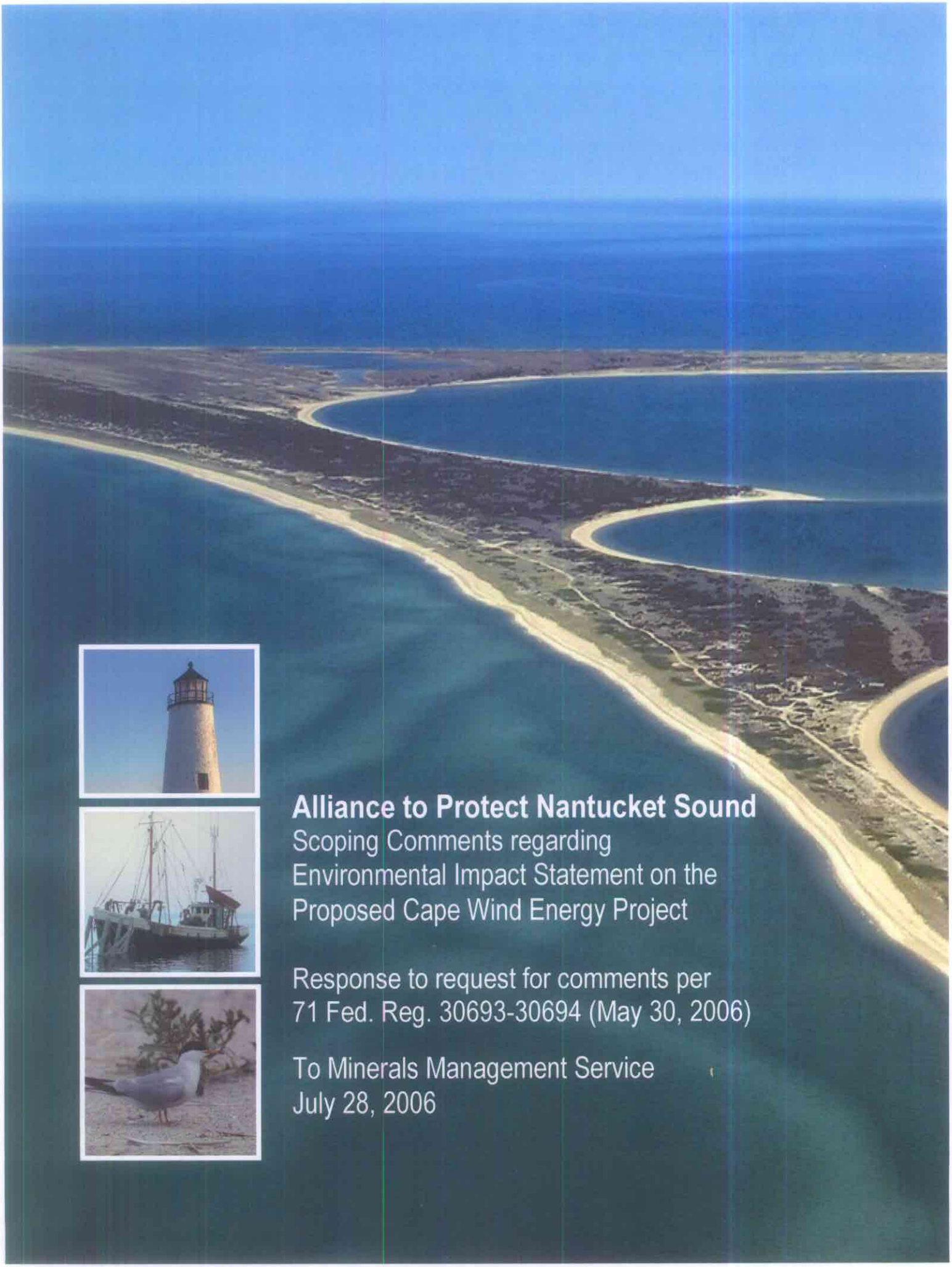

Alliance to Protect Nantucket Sound

Scoping Comments regarding
Environmental Impact Statement on the
Proposed Cape Wind Energy Project

Response to request for comments per
71 Fed. Reg. 30693-30694 (May 30, 2006)

To Minerals Management Service
July 28, 2006

Alliance to Protect Nantucket Sound

Scoping Comments on the Notice of Intent to Prepare an EIS

for

Proposed Cape Wind Project

Submitted to the Minerals Management Service

July 28, 2006

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I. Introduction

The Energy Policy Act of 2005 (Pub. L. No. 109-58, 119 Stat. 594) delegates to the Minerals Management Service (MMS) authority over alternative energy development on the outer continental shelf (OCS). Prior to the Act's passage, the U.S. Army Corps of Engineers (Corps) was the only federal agency to assume responsibility for non-oil and gas-related development on the OCS. The Corps began review of a proposal filed by Cape Wind Associates in November 2001 to develop a private wind energy facility on OCS lands in Nantucket Sound, including National Environmental Policy Act (NEPA) review of the proposed development.

The Corps' review failed to meet the requirements of NEPA and other applicable law. In a period spanning over three years,[1] the Corps prepared and released a draft environmental impact statement (DEIS) that was harshly criticized by the federal and state agencies involved, as well as a multitude of non-governmental organizations and the public. The DEIS, strongly influenced by the advocacy efforts of Cape Wind and its permit advocate Environmental Science Services (also the EIS contractor) was inadequate.

Having assumed lead agency authority over Cape Wind's proposed project, MMS is now developing its own EIS for the proposed project and has requested written scoping comments to aid in determining "the significant issues, potential alternatives, and mitigating measures to be analyzed in the EIS and the possible need for additional information." These scoping comments are prepared in response to that request and are designed to assist MMS in achieving those objectives.

These comments outline the history of the review process for the Cape Wind project and identify mistakes made by the Corps that must be avoided or corrected by MMS in its EIS. This background is necessary because, although MMS is planning to conduct its own EIS, it has indicated that it will rely on some materials/studies prepared under the Corps' direction. Because of the numerous deficiencies in the Corps' process and DEIS, MMS must use only those materials and studies that are above reproach.

The comments will also address the inadvisability of proceeding with this review before MMS has completed its programmatic EIS and promulgated program

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[1] The Corps received the CWA application on November 21, 2001, announced the start of the scoping process on January 30, 2002, and closed the comment period on the draft environmental impact statement on February 24, 2005.

regulations. Proceeding with the review before completing the programmatic EIS and developing regulations could establish precedent that will constrain both processes and possibly subject the regulations to litigation.

The comments then present specific issues that MMS should address in its EIS, including how the purpose and need statement should be drafted, the scope of the review of alternatives, and resource-specific impacts that must be examined.[2]

II. Background

MMS has the opportunity to structure a review process that facilitates a collaborative approach to minimize controversy, promote the dual objectives of marine ecosystem protection and renewable energy development, advance the principles of cooperative conservation, and balance federal, state and local rights. To do so, MMS should adopt a broader decision-making agenda that reflects both public interest considerations and applicable laws and regulations. This can be done by: 1) developing the underlying offshore renewable energy program before reviewing and making any decisions regarding the Cape Wind application; 2) insulating MMS decision-making from Cape Wind and its consultants for any purpose other than obtaining information; 3) formulating a purpose and need statement that is broad in scope and reflects relevant public interest values; 4) identifying and considering the full range of meaningful alternatives; 5) objectively evaluating the adequacy of data concerning possible impacts versus benefits; and 6) identifying substantive uncertainties and the research, monitoring, or other measures that are being taken or will be required to resolve them.

A. The Alliance to Protect Nantucket Sound

In 2002, concerned citizens living on Cape Cod, Martha's Vineyard and Nantucket Island responded to the proposed Cape Wind project by forming the Alliance to Protect Nantucket Sound (APNS). The initial purpose of APNS was to prevent the degradation of the Sound ecosystem through risky and detrimental industrial development. To that end, APNS has worked to identify and evaluate the impacts of Cape Wind's proposed energy plant on the Sound's numerous conservation, cultural, economic, historic, scenic, recreational and public trust values. Today the Alliance is a broad-based environmental organization dedicated to the long-term preservation of Nantucket Sound. APNS membership includes many dedicated environmental and

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[2] MMS participated as a cooperating agency throughout the review process. Thus, for MMS's convenience, these comments will also refer to MMS's comments on the Corps' DEIS regarding the various deficiencies and need for additional studies.

business professionals who have long-standing ties to the Cape and Islands. Our allies include local towns, chambers of commerce, environmental groups, fishing and recreation groups, the three Cape and Island airports, the ferry service operators, public figures, local businesses and citizens.

