



ecology and environment, inc.

International Specialists in the Environment

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February 23, 2009

Mr. Matthew Casey
Senior Development Engineer
EAPC Wind Energy Services LLC
PO Box 350 - 256 Farrell Farm Road
Norwich, Vermont 05055

Re: Proposed Newport Nearshore Windpark
Feasibility Review for Avian Radar Study

Dear Mr. Casey:

As per our agreement with EAPC Wind Energy Services LLC (EAPC), Ecology and Environment, Inc., (E & E) has prepared this feasibility review memorandum for conducting an avian radar study for the proposed Newport Nearshore Windpark. The proposed project site is in Delaware Bay off the southwestern New Jersey shoreline. Due to the perceived sensitivity of avian resources within the project area, agencies are likely to have significant concerns regarding potential impacts to avian resources in conjunction with the construction and operation of the Project. Based on our review, implementation of an offshore radar study is possible, although it will be costly, and there are safety issues that will need to be addressed. Our evaluation and recommendations are discussed below.

Purpose and Methodology

E & E reviewed existing information provided by EAPC, including:

- A Phase I Avian Risk Assessment conducted by Curry & Kerlinger, LLC (C&K) for the proposed 16 turbine (24 megawatt [MW]) Newport Windpark; an onshore project that would be located in coastal Cumberland County, New Jersey adjacent to the proposed Newport Nearshore Windpark project area;
- A map of the proposed project area that was provided by EAPC. The map identifies the project boundary, separated into three phases.
- Another map of the proposed project area showing locations of proposed platforms for meteorological (met) towers and/or LIDAR. The platforms would be 16 feet by 16 feet and 9 meters high.

E & E contacted several companies that conduct avian radar studies to determine the feasibility of conducting radar studies within and/or near the project area. A summary of the contact information is included in this memorandum. E & E developed recommendations for EAPC to pursue avian radar studies based on our professional judgment.

Wind Project Understanding

The Newport Nearshore Windpark is proposed to include 106 3.6-MW turbines which would be developed in three phases. Phase 1 would include 50 turbines (180 MW) in an approximately 20 square mile area in New Jersey waters of Delaware Bay that is nearest to Gandy's Beach and Fortescue Beach on shore. Phase 2 would include 29 turbines (104.4 MW) in an approximately 11 square mile area to the north of Phase 1. Phase 3 would include 27 turbines (97.2 MW) in an approximately 11.5 square mile area to the south of Phase 1. The range of distances between the project area and the New Jersey shoreline is approximately 1.5 miles to 6 miles.

Brief Background of Offshore Avian Radar Studies

A limited number of offshore radar studies have been conducted in North America (e.g. Cape Wind project) and Europe with mixed results. Dr. Mark Desholm, one of the world's leading experts on bird impacts from offshore wind facilities, recently gave an update to an American Wind Energy Association (AWEA) Offshore Wind Working Group conference call on the latest results from ongoing wildlife surveys underway in Europe. Dr. Desholm, of the Department of Wildlife Ecology and Biodiversity at the National Environmental Research Institute (NERI) of Denmark, explained that there is trouble with use of radar to track birds due to sea clutter (e.g. wave action, weather, site logistics, etc.).

It should be noted that maintaining safety has been identified as a serious issue for offshore wildlife studies, including radar studies. Several people were killed in 2008 while conducting offshore wildlife studies for proposed wind projects via plane crash and research vessel (believed to be a vessel that could anchor and act as a platform to conduct a radar study); see the attached link for one account of the tragedies:

<http://www.wind-watch.org/news/2008/05/21/plane-crash-was-second-fatal-accident-in-week-releated-to-wind-turbine-research/>

So, while it is feasible to conduct an avian radar study at an offshore location, there have been few previous studies, they often encountered difficulties, and they are also very expensive (i.e. on the order of hundreds of thousands of dollars).

Feasibility of Conducting Radar Study at Project Area

Based on discussions with contacts at four companies that specialize in avian radar studies (Stantec; DeTect Inc.; Geo-Marine, Inc.; ABR, Inc.), it is considered feasible to conduct an offshore radar study within the project area. There is a considerable amount of design that goes into conducting such a study; however, on a preliminary basis, it is anticipated that the proposed platforms could be used to house the radar units. If an energy source is not available on the platform, energy would most likely be supplied by generators. The space and energy requirements will vary by the type of system installed, and possibly by the firm conducting the radar study. Approximately 3,000 watts are needed to run the typical system from DeTect, and while they are exploring use of a combined solar and wind energy supply, they still assume a generator is the best current approach. Some of the systems are designed to operate remotely for long periods of time (e.g. DeTect and Geo-Marine units), while others still recommend regular visits (i.e. daily or every few days for Stantec). In all cases, visitations to the platform will be necessary for installation, periodic operation and maintenance checks, and demobilization.

It is anticipated that a radar study at one location would characterize the entire project area because broad front movement is anticipated for nocturnal songbird migrants (so similar results are assumed throughout the project area), a radar unit can cover several miles from one location, and only one radar study location is typical for these studies. Of the two potential platform locations in the Phase 1 project area, either would suffice for a representative area. The site selection will ultimately come down to which platform offers the best logistics for the remote radar study and possibly agency preference.

Recommendations

1. ***Involve avian radar firms in the design of the study.*** At least 3 to 4 months are required to design a site-specific offshore radar study. As there are numerous logistics to be worked out and agency coordination, it would be beneficial to start the process as soon as practicable. Each avian radar company has its own approach, cost, and experience; therefore, it will be necessary to determine which firm can offer the best study design and results for an acceptable cost. A system with remote data collection capabilities and wireless transfer is ideal for an offshore setting. It would be beneficial to have the radar study design underway to learn logistical constraints before finalizing a work plan with the agencies. If the platforms turn out not to be amenable to conducting a study, an onshore radar study could capture the eastern-most boundary of the project area and coupled with a NEXRAD analysis (see next recommendation) may be sufficient for agency use.

2. ***Conduct a NEXRAD analysis before finalizing plans for an offshore radar study.*** This analysis is a desktop exercise that will evaluate archived Doppler Weather Surveillance Radar (WSR-88 or NEXRAD) data during the spring and fall migration seasons to determine how the area is used for migratory bird passage. Several years can be analyzed to get a sense of temporal passage and year-to-year variation in the project area. DeTect and Geo-Marine have determined that the project area is within an acceptable distance from nearby NEXRAD stations to conduct a study. While E & E did not solicit quotations, it has been our experience in working with these firms that a five-year analysis is approximately \$50K and can usually be completed within 2-3 months. Having this analysis in advance of the radar study design may help with radar siting and length of study (i.e. duration of season to be analyzed).

3. ***Develop a draft work plan for bird and bat studies for agency review before implementing studies.*** It is critical to get permitting agency input in the design of the study. The draft work plan should include conducting the following studies: avian radar, NEXRAD (radar) analysis, visual surveys (by boat), and passive acoustical monitoring for bats but the details of those studies need to be developed with input from the regulatory agencies.

If you have any questions, please do not hesitate to contact me at 716/684-8060, or via e-mail at mmorgante@ene.com.

Sincerely,



Michael M. Morgante
Bird and Bat Studies Manager