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April 18, 2008

US Department of the Interior
Minerals Management Service
Environmental Assessment Branch (MS 4042)
381 Elden Street
Herndon, VA 20170

by email to:

<https://occonnect.mms.gov/pcs-public/do/SubmitComment?projectObjectId=0b011f808028a795>

by hard mail to:

c/o MMS Cape Wind Energy Project
TRC Environmental Corporation, Wannalancit Mills
650 Suffolk Street
Lowell, Massachusetts 01854

Re: Comments on the *Cape Wind Energy Project Draft Environmental Impact Statement, January 2008*

Dear Minerals Management Service:

Mass Audubon thanks the US Department of the Interior's (DOI) Minerals Management Service (MMS) for the opportunity to comment on the *Cape Wind Energy Project Draft Environmental Impact Statement (DEIS), January 2008*.

Mass Audubon has previously and formally commented to the federal government on an earlier DEIS for this project and issued a *Challenge Proposal* to permitting agencies and the applicant on the same (citations below). We specifically draw your attention to the *key data gaps* that Mass Audubon identified in these documents, as well as our support for an *adaptive management planning strategy*. Below we highlight those areas where our issues have been satisfactorily addressed and where we believe more work needs to be done. As a result of our review as described in our *Cape Wind Challenge*, Mass Audubon tentatively concluded that the Cape Wind Energy Project would not pose an ecological significant threat to the birds and associated marine habitat of Horseshoe Shoal, Nantucket Sound and environs. This conclusion was and continues to be based on our ongoing assessment of federal and state Environmental Impact Statements and Reports; almost seven years of our own and the applicant's field data; relevant literature review; consultation with ornithologists, scientists, and engineers, state and federal agencies, including

MMS, the US Army Corps of Engineers and U. S. Fish and Wildlife Service (USFWS); and a visit to Denmark's offshore wind farms during the 2005 spring bird migration season. We have also requested, and MMS and the proponent have agreed to, an Environmental Management System (EMS) to document actual effects and apply adaptive management. Mass Audubon supports the use of adaptive management to identify and implement any project modifications or conditions to avoid ecologically significant impacts.

We have identified remaining data gaps that should be filled in the Final Environmental Impact Statement (FEIS), or accounted for in the Record of Decision (ROD), EMS, final permitting, and/or lease sale. In the event that these new data show that there could be ecologically significant threats, the EMS should provide for permit condition adjustments to reduce those threats.

Background, Overview and Summary

Mass Audubon's previous Involvement with US Offshore Wind Energy Policy and the Cape Wind Energy Project

Mass Audubon has direct experience in this matter having commented both orally and in writing on the Cape Wind Energy Project. The following summary highlights some of the key steps in our participation, focusing primarily on involvement with federal planning and review processes:

- **August 7, 2001:** project proponent approached Mass Audubon to provide an informal briefing and to seek an informal response on the proposed size, timing and location of the project; Mass Audubon headquarters, Lincoln, MA. Mass Audubon provided brief verbal feedback.
- **January 3, 2002:** letter to U.S. Army Corps of Engineers, *File No. 199902477, Cape Wind Associates Scientific Measuring Tower*, requesting that avian monitoring be conducted at the tower in addition to meteorological monitoring.
- **December 7 and 8, 2004 (oral); and Feb. 23, 2005:** comments to the U.S. Army Corps of Engineers, New England District on the *Draft Environmental Impact Statement (DEIS) /Report (DEIR)/Development of Regional Impact (DRI) for the Cape Wind Energy Project*, (NAE-2004-338-1): (written, and at <http://www.massaudubon.org/PDF/CapeWindDEIS.pdf>.)
- **February 23, 2005:** request to U.S. Army Corps of Engineers, New England District for a Supplemental DEIS for the *Cape Wind Energy Project* (Reference File No. NAE-2004-338-1) for new information relevant to environmental concerns and bearing on the proposed action and its environmental impacts.
- **March 27, 2006:** *A Challenge Proposal Regarding the Cape Wind Energy Project*, in which Mass Audubon challenged the developer of the Cape Wind Energy Project and its permitting agencies to adopt comprehensive and rigorous monitoring and mitigation conditions that will reduce the threat to birds and other wildlife; (at <http://www.massaudubon.org/PDF/capewind/MAS-TheChallenge-3-06.pdf>)
- **July 11, 2006:** comments to MMS on the *Notice of Intent to Prepare an EIS on the Cape Wind Project*, (written).