The mission of APNS has expanded substantially since it was formed in 2002. Although APNS remains deeply involved in protecting the Sound's exceptional resource values from the threat posed by the proposed development, it has broadened its mission to include many other advocacy and public education ventures. In January 2005, APNS achieved Soundkeeper designation under the national Waterkeeper Alliance program. APNS is pursuing its campaign to obtain National Marine Sanctuary status for the Sound. APNS also is pursuing broader environmental initiatives, including collaborative efforts with state and local environmental agencies and organizations for the protection of marine resources and working to develop sensible marine policies that protect fragile coastal resources. It is from that perspective that APNS provides these comments.

B. The Location – Nantucket Sound

Review of the proposed project requires careful evaluation of the ecological, economic, historic, recreational, and aesthetic values of Nantucket Sound in the DEIS. From an ecological and public interest perspective, industrial development is incompatible with the resource values of Nantucket Sound. Nantucket Sound is one of the most highly valued marine ecosystems in the United States. The surrounding communities of the Sound – Cape Cod to the north and the islands of Martha's Vineyard and Nantucket to the south – have long depended on the resources of the Sound for food and livelihood. From the whaling industry of the eighteenth and nineteenth centuries to the fishing industry and tourist/recreation economy of the twentieth century, the communities of Cape Cod and the Islands have relied on the Sound's largesse.

Nantucket Sound has a rich and diverse biological community. The Sound serves as habitat for numerous species of fish, marine mammals, seabirds, sea turtles, and other species of marine wildlife. *See* Review of the State and Federal Marine Protection of the Biological Resources of Nantucket Sound (Center for Coastal Studies ed., 2003), *available at* http://www.coastalstudies.org/coastalsolution/horseshoe.htm (Coastal Studies Report). Through its wide array of fisheries, tourism, recreation, navigation lanes, ports and harbors, and the towns and villages that have built their communities around the sea, Nantucket Sound is the engine that powers the entire regional economy. *See* Blowing in the Wind: Offshore Wind and the Cape Cod Economy (Beacon Hill Institute ed., 2003), *available at* http://www.beaconhill.org/BHIStudies/BHIWindFarmStudy102803.pdf.

State and federal lawmakers have long recognized the importance of Nantucket Sound. In 1971, the Commonwealth of Massachusetts established the Cape and Islands Ocean Sanctuary (CIOS) as part of the Massachusetts Ocean Sanctuaries Act (MOSA). M.G.L. c. 132A, § 12(c). The CIOS protects the coastal areas of Cape Cod, Martha's Vineyard, and Nantucket from "any exploitation, development, or activity that would significantly alter or otherwise endanger the ecology or the appearance of the ocean, the seabed, or subsoil thereof…." *Id.* § 14. The CIOS was drafted to protect the entirety of Nantucket Sound. At the time the MOSA was passed, title to the central part of Nantucket Sound was uncertain. In 1986, the Supreme Court determined that the central portion of the Sound constituted federal waters. *United States v. Maine*, 475 U.S. 89 (1986).

In 1980, the Massachusetts Secretary of Environmental Affairs proposed Nantucket Sound for National Marine Sanctuary status pursuant to Title III of the Marine Protection, Research and Sanctuaries Act of 1972, 16 U.S.C. §§ 1431-1445. The National Marine Sanctuaries Act protects marine resources by authorizing the Secretary of Commerce to designate and manage areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or aesthetic qualities. By nominating Nantucket Sound in 1980, the Commonwealth attempted to protect the portion of the Sound that fell outside of the CIOS, noting that the federal waters warranted protection "for their value as a habitat area, species area, unique area and a recreational and aesthetic area." Because the National Oceanic and Atmospheric Administration did not have a marine sanctuary program in place until 1983, no action was taken on the 1980 nomination. In 1983, Nantucket Sound was selected for the Site Evaluation List, along with three other sites. Of these sites, Stellwagen Bank was selected for sanctuary designation. Nantucket Sound was rejected because of concern regarding the difficulties in managing multi-jurisdictional areas. The Sound remains on the Site Evaluation List today.

The multi-jurisdictional approach to management of the Sound has long been a problem. When the MOSA was passed, the *Boston Globe* praised then-Governor King for designating virtually all of the Commonwealth's coastal waters in sanctuary status in "one of those first-in-the-nation laws." But the *Globe* went on to note in the article that this ambitious effort in 1981 had one drawback. The *Globe* observed that: "the state law, restricted by its three-mile limit, leaves unprotected much of Nantucket Sound…." Noting the remarkable environmental and economic values of the unprotected area in the Sound, the *Globe* praised former Governor King for nominating that zone of the Sound, "unprotectable by state law," as a federal marine sanctuary, and seeking significant action to protect "the Massachusetts coastline: that one natural resource that is the unique object of envy by other states." Over two

decades later, the middle of Nantucket Sound remains on the sanctuary nomination list.

Were it not for the anomalous jurisdictional framework arising from the unique geographic configuration of the Sound, the proposed plant would be flatly prohibited under a 35-year-old state law that was passed to protect this ecologically, economically, and aesthetically invaluable area.

C. Brief History of Cape Wind's Application

APNS emerged quickly to protect the unique resource values the Sound possesses upon public revelation of the proposed project, becoming involved in the review process of Cape Wind's proposal in late January 2002. On November 21, 2001, Cape Wind had applied to the Corps for a permit to construct the proposed project on Horseshoe Shoal in Nantucket Sound. At that time, the only arguable source of authorization to build an alternative energy project on the OCS was section 10 under the Rivers and Harbors Act, 33 U.S.C. § 403, a law enacted more than a century ago to authorize permits for impediments to navigable waters. Cape Wind also applied at the time for a permit to construct a data tower within the proposed project boundaries, ostensibly to collect data that would be used in the Corps' DEIS.

On January 30, 2002, the Corps issued a notice of intent (NOI) to prepare an EIS. The Corps held scoping meetings on March 6 and March 7, 2002. APNS filed scoping comments on the EIS on April 8, 2002. Because of the controversy surrounding the proposal, the Corps initiated a series of meetings with the public under the direction of the Massachusetts Technology Collaborative. APNS participated in that process and raised numerous objections to the Corps' assumption of authority and the manner in which the Corps was conducting its review of the proposed project.

The Corps issued a permit to Cape Wind for the data tower in August 2002. APNS challenged the issuance of the permit in federal district court on the grounds that the Corps did not have the authority to issue permits on the OCS under section 10 and that a section 10 permit did not confer the necessary property rights for occupying federal public lands. Although the First Circuit ultimately held that the Corps could permit *de minimus* structures on the OCS under the Rivers and Harbors Act, it strongly suggested that such a permit could not be used to authorize the overall project proposed by Cape Wind. *See Alliance to Protect Nantucket Sound, Inc. v. United States Dep't of the Army*, 398 F.3d 105 (1st Cir. 2005).

On November 9, 2004, the Corps released the DEIS on the proposal and announced its availability for public review. The comment period closed on February 24, 2005. Six months later, Congress passed the Energy Policy Act, which formally delegated to

MMS authority over alternative energy development on the OCS. President Bush signed the Act into law on August 8, 2005. In September 2005, Cape Wind filed an ad hoc application with MMS for its proposed development in Nantucket Sound. That application referenced the Corps' DEIS as support for the application.

D. Deficiencies in the Corps' DEIS

Reliance on the Corps' DEIS is highly problematic, however. The Corps' DEIS failed in its identification and consideration of many of the impacts the proposed project will have on the Sound's resource values. The purpose of these scoping comments is not to criticize the Corps' DEIS; however, because MMS intends to incorporate unspecified portions of the Corps' review into its own DEIS, problems with the Corps' DEIS must be addressed. These comments provide only an overview of the various problems with the Corps' review. More detailed comments on the Corps' DEIS were submitted during the public comment period by federal, state, and local agencies, public officials, environmental organizations, and the public. If MMS uses portions of the Corps' DEIS, it must address the deficiencies and concerns identified during the comment period in its own DEIS.

