Our recommendations for a successful study were outlined to the developer in a letter dated February 28, 2017, and include the following:

- Radar must have a site-specific (within construction site) deployment.
- Radar must be able to detect and track 10-gram sized and larger vertebrates.
- Radar must have the ability to collect data continuously, due to pulsed nature of migration.
- Radar must suppress false detections from insects, wave clutter, and weather (≥80% of surveyed time producing viable data, including during heavy precipitation events.) Additionally, downtime should be non-biased. That is, each biological period (Dawn, Day, Dusk, and Night) should meet the ≥80% threshold. This was not part of the February 28th letter and is added here as a clarification.
- Radar must be able to determine flight altitude of migrants at altitudes near and within the rotor-swept zone to quantify collision risk.
- Radar must be able to determine and quantify behavioral avoidance or attraction to turbines in the open water setting.
- Radar must collect data for both small bird and bat migratory seasons (April-June; mid-August-Mid-November) pre-construction.
- Radar must collect data for several spring/fall seasons post-construction (determining behavioral changes that make collision more or less likely).

The draft report is an insightful and detailed comparison of the options provided by three respondents to LEEDCo's request for information. It also highlights several areas of concern related to operating an avian radar unit on a moving platform. LEEDCo has settled on a plan to use a four-point anchored barge, and has solicited responses from radar vendors for that type of deployment. The three proposals received by LEEDCo represent a limited set of options with known problems related to design, support, and lack of experience in the offshore environment. Unfortunately, the scope of the evaluation is limited to relative comparisons among proposals solicited by LEEDCo.

Chief among our concerns is that the evaluation was limited to options using a non-stable platform. This technique has not been used in a long-duration study and, based on years of experience operating avian radar units in the Great Lakes region, we are concerned about a high rate of failure, resulting in collection of poor data. The draft report identified the rolling and pitching barge as one of the major limitations for all systems evaluated. It is likely that any of these systems would perform better on a stable platform, but this option was not considered. A

compounding factor is that windy weather, known to be associated with high numbers of migrants, will likely be especially destabilizing to a barge-based system. This may cause the loss of critical data at times when capturing that data is most important. For that reason, the Service finds it critically important that a system capable of capturing accurate data reliably, even during periods of high wind and waves, be used for the study. The Service is unaware of radar studies that successfully used a floating platform for offshore studies.

The draft report, while stating concerns about a moving platform and weather, has not fully described the ramifications to a radar study. The recommendation in the report is for data collection to be successful during 80% of the time when weather conditions permit. This metric is concerning for the following reasons. First, the biological periods (dawn, day, dusk, and night) have been combined. If data is lost during the most important biological periods (i.e., at night, when most migrants are moving, and at dawn and dusk when migrants may be most vulnerable to collision), an 80% threshold met overall will not be as informative. Second, the "when weather permits" criteria is arbitrary and could result in a lack of informative data. While radars of all types are affected by weather, certain bands (notably S-Band) are less affected by atmospheric moisture than others (X-band). The report's recommendations to use these more susceptible bands do not take into account the additional lost data due to this weakness.

Additionally, since wind can also be considered a weather parameter, losses of radar data due to a rocking barge could cause large losses of data that would be otherwise recorded from a stable platform. Accepting a radar system that collects data "weather permitting" could lead to using a system that is unsuitable for an effective data collection in the project environment, and lead to costly delays.

Poor data quality has important downstream effects on the decision made for this and other projects, including project siting and mitigation. Poor data resulting from a faulty deployment may be interpreted as low migratory activity. All systems proposed by LEEDCo's respondents were engineered for use on land or a stable platform. If low numbers of migrants are recorded, it may not be possible to determine if these results are due to low migration rates or if the system is failing to detect or track migrants due to the movement of the barge.

In addition, software associated with these systems plays an integral part in suppressing false signals (clutter), and with accurate reporting (including sampling corrections for airspace). However, the report does not evaluate the the software, especially under the circumstances of a moving platform. This lack of evaluation makes it impossible to gauge the likely limitations of any system and difficult to anticipate circumstances when the system may be failing to detect or track migrants.

Finally, because the radar is placed offshore in a remote area, it is critically important to be able to monitor the system without personnel on site. While two of the vendors stated that they had remote capabilities, they did not clarify the full extent of what they could monitor and the extent to which they could resolve issues remotely. The Service has repeatedly suggested having remote troubleshooting and monitoring to quickly rectify issues with the system. This measure will save time and money and is crucial for an effective system (in our opinion, based on seven years of experience conducting radar studies around the Great Lakes). Commercial avian radar

systems are available that can be monitored and often repaired remotely, send electronic notifications when problems occur, include integrated power supplies, and have been used successfully on fixed platforms in an off-shore environment. However, these were not considered in the draft report.

The Service collected data with one of its avian radar units placed on-shore in the City of Cleveland this fall. Both the southward direction of flight and the delayed arrival times indicated that high numbers of migrants arriving in Cleveland were crossing Lake Erie. (See attachment 2 of USFWS letter "Draft Environmental Assessment for Lake Erie Energy Development Corporation's Project Icebreaker, Offshore Cleveland, OH (DOE/EA-2045)" sent 4-October-2017, attached.) While the location we utilized cannot tell us the flight altitude over the site of the proposed project or be able to serve as a basis for detecting attraction or avoidance to turbines post-construction, we have documented that large numbers of nocturnal migrants cross Lake Erie during fall migration.

The Service's comments and recommendations provided in this and previous letters have been focused on providing guidance that will result in a system and study design that are likely to successfully produce needed information to inform decisions. We appreciate the opportunity to review the evaluation of proposals and provide our recommendations.

Sincerely,

Lori H. Nordstrom
Assistant Region Director
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Midwest Region

cc:
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Summary: Response Cuyahoga County and Bratenahl Residents' Response to Applicant's Fourth Supplement to its Application electronically filed by John F Stock on behalf of Seward, Caryn Good and Seward, Steven and Dempsey, W. Susan and Maloney, Robert M. and Binford, Gregory and Blazey, Jr., Leon