- **March 27, 2007:** comments to the Massachusetts Executive Office of Environmental Affairs regarding the *Cape Wind Energy Project, Nantucket Sound Final Environmental Impact Statement/Report* (EOEA No. 12643); Cape Cod Commission Development of Regional Impact (DRI File No. JR#20084); and US Army Corps of Engineers (File No. NAE-2004-338-1); (written, and at <http://www.massaudubon.org/PDF/advocacy/MASFEIRComments.pdf>)

In addition,

- **May 25, 2006:** Mass Audubon provided testimony (oral) to MMS at the Boston, Massachusetts Area Hearing on the *Renewable Energy & Alternate Use Programmatic EIS Scoping*
- **December 21, 2006:** Mass Audubon provided MMS with follow-up comments (written) on the *Renewable Energy & Alternate Use Program on the Outer Continental Shelf EIS Scoping*
- **January 11, 2007:** as invited by MMS, Mass Audubon participated in the regional stakeholder meeting in Boston on the development of the alternative energy and alternate use program on the Outer Continental Shelf (OCS) under Section 388 of *The Energy Policy Act of 2005*
- **April 26, 2007:** Mass Audubon provided testimony (oral) to MMS on the *OCS Alternative Energy and Alternate Use Draft Programmatic EIS* at Newton, MA
- **June 26-28, 2007** as further invited by MMS, Mass Audubon participated in the *Workshop to Identify Alternative Energy Environmental Information Needs* on at MMS headquarters in Herndon, VA
- **October 26, 2007,** Secretary of the Interior Dirk Kempthorne appointed Mass Audubon and 21 others to serve on a special *Wind Turbine Guidelines Advisory Committee*, formed under the *Federal Advisory Committee Act* to advise the Secretary and the U.S. Fish and Wildlife Service (USFWS) on measures to avoid or minimize impacts to wildlife and their habitats from land-based wind energy facilities
- **February 13 – 15, 2008:** as invited by DOI, Mass Audubon presented results of our satellite telemetry project (remote “webinar”) in a MMS Workshop on *Birds & Offshore Wind Development* at the USFWS’ National Conservation Training Center in Shepardstown, West Virginia

Mass Audubon also has also submitted comments at each step in the Massachusetts Environmental Policy Act (MEPA) review process and through commentary to and consultation with state agencies. Mass Audubon has been participating since 2003 in the Massachusetts Energy Facility Siting Board’s (EFSB) permitting review of the project’s transmission cables, primarily focusing on conditioning for near shore work near Mass Audubon property to avoid impacts to coastal waterbird habitat and other resources in the vicinity of the landfall (*Cape Wind Associates, LLC and Commonwealth Electric Company d/b/a NSTAR Electric*, EFSB 02-2/D.T.E. 02-53 and Cape Wind’s application for a Certificate of Environmental Impact and Public Interest EFSB 07-08).

The Cape Wind Energy Project is America’s first offshore wind farm proposed on the federal Outer Continental Shelf (OCS.) It will be a utility-scale facility, involving 130 turbines arrayed

in a grid over approximately 24 square nautical miles on Horseshoe Shoal in Nantucket Sound off the coast of Massachusetts. It also includes an Electric Service Platform (ESP) for gathering the generated electricity, and two underwater cables that will transmit the power to the mainland on Cape Cod. The maximum height of the structures (tip of turbine blade) would be about 440 feet above mean sea level.

We review the Cape Wind Project in the context of the threat of rapid climate warming, oil spills, strip mining, air pollution, and the push for nuclear power as a clean energy source. We know that the combustion of fossil fuels releases greenhouse gases including carbon dioxide and methane that accumulate in the lower atmosphere and rapidly heat the earth. Combustion of fossil fuels also results in the release of mercury that bioaccumulates in the environment, causing health problems for humans, especially pregnant women and children. Rising sea levels and the increased likelihood of severe coastal storms related to warming flood low-lying barrier beaches and islands that serve as critical habitat for coastal birds including the endangered Roseate Tern and threatened Piping Plover.

To combat the threat of climate change, Mass Audubon supports increases in energy conservation and efficiency as the first priority. Production of electricity from renewable resources also needs to grow as quickly as possible to mitigate the effects associated with rapid climate change, but the growth of this source of energy should be done responsibly to minimize adverse environmental impacts. Of the renewable energy technologies available today, wind energy is the fastest growing, most successful, and most readily available.

Mass Audubon's technical review and assessment of the first DEIS focused primarily on the project's impacts on birds and their habitat. Our review standard then as now is that the project poses **no ecologically significant threat** to living resources in and around Nantucket Sound. We define ecologically significant threat as that which reduces populations or jeopardizes populations of endangered species. This standard does not mean zero impact on those resources because we realize that the production of energy always entails some level of environmental impact.