This will be a difficult task, as numerous problems with the Corps' DEIS were identified during the comment period. The fundamental problem undermining the entire document is that the Corps improperly allowed Cape Wind to assume a leading role in the development of the DEIS.[3] The result is a biased and conclusory document that fails to meet the requirements of NEPA. The DEIS purpose and need statement is unduly restrictive, and designed to advocate for the proposed project and eliminate alternatives from consideration. The purpose and need statement incorporates constraining factors which, taken together, establish an impermissibly narrow scope of review. By limiting its review to projects that produce between 200 and 1500 MW, the DEIS considered only exceptionally large projects. This approach does not comport with NEPA and is inappropriate in the renewable energy context. In addition, the Corps erred by looking at only a narrow geographic area. The combination of these two errors alone forced the Corps to focus its evaluation only on Nantucket Sound as a location for the project.

In addition to these errors, the Corps also: 1) incorrectly construed the purported "transmission bottleneck" for projects located in Maine; 2) relied upon an outdated report on electrical transmission in New England; 3) ignored sites outside New England that would still deliver power to the New England grid; 4) failed to address

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[3] APNS presented background information on this problem to MMS by letter of February 2, 2006, which is incorporated by reference.

transmission constraints in the Cape Cod region; and 5) failed to present the required NEPOOL System Integration Study which identifies the upgrades required and additional operational costs for integrating the Cape Wind power plant. By employing such constraints, the DEIS was effectively limited to the alternatives advocated by Cape Wind.

In addition, the Corps' DEIS: failed to properly consider cumulative impacts; was based on incorrect geographic boundaries; ignored the impacts of other planned or proposed projects; and failed to appropriately consider other activities that could have cumulative effects on resources. The data in the document are incomplete and inadequate, especially with respect to avian issues, benthic impacts, noise effects, light impacts on avian and marine species, marine mammal impacts, fishery impacts, National Historic Preservation Act properties, and the impacts associated with alternative sites. Furthermore, the DEIS misrepresents the project's economic impacts. Material economic analyses that enable the total project costs to be assessed against the project's potential benefits, most of which accrue not to the public but only to Cape Wind, are missing.

There are numerous other problems with the DEIS. As MMS pointed out in its comments on the DEIS:

> In many cases "conclusory statements" regarding environmental impacts of the proposed Cape Wind Energy Project (CWEP) cannot be supported by the data collected and analyses done. *While some sections appear to have been done reasonably well, others are not and in certain regards the DEIS is at best incomplete, and too often inaccurate and/or misleading.*

(Emphasis added.) The Environmental Protection Agency (EPA) found the DEIS inadequate:

> *We do not believe that the DEIS provides enough information to fully characterize baseline environmental conditions, the substantial environmental impacts of the proposed project, and alternatives that avoid or minimize those impacts.* Without this information we do not believe an adequate mitigation and monitoring plan can be developed, nor can a decision be made as to whether the projects is environmentally acceptable and in the public interest.... EPA has rated this DEIS as 'Category 3-Inadequate' in accordance with EPA's national rating system....

(Emphasis added.)

In light of these and other comments in the record, MMS should carefully evaluate whether to rely on any portion of the Corps' DEIS and be prepared to respond to criticisms already made with respect to any section it decides to incorporate.

III. Premature Review of Cape Wind's Project

MMS's decision to begin review of an individual project in advance of the promulgation of its offshore renewable energy regulations threatens to undermine the development of its regulatory program. Initiation of NEPA review and other possible decisions made prior to completing the programmatic EIS (PEIS) and promulgating governing regulations creates a situation in which the review of a single project could influence the overall regulations. As an example, any actions taken with regard to the Cape Wind proposal prior to completion of the programmatic EIS and overall governing regulations could affect subsequent decisions as to how development authority is provided (e.g., leasing vs. easements), how royalties are determined, and how other possible regulatory measures identified in the Service's NOI to prepare the PEIS are decided.

To the extent that MMS is conducting its premature review out of a mistaken notion that it is somehow unfair to force applicants that have been undergoing project review for several years to await the development of the regulatory program, MMS is ignoring the fact that such project applicants voluntarily assumed substantial risk by seeking to develop offshore wind energy facilities before Congress had authorized the activity. Further, those applicants have benefited from their early application by obtaining a provision that arguably exempts them from the competitive bidding process. MMS should confer no additional advantages on those applicants, particularly where such advantages hamper the full participation of governmental entities and the public, and thereby undercut program development.

A. Section 388 Requirements: Nothing Requires Immediate Review of the Cape Wind Project

Nothing in section 388 of the Energy Policy Act of 2005 indicates that Congress intended MMS to begin review of individual projects prior to developing a regulatory program. There are two special interest provisions that benefit Cape Wind in section 388. The first provision, referred to as the "savings provision," exempts Cape Wind and the Long Island Power Authority from resubmitting any documents that were previously submitted or having to seek reauthorization of any action that was previously authorized. *See* Pub. L. No. 109-58 § 388(d). The second provision exempts Cape Wind from a mandatory competitive process for the grant of a lease or

easement. *See id.* § 388(a)(3).[4] Neither provision indicates that Congress intended to allow review of Cape Wind's proposal before rules are promulgated.

In fact, a close reading of section 388 supports the view that Congress intended just the opposite – i.e., that all review would await promulgation of regulations. Section 388 establishes an aggressive schedule for MMS to issue regulations: "Not later than 270 days after the date of enactment of the Energy Policy Act of 2005, the Secretary…shall issue any necessary regulations to carry out this subsection." *Id.* § 388(a)(1)(D)(8). Although MMS has missed that deadline, the short period that Congress selected supports the view that Congress intended for MMS to concentrate on developing regulations before initiating project review. Further, section 388's explicit exemptions from certain requirements applicable to all other projects strongly suggest that where no explicit exemption is referenced, Congress did not intend for one to be provided. When Congress intended an exemption for a specific project, it explicitly provided one. The absence of an exemption for such an obvious issue indicates that Congress planned for all project review to follow development of the regulatory regime.

Waiting to conduct review until a regulatory program is in place is also consistent with the comments of the U.S. Commission on Ocean Policy. *See* Report of the Commission on Ocean Policy, An Ocean Blueprint for the 21st Century Final Report of the U.S. Commission on Ocean Policy, 318 (2004). In the Commission's 2004 Report, it criticized the use of section 10 under the Rivers and Harbors Act of 1899 for authorizing offshore wind energy development because section 10 "is not based on a comprehensive and coordinated planning process for determining when, where and how this activity should take place." *See id.* at 366. If MMS proceeds with its review of the proposed project, it will be doing so in precisely the manner the Commission objected to with respect to the section 10 process – i.e., it will be proceeding without a comprehensive and coordinated planning process in place.

Moreover, considering the proposed project while the regulatory program is being developed undermines public review. The public has no way of knowing what standards MMS will apply in making decisions. The requirements for an adequate application do not exist. This problem will become only more severe the further MMS proceeds with review of the proposed project without first establishing the regulatory program. A decision on the proposed project will be legally deficient if the public has not been allowed to comment upon, and if the NEPA review is not guided by, a finalized regulatory program and completed programmatic EIS.

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[4] This provision does not prohibit the Secretary from electing to require a competitive process for either project.

B. NEPA Regulations Prohibit Any Federal Action Until the Completion of the Programmatic EIS

MMS's consideration of the proposed project before the regulatory program is completed also does not comply with NEPA. NEPA requires a federal agency to refrain from any federal action until it completes a PEIS when one is underway. The CEQ regulations provide:

> While work on a required program environmental impact statement is in progress and the action is not covered by an existing program statement, agencies shall not undertake in the interim any major Federal action covered by the program which may significantly affect the quality of the human environment unless such action:
>
> 1) Is justified independently of the program;
>
> 2) Is itself accompanied by an adequate environmental impact statement; and
>
> 3) Will not prejudice the ultimate decision on the program. Interim action prejudices the ultimate decision on the program when it tends to determine subsequent development or limit alternatives.

40 C.F.R. § 1506.1(c).

There is no independent justification for proceeding with the review of the proposed project until MMS has completed its PEIS. Not having to resubmit documents already submitted and an exemption from the competitive bidding process do not provide the independent justification that § 1506.1(c) requires.