We acknowledge that there will be a certain level of risk to the living resources of Nantucket Sound posed by the construction, operation, and eventual dismantling of the Cape Wind Energy Project. Our premise, however, is that there is a substantial risk to those resources posed by the unmitigated and continued use of fossil fuels at today's levels. We also acknowledge that there will remain significant uncertainty in the environmental impacts of a project that is the first major offshore wind farm in North America. It is therefore imperative that resolvable uncertainty be reduced or eliminated, and that remaining uncertainty be managed by a strong pre- and post-construction monitoring program built on adaptive management principles that includes enforceable mitigation in the event that environmental impacts exceed predictions as presented in the DEIS.

We also acknowledge that review of Cape Wind will set the standard for offshore wind energy projects in the nation and it is therefore imperative that we, as a nation, get it right.

The new DEIS satisfies our previous requests for:

1. A Supplemental DEIS;
2. An adaptive management plan (proposed but not completed);
3. Comprehensive and rigorous monitoring (ongoing); and
4. Mitigation (partial);

The US Energy Policy Act of 2005 (Public Law 109-58, Section 388) satisfies our requests for:

1. Developing planning and siting criteria;
2. Refining regulatory permitting procedures;
3. Establishing a project decommissioning plan;
4. Establishing a leasing program; and
5. Establishing a compensation program.

The key avian data gaps identified in the *Challenge Proposal* were:

- Nighttime distribution and behavior of hundreds of thousands of Long-Tailed Ducks in and around Horseshoe Shoal;
- Movement of endangered Roseate Terns and threatened Piping Plovers during the late-summer to early-fall migration particularly at dawn and dusk; and
- An additional two seasons of radar to provide more information on the abundance and distribution of migrating songbirds.

Because of limitations on some of the data gathered to date, and because the Roseate Tern and Piping Plover are federally listed endangered and threatened species respectively and already at some risk of extinction, **Mass Audubon requests that additional work to reduce the uncertainty about risk to these species be completed in the FEIS, ROD, EMS, final permitting, and/or lease sale.**

Our comments focus on this remaining uncertainty. We also provide a few comments on other areas of the DEIS and provide recommendations regarding design refinements, including lighting and bird perch deterrents, and note the need for clarification in the presentation of some of the information and mitigation for the marine environment.

Detailed Comments – Policy

The new DEIS satisfies our request for:

1. Additional information in a Supplemental DEIS. Some, but not all of the key data gaps we previously identified have been addressed. See below for the additional information we believe is necessary prior to completion of the NEPA process.
2. Adaptive management plan. **Mass Audubon requests that EMS be applied to any lease and permits for the Cape Wind project.** Mass Audubon has previously proposed adoption of an adaptive management plan for this project (see Mass Audubon's *Challenge*, and May 25, 2006 comments to MMS on the *Scope of the Programmatic Environmental Impact Statement for the National Offshore Alternate*

Energy-Related Use Program and Rule as authorized by The US Energy Policy Act of 2005; above.) The applicant has previously agreed to this requirement (and at DEIS Section 9.1).

- a. **Mass Audubon also requests the opportunity to publicly review and comment on any EMS applied to the Cape Wind Energy Project.**
- b. The EMS, as described by the International Organization of Standards, should include a method for identifying, managing, controlling and monitoring any and/or all-environmental impacts from the project both at construction, operation, maintenance, and facilities removal periods.
- c. The EMS is a continuous improvement process and should be periodically updated to reflect actual on-the-ground impacts of the project to reflect any and/or all-changing circumstances of the project in terms of construction, operation and physical resource characteristics.
- d. There are several models that can be applied to the development of an EMS. At minimum the EMS should require:
 - i. Documentation on the application of all relevant rules, regulations, policies, guidelines, statutes, and outstanding permit requirements;
 - ii. A plan of implementation on the pre-construction, during-construction, operational phase, and facilities removal aspects of project;
 - iii. A well-designed Before-After-Control-Impact (BACI) study that enables accurate assessment post-construction impacts to wildlife, especially endangered and threatened species. To be effective, the monitoring program should commence at a minimum of one year at the pre-construction phase, and for three years-post construction. Certain elements should be in place longer.
 - iv. Post-construction monitoring should employ methods using the latest technology to monitor bird and bat activity, to any bird and bat collisions. This could include bird tracking by radar, use of bat detection devices, and visual observations from the ESP;
 - v. Routine environmental compliance audits during construction and post-construction; and
 - vi. Identification of thresholds that trigger compliance and/or permit condition adjustments;
 - vii. **We request that the EMS include the establishment of a decision-making process based on an outside independent technical review panel that analyzes data collected during post-construction monitoring. The Boston Harbor Outfall Project and the Horns Rev/Nysted Projects provide models.**

The new DEIS also partially satisfies our request for rigorous mitigation protocols, in the event that the project results in unanticipated ecologically significant adverse impacts to the marine environment, to be applied to pre- and post-construction conditions to reduce the threat to birds and other wildlife on Horseshoe Shoal and throughout Nantucket Sound generally;

With regard to mitigation payments for protection of coastal waterbirds in and around Nantucket Sound, the DEIS (Section 9.7.1.1) reinforces the Massachusetts Secretary of the Executive Office of Energy and Environmental Affairs' March 29, 2007 *Certificate on the Final Environmental Impact Report for the Cape Wind Project* by requiring \$780,000 in mitigation funds for the continued restoration of Roseate Tern habitat at Bird Island in nearby Buzzards Bay. The Bird Island restoration project is a valuable one for Roseate Terns, however, it is not clear that this proposed mitigation will compensate for predicted Roseate Tern mortality (i.e., reduce adult mortality or add adults to the population); this restoration project may only maintain and enhance habitat over the long-term for a population already near saturation at that site. **We request that MMS explicitly and quantifiably link the proposed and additional mitigation to the predicted impact of this project on Roseate Terns and other coastal bird species and increase the required mitigation if justified.**

The US Energy Policy Act of 2005 (Public Law 109-58, Section 388) satisfies our requests for:

1. Future planning and siting criteria to guide environmentally sound facility site selection, including state and federal lands and waters (see our comments above regarding *Renewable Energy & Alternate Use Program on the Outer Continental Shelf EIS Scoping*).
2. Refining regulatory permitting procedures (see EMS comments above);
3. Establishing leasing programs to fairly and adequately compensate the public and adjacent host coastal states for use of federal lands and waters (see above); and
4. Establishing procedures, with adequate private bonding, to fund decommissioning of abandoned wind energy facilities (DEIS Section 2.5; and see above).

Detailed Comments - Avian

Based on our assessment of the first DEIS, field data and the relevant literature, Mass Audubon previously identified data gaps that should be addressed prior to final approval of the Cape Wind Energy Project. The data gaps we identified in our review of the previous DEIS were:

- Nighttime distribution and behavior of hundreds of thousands of Long-Tailed Ducks in and around Horseshoe Shoal;
- Movement of endangered Roseate Terns and threatened Piping Plovers during the late-summer to early-fall migration particularly at dawn and dusk; and
- An additional two seasons of radar to provide more information on the abundance and distribution of migrating songbirds.

Analysis of the additional data to fill those gaps should indicate no significant ecological impact, as defined above in the FEIS, ROD, EMS, final permitting, and/or lease sale.

Our comments on the current DEIS focus on our analysis of the response of the document to our previously identified data gaps, and specifically on the Roseate Tern, a federally listed endangered species. Additional comments on analysis of selected environmental impacts are also provided below.

Roseate Tern Risk Assessment

The DEIS predicts that the project as proposed would have a moderate impact on Roseate Terns that nest, forage, and stage within 25 miles of the project area, but this impact would not jeopardize the population. This conclusion is based on a Population Viability Analysis (PVA) that included estimated collision mortalities derived from a collision risk model used by Hatch and Brault (2007). The latter used estimated mean traffic rates in and outside of the project area derived from boat and plane surveys conducted by consultants to the applicant and Mass Audubon.

As many as 45% of the North Atlantic population (estimated at 3,826 pairs) of Roseate Tern nests in Buzzards Bay to the west of the project area, and a substantially higher percentage (nearly all) stage to the east on Monomoy National Wildlife Refuge prior to fall migration. Given the importance of this area to this federally listed endangered species it is critical to reduce uncertainty in the risk assessment to an acceptable level, recognizing that there is always some degree of uncertainty in any biological system. This level of acceptability is influenced by the potential positive benefits to Roseate Terns in climate change mitigation, and specific and quantifiable mitigation that should be included, as described above.

The following data are needed to draw conclusions about risk: passage rate through the project area and flight heights at different times of day, different seasons, and weather conditions. Observations by Mass Audubon and the applicant provide the primary source of data on use of the project area by Roseate Terns.

Passage Rates

The results of the independently conducted surveys provide a consistent picture of tern habitat use and flight height under a restricted set of conditions, including time of day and periods of high visibility. As the DEIS states on Appendix C, page 2-12, data on terns collected by the applicant and independently by Mass Audubon did not include dawn and dusk or nighttime movements of terns across Horseshoe Shoal. Our own observations indicate and Hatch and Brault (2007) acknowledge that most Roseate Terns came and went from the vicinity of Monomoy during the post-breeding period outside the timeframe most surveys were conducted.