More important, any decision-making at this time may prejudice the entire regulatory program by limiting how MMS treats Nantucket Sound and how MMS will determine subsequent development and alternatives. For example, it seems likely that MMS will determine that certain areas should be off-limits to certain types of development, as the Bureau of Land Management (BLM) did with respect to onshore wind energy development. In fact, making certain areas off-limits to development is an option that MMS presumably is considering. In its Advance Notice of Proposed Rulemaking (ANPR), MMS requested comments on whether it should "solicit comments on which areas of the OCS should be included or excluded from the program." 70 Fed. Reg. 77,345, 77,348 (Dec. 30, 2005). How is MMS to consider this issue fairly with respect to Nantucket Sound if it has committed substantial agency resources to conducting a review for the proposed project? The time and agency resources that would be involved in reviewing the proposed project clearly have the potential, among other things, to prejudice MMS's ultimate determination of whether Nantucket

Sound should be developed in the manner proposed. The effort also could have precedential and prejudicial effects on subsequent proposals.

Courts have allowed agencies to proceed with individual project review during the preparation of a PEIS, but only when interim programs are in place. In *ONRC Action v. Bureau of Land Management*, 150 F.3d 1132 (9th Cir. 1998), for example, plaintiffs claimed that BLM violated NEPA by failing to halt review of proposed forest sales pending completion of an EIS for an ecosystem management strategy. BLM proposed the plan in response to President Clinton's July 1993 mandate "to develop a scientifically sound and ecosystem-based strategy for management of these lands." During the EIS process, BLM did not implement an interim screening process for proposed forest sales to preserve alternatives, as the Forest Service did. BLM argued that halting review was not necessary because it qualified as an exception to 40 C.F.R. § 1506.1(c) in that the action was covered by an existing program. The court agreed, finding that existing resource management plans qualified BLM for the exception, allowing it to proceed with individual project review. *Id.* at 1134-35. *See also Sierra Club v. Bosworth*, 352 F. Supp. 2d 909 (D. Minn. 2005) (explaining that NEPA recognizes that agency actions may go forward while a plan is being *revised*).

Here, no interim program exists. Indeed, the current situation is worse with respect to the manner in which Cape Wind will be evaluated than it was with the Corps' review. At least with the Corps' review, the public knew what standards would be considered,[5] however nebulous those standards may have been. In this case, MMS is conducting its review with nothing to guide it except the statute itself, which directs MMS to promulgate regulations. There are no regulations; there is no guidance; and MMS has developed no policies.

C. MMS's NEPA Responsibilities Are Significantly Increased By Virtue of Its Decision to Proceed at This Time

Not only does MMS's approach violate 40 C.F.R. § 1506.1(c), but MMS also has substantially increased its NEPA burden by following this approach. MMS issued an NOI to prepare a PEIS for the entire alternative energy offshore program on May 5, 2006. 71 Fed. Reg. 26,559 (May 5, 2006). MMS will be using that document to aid site-specific reviews by supporting and streamlining subsequent reviews. MMS's information sheet indicates that

> [s]ince the focus of this [PEIS] is on the program and rules, it is expected that subsequent NEPA documents prepared for site-specific

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[5] 33 C.F.R. § 320.4(a) listed at least twenty different "public interest" factors to be assessed by the Corps.

> alternate energy-related use projects will tier off this [PEIS] and the Record of Decision.... The [PEIS] will focus on generic impacts from each industry sector based on global knowledge and identify key issues that subsequent, site-specific assessments should consider....

OCS Renewable Energy and alternate Use Programmatic EIS, http://ocsenergy.anl.gov/documents/docs/OCS_EIS_Fact_Sheet.pdf.

Conducting a PEIS from which other impact reviews can be tiered is an efficient use of agency and public resources. It expedites the review process and provides the public with the general library of data through which a project can be viewed in context. NEPA regulations provide, in relevant part:

> Agencies are encouraged to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (Sec. 1508.28). Whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then prepared on an action included within the entire program or policy (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement and incorporate discussions from the broader statement by reference and shall concentrate on the issues specific to the subsequent action.

40 C.F.R. § 1502.20.

CEQ guidance further elaborates on the value of tiering:

> Tiering is a procedure which allows an agency to avoid duplication of paperwork through the incorporation by reference of the general discussions and relevant specific discussions from an environmental impact statement of broader scope into one of lesser scope or vice versa. ...[T]his would mean that an overview EIS would be prepared for all of the energy activities reasonably foreseeable in a particular geographic area or resulting from a particular development program. This impact statement would be followed by site-specific or project-specific EISs. *The tiering process would make each EIS of greater use and meaning to the public as the plan or program develops, without duplication of the analysis prepared for the previous impact statement.*

NEPA's Forty Most Asked Questions, *last accessed at* http://ceq.eh.doe.gov/nepa/regs/40/40p3.htm on July 23, 2006. (Emphasis added.)

Of course, tiering would not be available in this case because MMS has decided to proceed before completing the PEIS. Consequently, MMS will have to provide much of the same general discussion that it is developing in its parallel PEIS review to avoid limiting or compromising the subsequent regulatory program. Many informational requirements for the DEIS will necessarily be duplicative of the information being prepared for the PEIS. This baseline information is necessary to the consideration of project impacts, and therefore must be included in the DEIS. Were such information not necessary, there would be no reason for conducting the PEIS. MMS has already determined that a PEIS is needed; claiming that such information is not needed for the proposed project is untenable.

In fact, there are numerous issues for which general information must be provided. Included in those areas are the obligations set forth by Congress in section 388. Section 388 requires the Secretary to ensure that development is permitted in a manner that provides for: a) safety; b) protection of the environment; c) prevention of waste; d) conservation of OCS natural resources; e) coordination with relevant Federal agencies; f) protection of national security interests of the United States; g) protection of correlative rights in the OCS; h) a fair return to the United States for any lease, easement, or right-of-way; i) prevention of interference with reasonable uses (as determined by the Secretary) of the exclusive economic zone (EEZ), the high seas, and the territorial seas; j) consideration of the location of the lease or easement and any other use of the sea or seabed, including use for a fishery, a sea lane, a potential site of a deepwater port, or navigation; k) public notice and comment on any proposal; and l) oversight, inspection, research, monitoring, and enforcement relating to the proposed project.

MMS will have to determine whether the proposed project is consistent with these requirements, and to do so, it must provide general information responding to each requirement in the DEIS for the proposed project, as well as site-specific data and data on all reasonable alternatives. This information must be included in the DEIS so that the public has the opportunity to comment.

D. MMS's Approach Undermines the Ability of Interested Parties to Participate in the Decision-Making Process

MMS's approach to the review of the proposed project is also seriously undermining the ability of the public to participate in the process in a meaningful manner. Section 388 provides for coordination with affected state and local governments. Pub. L. No. 109-58 § 388(a)(7). In addition, section 388 requires public notice and

comment on any proposal. *Id.* § 388(a)(4)(K). According to MMS's ANPR, section 388 provisions addressing public comment and participation call for:

> Coordinating and consulting with state governors or local government executives concerning activities that may affect them, developing and implementing regulations in consultation with certain Federal agencies and the governors of affected states, and ensuring that activities are carried out in a manner that provides for coordination with relevant Federal agencies. *MMS views these requirements as essentially covering all aspects and phases of the non-oil and gas energy and alternate use program established by the Energy Policy Act of 2005.*

70 Fed. Reg. at 77,348 (emphasis added).

There is no reason to exempt the proposed project from the procedural requirements that MMS views as "essentially covering all aspects and phases" of the alternative energy program. MMS has declared its position on consultation in its ANPR and its policy admits of no exception. How does MMS intend to meet this obligation without first promulgating regulations?

The issues on which MMS has requested comment illustrate how significant this problem is. MMS requested comment on a number of consultation issues that cannot be harmonized with its review of the proposed project. For example, MMS made the following inquiries late last year in the ANPR that cannot be reconciled with review of a project, as explained in the statement in italics beneath each inquiry:

> 31. Should a broad approach be taken to developing a program or should efforts be targeted to specific regions with commensurate coordination and consultation?
>
> *If MMS decides to target specific regions, review of Nantucket Sound will be completely short-changed. It will be too late for meaningful coordination and consultation under the program, since the DEIS will already be complete. Of course, since the proposed project is not exempt from program requirements, the consultation will nonetheless have to occur to comply with the law, creating extra burdens on the agency and the public.*
>
> 32. Would the establishment of Federal/state cooperatives for targeted areas be useful? Similar to the process for OCS oil and gas program formulation, should we solicit comments on which areas of the OCS should be included or excluded from the program? After

establishing where there is consensus in support of program activities, should coordination and consultation efforts be directed to those areas? Conversely, should such efforts be curtailed or abandoned for areas recommended for exclusion?