Consequently, the collision risk model may underestimate traffic rates across the project area. Mass Audubon has conducted intensive observations of color-banded Roseate Terns at 37 post-breeding locations in Buzzards Bay, Cape Cod Bay, and Nantucket Sound to locate previously banded birds (approximately 2,000 adult Roseate Terns have been color-banded). Our efforts to locate color-banded individuals at multiple sites throughout the region demonstrate that terns travel from Black Beach, Falmouth to South Beach, Chatham and Smith Point, Nantucket and other sites. These observations indicate that terns can cross Nantucket Sound repeatedly during the post-breeding period and some of the trips may take them across the project area more than once. Fledglings and breeding birds from colony sites in the Gulf of Maine have been regularly sighted in the Cape Cod region, indicating that during the time of post-breeding dispersal, birds originating from sites further north also may pass by the project area more than once.

Flight Heights

Boat surveys provide a more reliable method for assessing flight heights than plane surveys. Data collected by Mass Audubon using this method were provided to MMS and the applicant. Of 103 Common and Roseate Terns counted during three years of Mass Audubon boat surveys (species were not always distinguishable) only one was observed flying at the height of the rotor swept zone during the pre-migratory staging period (August through mid-September). In two seasons of boat surveys during the breeding season (defined as late April through July), 567 Common Tern/Roseate Terns were observed and seventeen, or 3%, were recorded within the rotor swept zone. These results are consistent with those of the applicant and provide support for the conclusion that the risk to terns transiting through the project area is low. Nevertheless the generality of these results may be questioned because, like habitat-use data, surveys were limited to daylight hours and clear weather. In addition, Mass Audubon staff have observed kettling (birds using thermals in groups at higher altitudes) terns in Nantucket Sound.

Data from four days of observation to the east of Horseshoe Shoal near Monomoy by the applicant were used to obtain flight heights used in the risk assessment for Roseate Terns. Although these observations also suggest risk based on observed flight heights is low, the observation site is 15-20 miles from the project area, and the relevance of these observations to Roseate Tern behavior and activity on Horseshoe Shoal is not defined.

In order to make as accurate an assessment of collision risk for endangered Roseate Terns estimates of activity of terns during times and conditions not surveyed is needed.

Endogenous Factors

Endogenous factors including age, breeding condition, and sex may influence the rate of crossings and, therefore, collision risk. Male terns contribute most post-fledging parental care, and this could result in males making more trips, particularly during the staging period. Sex ratio of the Roseate Tern in North America is strongly female-biased, and males have lower annual survival. If males are at greater mortality risk, there are potential population-level implications.

Conclusion

Because the Roseate Tern is a federally listed endangered species already at some risk of extinction (as indicated from the PVA described in the DEIS) we feel that additional work is necessary to reduce the uncertainty about risk to this species if the project is built. The results of any additional data collection should be included in the Final Environmental Impact Statement (FEIS), or accounted for in the Record of Decision (ROD), EMS, final permitting, and/or lease sale. In the event that these new data show that there could be ecologically significant threats, the EMS should provide for permit condition adjustments to reduce those threats.

- 1) We strongly recommend that both the PVA and the collision risk model be peer-reviewed and at least one alternative collision risk model be tested. We can provide names of individuals upon request who have built such models.

We support MMS's conclusion (Appendix C, p. 2-13) that more data are needed to assess Roseate Tern flight behavior in the project area. We agree that many aspects of the Belgium study by Everaert and Stienen (2006) are not relevant to the proposed project, but the study does indicate that tern mortality could reach high levels if wind turbines are installed in inappropriate locations. Additional empirical data would strengthen conclusions from the different collision risk models that are used to estimate project impact in the PVA model.

- 2) **We request that basic information about flight heights and passage rates through the project area be collected** within the project area at dawn and dusk from within the project area, during the arrival and breeding periods, and particularly during the staging period prior to fall migration. Such information could be collected in stationary boat surveys combined with marine radar and advanced (Generation IV) night vision equipment.
- 3) The Hatch and Brault collision risk model's conclusions should be tested with different assumptions about passage rates and flight heights. Barring the availability of additional empirical data, some arbitrary numbers would have to be used corresponding to increased activity or a greater percentage of birds flying within the rotor swept zone. The authors did Monte Carlo simulations to generate confidence intervals around the mean collision mortality estimate based on observed activity, but the collision risk model should be run with different but reasonable assumptions about average activity, e.g., what if activity is during nighttime is double the activity recorded during daylight hours.
- 4) If not already completed, we recommend that a detailed sensitivity analysis be conducted with the existing PVA. For example, the PVA could include analysis of the effect of increased male mortality, i.e., if all eight birds that die each year are male, on the extinction risk of Roseate Tern.