If MMS determines that such cooperatives are useful, they would likely be established too late to benefit those impacted by the proposed project. The question also suggests that, where there is no consensus for program activities, as is clearly the case for the proposed project, consultation efforts would be curtailed or abandoned because such areas would be recommended for exclusion. How will that provision apply in the context of the proposed project? Will the proposed project be reviewed by MMS and the public only to have Nantucket Sound excluded from development because of the overwhelming political and public opposition to the project? Are not the tremendous political opposition, public opposition, and three-decade-long effort to protect the Sound sufficient to exclude the area from program development? Or will the fact that MMS has invested substantial agency resources in its review prevent it from excluding the area? If Nantucket Sound is not excluded, how will MMS conduct the consultation?

33. What are the critical stages (e.g., site evaluation, application, competitive sale) for consultation for affected parties?

Clearly, MMS has already identified some stages that it considers likely to be critical times for consultation – i.e., site evaluation, application, and competitive sale. Others may be identified during the ANPR and PEIS processes. How will MMS make up for the fact that it failed to comply with regulations designed to provide consultation at times long past in the review of the proposal?

70 Fed. Reg. at 77,348.

MMS indicated in its ANPR that it intends to establish obligations for consultations with affected states and interest groups as part of its programmatic regulations. It also has indicated that the proposed project will not be exempt from those obligations. It is not evident how this might be done if the obligations are not in place. Further, any consultations undertaken before the final regulations are promulgated could establish undesirable and inappropriate precedents and limitations on the obligations to be set forth in the programmatic regulations.

MMS's apparent approach appears to prioritize the interests of a developer over the public's interest. This approach will deprive the public of the consultation provisions that MMS will eventually promulgate. By inviting the public to comment on the proposed project before determining the criteria by which the proposal will ultimately be assessed, MMS prevents the public from factoring in those standards that MMS, incorporating the *subsequent* program-related recommendations of the public, will deem relevant. If MMS does not first promulgate rules of general applicability to elucidate the standards for granting leases, easements or other forms of authorization under section 388, the public will not be privy to the criteria for evaluating the merits of a proposed project. Without regulations in place that inform the public of what measures MMS intends to use for assessing the proposed project, the public cannot provide relevant feedback to MMS. Hence, the opportunity for meaningful participation in MMS's decision-making process is lost.

It is virtually impossible for MMS not to be influenced by the ideas and features of the proposed project, as it reviews the project with an eye towards completing its rulemaking process. This raises serious concerns over the right of the public to participate effectively in the rulemaking process. In reviewing the proposed project prior to generating regulations that would guide the public in evaluating the project, MMS is simultaneously circumscribing the right of the public to participate in a meaningful manner in MMS's rulemaking decisions and impairing the quality of the review of the proposed project.

IV. Integration with Other Review Requirements

If MMS proceeds with its review of the proposed project, despite the compelling legal and policy reasons for not doing so, there are numerous issues that it must address in the DEIS for the proposed project. The DEIS must be broader than what can be prepared in other individual project reviews, since in other reviews MMS will be able to tier site-specific EISs from the PEIS. Further, it is highly likely that MMS will have to complete a supplemental or revised DEIS in this case to respond to those regulatory criteria it eventually promulgates, as well as data it generates through the PEIS process. These comments are offered despite our strong objections to proceeding at this time.

A. Coast Guard Review

On July 11, 2006, President Bush signed into law the Coast Guard and Maritime Transportation Act of 2006. Pub. L. No. 109-241. Section 414 of the Act addresses the significant marine safety and navigation risks posed by offshore development in Nantucket Sound:

SEC. 414. NAVIGATIONAL SAFETY OF CERTAIN FACILITIES:

(a) Consideration of Alternatives—In reviewing a lease, easement, or right-of-way for an offshore wind energy facility in Nantucket Sound under section 8(p) of the Outer Continental Shelf Lands Act (43 U.S.C. 1337(p)), not later than 60 days before the date established by the Secretary of the Interior for publication of a draft environmental impact statement, the Commandant of the Coast Guard shall specify the reasonable terms and conditions the Commandant determines to be necessary to provide for navigational safety with respect to the proposed lease, easement, or right-of-way and each alternative to the proposed lease, easement, or right-of-way considered by the Secretary.

(b) Inclusion of Necessary Terms and Conditions—In granting a lease, easement, or right-of-way for an offshore wind energy facility in Nantucket Sound under section 8(p) of the Outer Continental Shelf Lands Act (43 U.S.C. 1337(p)), the Secretary shall incorporate in the lease, easement, or right-of-way reasonable terms and conditions the Commandant determines to be necessary to provide for navigational safety.

The legislative history of the provision explains the congressional intent behind section 414:

> [Section 414] deals with construction of offshore wind energy facilities in the area off the coast of Massachusetts known as Nantucket Sound, and it will require the Secretary of the Interior to incorporate any "reasonable terms and conditions the Commandant of the Coast Guard determines to be necessary to provide for navigational safety." Interpretation of this clause will be critical to ensuring that navigation, aviation, and communications are not adversely impacted by construction of such a facility.
>
> A company known as Cape Wind, LLC has proposed the permanent installation of 130 wind turbines, each reaching 417 feet in height, on 24 square miles of Nantucket Sound in an area surrounded by three commercial airports, two busy ferry routes, and a major shipping channel. The area is heavily utilized by commercial fishermen and recreational boaters as well. Perhaps most

> importantly, the project would be situated less than 15 miles from the only PAVE/PAWS missile defense radar station on the entire eastern seaboard.
>
> Studies conducted in and around offshore wind farms in Britain have shown that these installations can have adverse impacts on radar for boats, aircraft, and air traffic controllers, and they may pose a hazard to navigation.
>
> It must be left up to the Commandant of the Coast Guard to decide what is necessary to prevent negative impact to navigation, aviation, and communications caused by the proposed wind farm. We trust the Commandant to act responsibly and only prescribe reasonable terms and conditions. If someone wants to challenge his decision as unreasonable, they will have to raise the matter in court. It will be up to the courts, not the Secretary of the Interior, to decide if the Commandant's terms and conditions are unreasonable.
>
> Further, we must remain open to the possibility that the Commandant may find that no amount of mitigation could be sufficient to eliminate the potential detrimental effects of the specific siting of this development. If the final determination of the Commandant is that the proposed siting is unacceptable, the Secretary must abide by that decision as well, and therefore fail to issue a permit, lease, easement, or right-of-way that would allow the facility to be constructed on the proposed site.
>
> * * *
>
> I support development of renewable sources of energy, but not at the expense of public safety or national security. The provisions included in section 414 of this bill ensure that the impacts of Cape Wind's potential development on the citizens of Massachusetts and the rest of the country will be evaluated fairly and appropriately by those who have the expertise to make a final determination on how best to mitigate any adverse effects. I urge my colleagues to act swiftly to pass the Coast Guard and Maritime Transportation Act of 2006….

152 Cong. Rec. S6439-6440 (daily ed. June 22, 2006) (remarks of Sen. Stevens).

This provision has several significant consequences for the MMS review. As an initial matter, the Coast Guard must serve as a co-lead agency for the DEIS. MMS

cannot authorize this project without Coast Guard sign-off, and therefore, the Coast Guard must be invited to serve as a co-lead on the DEIS. Second, because MMS failed to scope this aspect of the project review, a renewed scoping process must be conducted. Third, MMS must allow the Coast Guard sufficient time to conduct its study. The Coast Guard will need time to invite participation by public and marine interests to review properly the effects of the proposed project on navigational safety. The Coast Guard analysis must occur *before* a DEIS is published. Fourth, a memorandum of understanding must be developed, subject to public review, to define the relationship between the Coast Guard and MMS review. Fifth, MMS must evaluate all alternatives based upon the Coast Guard's review, and eliminate proposed sites that present significant risks. In addition to section 414, it is likely that the Coast Guard will develop national policy, standards and/or regulations that will guide review of individual site proposals in the offshore environment.