Plovers

The DEIS acknowledges that it is "impossible to characterize movements across the Project Area at this time" (Report No 4.2.9-1, p 7). It also states that the methods used were unlikely to detect Piping Plover movements, and some might occur at rotor height. The DEIS states that to understand Piping Plover migration, additional data are needed on "migration patterns in a variety of weather conditions during both day and night, including: flight heights, flight patterns (e.g., coastal, off-shore, well off-shore), flight directions, and additional important stop-over habitats."

The DEIS should reference banding studies completed in the 1980s that showed some local movements during the breeding season that are applicable to the risk assessment (Strauss, 1990). Based on limited information from banding studies, local movements of concern for risk of collision are pre-breeding prospecting movements and mid-season movements if pairs re-nest in a new location. During migration, Piping Plovers are potentially at risk if they pass through the project area. Because over 40% of the entire Atlantic Coast population of Piping Plovers nests in Massachusetts or farther north, the population level impacts could be significant. We detected at least five unidentified shorebirds in the project area during our boat surveys, and additional effort should be made to detect Piping Plover movements through the project area.

Conclusion

Because the Piping Plover is a federally listed threatened species already at some risk of extinction, **we request that the additional boat survey work as described earlier for Roseate Tern also should accommodate attempts to determine Piping Plover activity in Horseshoe Shoal.**

Migratory Songbirds and Additional Radar Data Collection

General Radar Studies

The first DEIS, released by the Army Corps of Engineers, described results from two seasons of radar data collection using both S-Band (horizontal scanning) and X-Band (vertical scanning) radar – spring (May 7 – June 7, 2002) and fall (September 3 – October 1, 2002). This DEIS includes two additional seasons of radar data, one each from spring and fall, as we requested in our *Challenge*. Dates of the collection were spring (April 18 – June 3, 2006) and fall (Sept 18 – November 15, 2005). Fall radar data collection was conducted from Cape Pogue, Martha's Vineyard, approximately 10 miles from the center of the proposed project area, and spring radar data collection was conducted from within the project area.

Although the additional two seasons of radar data meets the literal request of our *Challenge*, we have remaining concerns about interpretation of the data and conclusions regarding risk to migratory songbirds.

- 1) The two fall radar studies were not conducted within the project area. The fall 2005 survey captured only a small portion of the project area while the fall 2002 survey missed the project area entirely. As a result the risk assessment assumes that the behavior and abundance of birds approaching Cape Pogue adequately represent the behavior and abundance of birds as they approach the project area. **Information should be provided in the DEIS that validates this assumption, or a detailed explanation provided as to why these data are appropriate surrogates for data collected directly in the project area.**
- 2) Differences in passage rate and heights between the two surveys within each season are large, and a more detailed discussion of the relevance of these differences to the risk assessment should be provided.
- 3) Ground-truthing of radar data collection was conducted in Fall 2005 and Spring 2006; it is not clear how the results were used in the interpretation of the data, particularly for S-Band radar results. The DEIS also acknowledges that very few passerines were observed during the ground-truth surveys.
- 4) The DEIS states that radar cannot provide species-specific information without infrared visual confirmation (Appendix C; page 2-12). Although literally true, terns would likely appear as medium, fast targets, and **we request MMS filter target observations on those targets meeting the proposed criteria and flying within the rotor swept zone.** We suggest that MMS consult Gudmundsson et al. (1982) where this technique was used in a study of Arctic Terns.

Long-tailed Duck

Nighttime Roosting Locations

Initial results of satellite telemetry with a small sample of instrumented Long-tailed Ducks (LTDU) conducted during independent research by Mass Audubon to date have not recorded any instances of the use of Horseshoe Shoal by nighttime roosting ducks. Ducks are now departing Nantucket Sound, and two of our ducks have been located north of New Brunswick, Canada. These data are being made available to MMS. This finding, albeit extremely limited, is consistent with anecdotal observations made by Mass Audubon during duck capture attempts and observations reported by the applicant. The DEIS reports results from two boat surveys (Section 4.2-12) indicating that substantial numbers of LTDUs did not fly through or settle on Horseshoe Shoal. Surveys were conducted on February 15 and March 6 of 2006, and one aerial survey was conducted March 6, 2006. Only 1500 ducks were observed from Smith's Point on Nantucket (2% of the maximum reported in surveys by the applicant), and anecdotal observations indicate that the diurnal flight behavior of LTDU had changed.

Mass Audubon proposes to instrument additional ducks in early winter 2008, and we are investigating the use of Generation III night vision goggles to observe night-roosting LTDUs in combination with boat and aerial surveys.