B. Integration with Other Permitting Requirements

In the request for written scoping comments, MMS stated: "In order to address all the environmental analyses in the most efficient manner, the State MEPA and Federal NEPA process will run concurrently and be analyzed together, within the NEPA document." 71 Fed. Reg. 30,693-30,694 (May 30, 2006). MMS should indicate how it intends to integrate its review with the various federal and state requirements for the proposed project.

1. Federal Laws

MMS's DEIS should address how the project comports with applicable federal laws and regulations. In every case where a permit or other authorization is required, consideration should be given to NEPA's EIS requirement.

a. Permit Under the Rivers and Harbors Act of 1899

Cape Wind must obtain a section 10 permit from the Corps for the portions of the project that alter or obstruct the navigable waters of the United States. Section 10 prohibits any obstruction in the navigable waters of the United States without approval from the Chief of Engineers. 33 U.S.C. § 403. The section 10 permitting process requires the Corps to conduct a public interest test that evaluates the following:

> All factors which may be relevant to the proposal must be considered including the cumulative effects thereof: among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion

> and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people. For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines. Subject to the preceding sentence and any other applicable guidelines and criteria (see §§ 320.2 and 320.3), a permit will be granted unless the district engineer determines that it would be contrary to the public interest.

33 C.F.R. § 320.4. MMS must coordinate its DEIS efforts with the Corps to ensure that all information required is provided.

b. Compliance with the Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to ensure that their actions are not likely to jeopardize a listed species or adversely modify its critical habitat. 16 U.S.C. § 1536(a)(2). Federal agencies must satisfy this obligation through the consultation process of section 7 and its implementing regulations at 50 C.F.R. Part 402. The ESA is violated by failing to follow properly the consultation procedures and requirements of section 7. *See, e.g., Thomas v. Peterson*, 753 F.2d 754, 763-64 (9th Cir. 1985); *Greenpeace v. NMFS*, 80 F. Supp. 2d 1137 (W.D. Wash. 2000). Only after a federal agency complies with these procedures can any project be permitted to go forward that may affect a listed species. *See, e.g., Greenpeace v. NMFS*, 106 F. Supp. 2d 1066, 1075.

Pursuant to section 7, a federal agency must "review its actions at the earliest possible time to determine whether any action *may affect* listed species or critical habitat." 50 C.F.R. § 402.14(a) (emphasis added). This "may affect" standard is very low. *See* Final ESA Section 7 Consultation Handbook (March 1998), at xvi (hereinafter "Consultation Handbook") (defining "may affect" as "the appropriate conclusion when a proposed action may pose *any* effects on listed species…") (emphasis added). If this "may affect" standard is satisfied, the action agency must consult with the U.S. Fish and Wildlife Service (FWS) and/or NOAA Fisheries (NMFS) (collectively, the Services). As FWS explained when issuing its section 7 implementing regulations, "the burden is on the Federal agency to show the absence of likely, adverse effects to listed species or critical habitat as a result of its proposed action in order to be excepted from the formal consultation obligation." 51 Fed. Reg. 19,926, 19,949 (June 3, 1986).

The "may affect" determination is required when the action agency is advised by the consulting Service that a listed species or critical habitat may be present in the action area. *See* 50 C.F.R. § 402.12(d); *NRDC v. Houston,* 146 F.3d 1118, 1126 (9th Cir. 1998). Once a listed species or critical habitat is determined likely to be present in the action area, the action agency must prepare a biological assessment to determine whether any such species or habitats are likely to be adversely affected by the underlying federal action. 16 U.S.C. § 1536(c); 50 C.F.R. § 402.12(d)(2). If a biological assessment determines that the action is not likely to adversely affect a species or critical habitat, the project/permit can go forward only if the applicable Service concurs (subject to its own conservation obligations). 50 C.F.R. § 402.12. If the biological assessment determines that the action is likely to adversely affect a species, or if the consulting Service disagrees with the action agency's "not likely" effects determination, then formal consultation is mandated, and the applicable Service must prepare a biological opinion. If the biological opinion indicates that the activity in question is likely to adversely affect a listed species or critical habitat, it must identify reasonable and prudent alternatives to avoid or mitigate the possible adverse effects.

Section 7 determinations must be based on the best science and commercial data available. *See* 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(d). The "obvious purpose of the requirement that each agency 'use the best scientific and commercial data available' is to ensure that the ESA not be implemented haphazardly, on the basis of speculation or surmise. While this no doubt serves to advance the ESA's overall goal of species preservation, we think it readily apparent that another objective (if not indeed the primary one) is to avoid needless economic dislocation produced by agency officials zealously but unintelligently pursuing their environmental objectives." *Bennett v. Spear*, 520 U.S. 154, 176-77 (1997). Indeed, "[o]ne would be hard pressed to find a statutory provision whose terms were any plainer than those in § 7 of the Endangered Species Act." *Tenn. Valley Auth. v. Hill,* 437 U.S. 153 (1978).

As the action agency, MMS is responsible for preparing a biological assessment on the potential effects on all ESA-listed species that may be impacted by the proposed project. *See* 50 C.F.R. § 402.12(b). To be compliant with section 7, the biological assessments must utilize the best scientific information and commercial data available. 50 C.F.R. § 402.14(d).

Although the Corps was responsible for meeting section 7 obligations prior to the enactment of the Energy Policy Act, the Corps did not satisfactorily meet those responsibilities. The Corps included in its DEIS a "Marine Biological Assessment" that suffered from procedural irregularities and substantive problems, as outlined in APNS's comments on the DEIS. As regards the listed avian species (i.e., the piping plover and roseate tern), the Corps failed to produce a biological assessment at all,

instead drafting a "biological evaluation" that was to serve as the basis for a future biological assessment. There was no indication that the required ESA section 7 consultation process for avian species had been initiated by the time the DEIS was distributed for public comment. Both the biological assessment and the biological evaluation failed to comply with the plain requirements of section 7, making it questionable whether they can be used in any way by MMS.

To repair the deficiencies in the biological evaluation regarding avian species appended to the Corps' DEIS, MMS must, among other things, generate or obtain fuller and more precise information on:

> The species, numbers, timing, and heights of flight of birds passing through the project area, especially at night during September, October, and early November.
>
> Migrating waterbirds, including species, numbers, locations, timing, and heights of flight of birds passing through the project area, especially during evenings and at night during April-May and September-November.
>
> The federally endangered Roseate Tern and the state-listed Common Tern, including numbers, timing, and heights of flight of these species passing through the project area, especially by day in May-September and in late evenings and early mornings in August and September.
>
> Resident and wintering waterbirds, including species, numbers, timing, and heights of flight of these birds passing through the project area, especially in evenings and at night, throughout the year.
>
> The demographics and risks to wintering sea-ducks, including their distributions and movements within Nantucket Sound, and the heights of their flights that pass through the project area, especially at night.
>
> The extent to which the lights proposed for installation on the project towers would attract birds under different weather conditions, and expose them to risk of collision with the towers or rotating blades.

In addition, MMS cannot rely on many of the avian studies. The radar data, for example, were not compared with the visual observation data despite the Corps' direction that "Data gathered through radar should be validated with direct observations." In fact, there is a 3,100% disparity between the visual record of

individual birds within the study area on September 25, 2002 and those recorded on the radar that day. Disparities of this type must be corrected.

To meet the section 7 consultation requirement, MMS will have to prepare, or require preparation of, more adequate biological assessments and will have to enter into formal consultations with FWS concerning listed avian species and with NMFS concerning listed sea turtles and marine mammals. Neither the biological evaluation nor the biological assessment appended to the Corps' DEIS provides an adequate basis for initiating the required consultations. In this regard, it is important to recognize that the MMS and the Services are obligated under section 7 to presume adverse impacts in the absence of quality data. It is "beyond doubt that Congress intended endangered species to be afforded the highest of priorities." *TVA* v. *Hill*, 437 U.S. 153, 174 (1978). As further stated by the U.S. Supreme Court:

> [T]he legislative history of [section] 7 reveals an explicit congressional decision to require agencies to afford first priority to the declared national policy of saving endangered species. The…language [of section 7] *reveals a conscious decision by Congress to give endangered species priority over the 'primary missions' of federal agencies*.

Id. at 186 (emphasis added).

Formal consultations are required because the proposed project is likely to result in the take of listed species. Section 9 of the ESA prohibits the "taking" of listed species, unless it is determined that the taking will not jeopardize the continued existence or recovery of the species. 16 U.S.C. § 1538. To "take" means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Id.* § 1532(19). The Services have defined "harm" to include significant habitat modification that results in actual death or injury by significantly impairing essential behavioral patterns. *See* 50 C.F.R. § 17.3 (FWS), 50 C.F.R. § 222.102 (NMFS); *see also Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 115 S. Ct. 2407 (1995) (upholding FWS definition of "harm"). NMFS considers "essential behaviors" to include breeding, spawning, rearing, migrating, feeding, and sheltering. 50 C.F.R. § 222.102.

Before any federal action that could take a listed species may proceed, the action agency or the applicant must obtain an incidental take statement from the applicable Service through the formal consultation process. 15 U.S.C. § 1536(b)(4); 50 C.F.R. 402.14(i); Consultation Handbook, at 3-12 ("not likely to adversely affect" determination cannot apply to a federal action that is likely to take a listed species); *Strahan v. Coxe*, 127 F.3d 155, 163 (1st Cir. 1997) (in the absence of express take

authorization, the regulatory approval of activities that result in the take of a listed species violates the ESA).

The proposed project will clearly result in impacts that establish a duty to undertake formal consultation under section 7(a)(2) of the ESA. 16 U.S.C. § 1536(a)(2). MMS must provide the Services with "the best scientific and commercial data available *or which can be obtained during the consultation* for an adequate review of the effects that an action may have upon listed species or critical habitat." 50 C.F.R. § 402.14(d) (emphasis added). If it is determined that the proposed project is likely to have adverse effects on a listed species or critical habitat, the relevant Service must provide a biological opinion identifying reasonable and prudent alternatives for avoiding or mitigating the impacts.

MMS must undertake these ESA obligations early in the review, rather than wait until late in the project review, as the Corps did. Because the necessary three years of related studies have not occurred, the review must await their completion. These studies are needed not only for ESA compliance, but to ensure a sufficient EIS as well.

c. Compliance with the Migratory Bird Treaty Act

The DEIS must: 1) set forth the process by which MMS will ensure compliance with the Migratory Bird Treaty Act (MBTA), 16 U.S.C. §§ 703-712.; and 2) evaluate how the project will impact migratory birds.

The MBTA prohibits any killing by any means of migratory birds. 16 U.S.C. § 703. "Unless and except as permitted by the regulation made as hereinafter provided in this subchapter, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture or kill…any migratory bird…." *Id.*; *see also* 50 C.F.R. § 10.12. The list of covered migratory birds includes fifty or more species that will be directly affected by the proposed project. *See* 50 C.F.R. § 10.13.

The MBTA applies to federal agencies, as well as private individuals. *See, e.g., Humane Soc'y v. Glickman*, 217 F.3d 882, 885-88 (D.C. Cir. 2000). Federal agencies also have an additional duty to conserve migratory birds pursuant to Executive Order 13186, which directs federal agencies to take affirmative steps to minimize and avoid the direct and incidental take of migratory birds resulting from federal activities. *See* Exec. Order No. 13186, 66 Fed. Reg. 3,853 (Jan. 17, 2001).

The MBTA is a strict liability statute. *See United States v. Corrow*, 119 F.3d 796 (10th Cir. 1997); *United States v. Corbin Farm Serv.*, 444 F. Supp. 510 (E.D. Cal.), *aff'd on other grounds*, 578 F.2d 259 (9th Cir. 1978); *United States v. FMC*, 572 F.2d

902 (2d Cir. 1978). A company can be held criminally liable for the unintentional taking of migratory birds. *United States v. Moon Lake Ass'n, Inc.*, 45 F. Supp. 2d 1070 (D. Colo. 1999).

The take prohibitions of the MBTA apply to the EEZ. *See* Memorandum from the Office of the Solicitor to Director, Fish and Wildlife Service (Jan. 19, 2001). The United States has authority over living natural resources on the EEZ:

> Within the Exclusive Economic Zone, the United States has, to the extent permitted by international law, a) sovereign rights for the purpose of exploring, exploiting, conserving and managing natural resources, both living and non-living, of the seabed and subsoil and the superjacent waters and with regard to other activities for the economic exploitation and exploration of the zone....

Presidential Proclamation 5030 (Exclusive Economic Zone of the United States of America), 48 Fed. Reg. 10,605 (Mar. 10, 1983). The Office of Legal Counsel has determined, for example, that the Antiquities Act applies to the EEZ. *See* Opinion of Office of Legal Counsel (O.L.C.), Department of Justice (Sept. 15, 2000) (Administration of Coral Reef Resources in the Northwest Hawaiian Islands). Likewise, NEPA, the Clean Water Act, the National Historic Preservation Act, and numerous other resource-specific statutes apply on the OCS.

Wind turbines will impact migratory bird species. The DEIS must evaluate the project's impacts on any species covered under the MBTA and determine whether the project can comply with the MBTA.

d. Compliance with the Bald and Golden Eagle Protection Act

The DEIS must address impacts on bald eagles, a species known to frequent the Nantucket Sound region. The Bald and Golden Eagle Protection Act (BGEPA) proscribes taking or killing of any bald or golden eagle "by any manner or means," including by "poisoning," "molesting," and "disturbing." 16 U.S.C. §§ 668(a), 668c. Without sound, credible data showing that the proposed project will not adversely impact bald eagles, the risk of fatalities is unacceptable. The BGEPA applies to both indirect and unintentional harm. *See Moon Lake*, 45 F. Supp. 2d at 1086. The BGEPA's criminal penalties apply to those who act "knowingly, or with wanton disregard for the consequences." 16 U.S.C. § 668(a). "Knowingly," in this context, means "the offender knew what he was about to do and, with such knowledge, proceeded to do the act." *See* S. Rep. No. 92-1159, at 5, *reprinted in* 1972 U.S.C.C.A.N. 4285, 4289. The evidence must show only that the offender was "conscious from his knowledge of surrounding circumstances and conditions that his

conduct will naturally and probably result in injury [to protected birds.]" *Id.*; *see also Moon Lake*, 45 F. Supp. 2d at 1074. The BGEPA's civil penalties apply to any violation without regard to knowledge or intent. 16 U.S.C. § 668(b).

It is well-documented that offshore wind facilities impact eagles. A key population of Europe's largest eagle, for example, has been significantly reduced by the Smøla wind energy facility in Norway. *See* Wind Farm Strikes at Eagle Stronghold, http://www.rspb.org/policy/windfarms/eaglestrike.asp. The DEIS must address the impacts of the proposed project on protected eagle species.

e. Compliance with the Clean Water Act

MMS will have to coordinate its NEPA review with Clean Water Act (CWA) requirements. The CWA prohibits the discharge of any "pollutant" from a point source to waters of the United States without a permit. Section 404 authorizes permits for discharges of dredged and fill material into waters of the United States. 33 U.S.C. § 1344. A section 404 permit will be required for the cables, for the discharges associated with the jet-plow technology, and for the riprap at the base of the turbine structures.

Projects requiring a section 404 permit must be evaluated against the CWA section 404(b)(1) guidelines. *See* 40 C.F.R. Part 230. Among many other factors, the effect of the discharge on "aesthetics" and on certain "preserve" areas must be considered:

> Aesthetics associated with the aquatic ecosystem consist of the perception of beauty by one or a combination of the senses of sight, hearing, touch and smell.... The discharge of dredged or fill material can mar the beauty of natural aquatic ecosystems by degrading water quality, creating distracting disposal sites, inducing inappropriate development, encouraging unplanned and incompatible human access, and by destroying vital elements that contribute to the compositional harmony or unity, visual distinctiveness, or diversity of an area. The discharge of dredged or fill material can adversely affect the particular features, traits or characteristics of an aquatic area which make it valuable to property owners. Activities which degrade water quality, disrupt natural substrate and vegetational characteristics, deny access to or visibility of the resource, or result in changes in odor, air quality, or noise levels may reduce the value of an aquatic area to private property owners.

Id. § 230.53. The DEIS should address these issues.

Further, where an activity proposed for a "special aquatic site" is not water dependent:

> practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise [and] all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the ecosystem, unless clearly demonstrated otherwise.