Dawn and Dusk Movements

Initial counts taken by Mass Audubon from the ferry from Hyannis to Nantucket indicate that thousands of LTDU move across Nantucket Sound regularly at heights well above those documented most commonly in studies cited in the DEIS. On January 8, 2008, average flight height of 5,287 LTDU during a 20 minute period was estimated at 50 m above surface level, with many observations of ducks flying in large groups above 100 m. Flight heights were made by comparison of the height of the deck above water.

The Report No 4.2.4-4 (A Late Winter and Early Spring 2002 Waterbirds Survey) states on p. 12 that "neither of the survey methods (plane or boat) enables precise measurements of the height at which birds were flying, and estimated altitudes were not systematically recorded; despite this, there was a very strong impressions (sic) that the great majority of waterbirds flew within 100 feet (30 m) of the water surface... it was evident that very few birds were observed in the height range of the proposed wind turbine rotors." Where data were not collected systematically statements about risk based on "strong impressions" should be treated as testable assumptions rather than conclusions.

Additional Comments

Least Terns

Least Terns, a state-listed species, were seen rarely in the project area, and they are discounted in the risk assessment. The likelihood of detecting Least Terns with the methods employed may be lower than the probability of detecting larger terns, so this species should not be discounted

solely based on absence in surveys. **Boat surveys proposed for Roseate Tern (see earlier comments) could also provide data on Least Tern use of the proposed project area.**

Lighting

The DEIS (Report 4.2.9-1, p. 31) states (based on Kerlinger 2004 as cited in the DEIS) that “The proposed WTG lighting does not possess characteristics that are known to attract night migrating birds” and includes some of the features recommended by the USFWS in *Guidelines for Communication Towers*, for reducing potential bird problems on land. The recommended lighting should include all of the features of the USFWS guidelines if feasible.

The DEIS also states that “The most recent research has shown that these lights do not attract night migrating songbirds.” However, red pulsing lights may attract and disorient birds (Gauthreaux and Belser 1999). There is sufficient evidence that the lights proposed for the WTG towers (red flashing lights at night, to meet FAA and USCG safety guidelines) pose a risk to nighttime migrants. There is also some evidence that white strobe lights might be less attractive to songbirds than red pulses, and that pulse duration is more important than color; a longer off phase between pulses is thought to be less attracting (e.g., Gauthreaux and Belser 1999, USFWS 2000, Kingsley and Whittam 2001). The influence of lighting on birds is an evolving field and final requirements on turbine lighting should rely on the latest available research; lighting recommendations should be described in detail.

ESP Platform

Deterrents to perching include a 3 mm stainless steel marine wire on top of a railing on each WTG and on railings and ladders of the ESP. It is possible that birds (even terns) will perch on this wire (as we have seen them perch on similar-sized electric fencing wire). The DEIS acknowledges that some perching is unavoidable; we recommend, therefore, that anti-perching devices (beyond a thin wire) be used on all surfaces. Anti-perching devices that consist of wires of approximately 6 cm of length that protrude at near perpendicular angles from the surface are commonly used on marine installations such as solar panels at lighthouse stations and could be employed on all railings and surfaces where perching is possible in this project.

The DEIS states that the final design of perch deterrents would be based on recommendations from USFWS. The final design should be determined and field-tested prior to construction, and the details of these activities should be part of the FEIS

The DEIS states that the existing Scientific Measurement Devices Station (SMDS) has been “bird-proofed” and effectively eliminated perching, but does not describe these bird-proofing measures.

Marine Environment

In general, the DEIS predicts that effects on subtidal habitats will be minor and temporary, if at all. The DEIS notes that the footprint of the project is small in relation to the entire area of Horseshoe Shoal and Nantucket Sound and that the predominant sandy substratum underlying

the Shoal and the route of the proposed undersea cable is subjected to frequent natural disturbances. It indicates that the monopoles will create some hard-bottom habitat but that this will have no major impact upon the ecology of Nantucket Sound. While we generally agree with this assessment, we note the following issues:

Eelgrass

Eelgrass, *Zostera marina*, and other submerged aquatic vegetation (SAV) were identified as concerns in the previous DEIS, and this was reflected in comments from various agencies on that document. Any displacement of eelgrass beds by the construction of the monopoles or the laying of the cable should be mitigated. MMS should require that divers inspect the sea grass bed a short time after the jet plow has passed to confirm that there has been no impact. **We request that the criteria for determining when eelgrass should be replanted be specifically described in the FEIS.** Other projects in Massachusetts in which cables or pipes have been laid have inadvertently damaged eelgrass habitats, thus the need for caution and vigilance.

As a clarification - eelgrass is Habitat Area of Particular Concern (HAPC) for summer flounder, as designated by the New England Fisheries Management Council. Essential Fish Habitats (EFH) is based on fish distributions, not habitat type, so it would be more correct to say that the eelgrass is within a number of EFH for managed species rather than that it is an EFH in itself.

Marine Mammals

The first DEIS released by the Army Corps of Engineers included a discussion of techniques of pile driving if certain listed species are known to be present. Although we agree that cetaceans are a rare occurrence in Nantucket Sound, their status as federal listed species requires that proper precautions be taken to avoid any impacts. Mass Audubon urges that pile driving and other activities that generate significant undersea noise should not occur when cetaceans are present. **We request that MMS require the use of observers and a network of hydrophones in the project area to alert project personnel when cetaceans are present in the area.**

The Subtidal Marine Community

It is important that all pre-construction data be accurately described to facilitate analysis of post-construction impact. For example, p. 4-68 of the DEIS states that the shifting sands of Nantucket Sound make this habitat more variable for benthic organisms than other marine habitats in southern New England. Data on mean abundance and taxon richness are presented for this habitat, and standard errors should be included to support this statement.

The FEIS should define the criteria they are using for calling a taxon “dominant.” It is misleading to call Nematoda the most dominant taxa since they were only identified to the Phylum level whereas amphipods to the family level.

The DEIS indicates that about 10% of the project area is hard bottom habitat, an increase than what was indicated in the previous DEIS. We agree that it is important to monitor the hard bottom benthic community that develops on the turbines, and associated fish, turtles and birds that might be attracted to this artificial structure.

Mitigating Marine Impacts

The DEIS mentions that scour mats or rock armoring would be used if significant issues with scouring around the monopoles are found. We recommend that the criteria and decision-making framework for this mitigation be clarified in the FEIS, and that this process be formalized in the EMS.

Alternatives Analysis

The preferred alternative is preferable to the South of Tuckernuck and Monomoy Shoals alternatives. The condensed array alternative is difficult to evaluate because we do not know enough about these systems to say that certain densities of monopoles are more preferable than others from an environmental impacts perspective. Regarding the Smaller Project and No Action alternatives, no data is available for evaluating the relative risks to fauna and flora of those alternatives.

Conclusion

Mass Audubon believes that some resolvable uncertainty remains in the environmental assessment of the *Cape Wind Energy Project*. This conclusion is based on our ongoing assessment of federal and state Environmental Impact Statements and Reports; almost seven years of our own and the applicant's field data; relevant literature review; consultation with ornithologists, scientists, and engineers, state and federal agencies, including MMS, the US Army Corps of Engineers and USFWS; and a visit to Denmark's offshore wind farms during the 2005 spring bird migration season. We are pleased that MMS and the applicant have agreed to the implementation of an EMS to document effects and apply adaptive management. Mass Audubon supports the use of adaptive management to identify and implement any project modifications or conditions to avoid ecologically significant impacts. **We request that MMS and the applicant make the details of the EMS available for public review and comment in advance of permitting the project. We also ask that MMS explicitly and quantifiably link proposed mitigation to the predicted impact of this project on Roseate Terns and other coastal bird species.**

We have identified remaining data gaps that should be filled in the Final Environmental Impact Statement (FEIS), or accounted for in the Record of Decision (ROD), EMS, final permitting, and/or lease sale. In the event that these new data show that there could be ecologically significant threats, the EMS should provide for permit condition adjustments to reduce those threats.

Thank you again for the opportunity to comment. We look forward to reviewing the FEIS, Draft EMS, and ROD.

Sincerely,



Laura A. Johnson
President

LAJ:JJC:TA

cc: Massachusetts Congressional Delegation
Cape & Islands Legislative Delegation
Co-chairs Massachusetts Joint House-Senate Committee on The Environment, Natural Resources and Agriculture
Secretary, Mass. Executive Office of Energy and Environmental Affairs
Cape Cod Commission
U.S. Army Corps of Engineers
USFWS
MEPA
MassWildlife
Cape Wind Associates

Mass Audubon works to protect the nature of Massachusetts for people and wildlife. Together with more than 100,000 members, we care for 33,000 acres of conservation land, provide educational programs for 200,000 children and adults annually, and advocate for sound environmental policies at local, state, and federal levels. Mass Audubon's mission and actions have expanded since our beginning in 1896 when our founders set out to stop the slaughter of birds for use on women's fashions. Today we are the largest conservation organization in New England. Our statewide network of 45 wildlife sanctuaries welcomes visitors of all ages and serves as the base for our conservation, education, and advocacy work.

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