Id. at § 230.10(a)(3). Special aquatic sites are "geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region." *Id.* at § 230.3(q-1). The Massachusetts Department of Environmental Protection (DEP) already "has determined that the wind turbines and transmission cables *do not meet the criteria to be classified as water dependent*" under 310 C.M.R. 9.12. *See* Letter to Ellen Roy Herzfelder, Secretary, Executive Office of Environmental Affairs, Massachusetts Department of Environmental Protection (DEP) from Robert P. Fagan, Regional Engineer, Bureau of Resource Protection, Massachusetts DEP (May 26, 2003). The DEIS should address this issue.

A section 402 permit will also be required. The CWA prohibits the discharge of any "pollutant" from a point source to waters of the United States without a permit. 33 U.S.C. § 1311(a). Section 402 authorizes EPA to issue permits for the discharges of pollutants to waters of the United States, including the territorial sea and the contiguous zone, which is defined as 12 miles from the baseline. *Id.* at §§ 1342(a), 1362(12). Point source discharges to the territorial seas, contiguous zone and the ocean are subject to "ocean discharge guidelines." 33 U.S.C. § 1343; 40 C.F.R. Part 125.

Under the ocean discharge guidelines, EPA is required to determine whether a proposed discharge will cause "unreasonable degradation of the marine environment" by looking at 10 factors, including, among others, the existence of special aquatic sites, such as marine sanctuaries, refuges and national seashores, existing or potential recreational and commercial fishing, and "such other factors relating to the effects of the discharge as may be appropriate." 40 C.F.R. §§ 125.120-.124. "Unreasonable degradation" is defined as follows:

> (1) Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities, (2) Threat to human health through direct exposure to pollution or through consumption of exposed aquatic organisms, or (3) Loss of esthetic,

recreational, scientific, or economic values which is unreasonable in relation to the benefit derived from the discharge.

Id. at § 125.121(e). The DEIS should address these issues.

f. Compliance with National Historic Preservation Law

The implementing regulations of NEPA (40 C.F.R. §§ 1508.27(b)(3) and (8)), the National Historic Preservation Act (NHPA), 16 U.S.C. § 470, and the regulations of the Advisory Council on Historic Preservation (ACHP), 36 C.F.R. Part 800, require federal agencies to consider the effects of their actions on historic properties and to take those effects into account during project planning and implementation. MMS is also required to review the impacts of the proposed project under the procedures set out in Section 106 of the NHPA (16 U.S.C. § 400f). The NHPA review should be run concurrently with NEPA review. *See* 36 C.F.R. § 800.9. The review requires that, at a minimum, MMS: 1) identify all historic properties that will be affected by the project; 2) assess the nature of the effects to those properties and their setting; 3) seek ways to avoid, mitigate or minimize those effects that are adverse; and 4) afford special treatment and extra protections to those extraordinary historic properties known as National Historic Landmarks (NHLs).

The environmental impact review of historic properties conducted as part of the Corps' DEIS on the proposed project is inadequate and cannot be relied on to fulfill MMS's obligations under NEPA or the NHPA. MMS will need to complete an independent evaluation of the impacts of the proposed project on historic structures.

(i) Assessing Eligible Historic Properties

The Corps' review of the proposed project was insufficient, primarily because the Corps, following its own procedures, misconceived and misapplied its historic preservation obligations under the NHPA and the ACHP's rules.[6] By improperly limiting its historic preservation identification efforts to "designated" historic properties in the project's area of potential effects (APE), the Corps failed to consider effects to scores of historic properties and districts, including thousands of historic structures on Cape Cod, Martha's Vineyard and Nantucket.

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[6] Pursuant to its regulations, for properties not within the footprint of a project, the Corps identified and assessed indirect effects only on "designated historic properties," meaning properties included or determined by the Keeper to be eligible for listing in the National Register of Historic Places (NRHP) and historic properties that, in the opinion of the Massachusetts State Historic Preservation Officer and the Corps, appear to meet the eligibility criteria. 33 C.F.R. Part 325, Appendix C, §§ 1(a), 15.

Public Archaeology Laboratory, Inc. (PAL) conducted an assessment of the visual effects to historic properties that would be caused by the proposed project if located at Horseshoe Shoal (Visual Impacts Assessment).[7] Following the Corps' procedures, the Visual Impacts Assessment identified some, but not all, of the historic properties on Cape Cod, Nantucket and Martha's Vineyard that are within the APE for visual effects.

Based on the PAL Visual Impacts Assessment report, the Corps concluded that the project would have an adverse effect on 16 historic properties, including the Kennedy Compound NHL and the Nantucket Island NHL, four historic districts (containing hundreds of individual homes and structures), and 10 individual historic properties. *See* DEIS at § 1.0. On August 11, 2004, the Massachusetts State Historic Preservation Officer (SHPO) concurred with the Corps' determination of adverse effect.[8] The ACHP's rules require the Corps to consult with the SHPO, other consulting parties and identified Indian tribes, "to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects on historic properties." 36 C.F.R. § 800.6(a).

By limiting its review to only "designated" properties, the Corps failed to identify or consider effects to numerous historic properties, where required to do so by Section 106 of the NHPA. Federal preservation law makes no distinction between properties eligible for the National Register of Historic Places and those actually listed or formally determined eligible by the Keeper. The NHPA requires agencies to identify and assess effects to all properties "included in or eligible for inclusion in the National Register," defined by regulation as those properties that meet the criteria of the National Register. *See* 16 U.S.C. § 470f; 36 C.F.R. § 800.16(1)(1).

Federal courts have held that "[t]he [NHPA] definition of 'eligible property' makes no distinction between determined eligible and property that may qualify" and have refused to apply Corps regulations that maintained such a distinction. *See Colorado River Indian Tribes v. Marsh*, 605 F. Supp. 1425, 1437 (C.D. Cal. 1985).

According to the attached report prepared by Candace Jenkins, an expert consultant in architectural history and historic preservation, the Corps' identification efforts fell far

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[7] The PAL report is entitled "Technical Report – Visual Impact Assessment of Multiple Historic Properties Cape Wind Energy Project – Nantucket Sound, Cape Cod, Martha's Vineyard, and Nantucket, Massachusetts" and is found in the Corps DEIS at Appendix 5.10-F.

[8] Letter from Brona Simon, State Archeologist, Deputy State Historic Preservation Officer, Massachusetts Historical Commission, to Christine A. Godfrey, Chief, Regulatory Division, U.S. Army Corps of Engineers, "Cape Wind Energy Project, Barnstable and Yarmouth, MA" (Aug. 11, 2004).

short of the required standard. First, in violation of even its own limited procedures, the Corps made no assessment of two properties listed on the National Register, and one property that has been formally determined eligible. Second, reviewing only existing records, the consultant found at least 20 properties and districts (some containing hundreds of homes and structures) that are eligible for inclusion on the National Register and are within the APE of the project. Exhibit 1 at 2-5.[9]

To comply with the NHPA, MMS will need to identify and assess visual effects on all the historic properties that will be in view of the proposed project on the shores of Cape Cod, Martha's Vineyard, and Nantucket Island. MMS can and should adopt a more appropriate scope of identification efforts, in order to be able to understand and consider the full nature of effects to those historic properties, and to rectify the previous failure to do so.

(ii) National Historic Landmarks

The NHPA also requires MMS to minimize "to the maximum extent possible" harm from the project to any historic properties of exceptional national significance to the United States that have been designated by the Secretary of the Interior as NHLs. This requirement is applicable to this project because the preferred alternative for the proposed project will directly and adversely affect two NHLs: 1) the Nantucket Historic District; and 2) the Kennedy Compound.

This direct adverse effect was previously acknowledged by the Corps and the Massachusetts SHPO. Letter from Brona Simon, State Archeologist, Deputy State Historic Preservation Officer, Massachusetts Historical Commission, to Christine A. Godfrey, Chief, Regulatory Division, US Army Corps of Engineers, "Cape Wind Energy Project, Barnstable and Yarmouth, MA" (Aug. 11, 2004). MMS can and should save these unique properties of exceptional national significance from the adverse effects of the CWA project.

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[9] The consultant's review and identification of potentially eligible properties was not exhaustive or even complete. It was limited to properties identified on records as having been recommended for listing by professional consultants as the result of comprehensive surveys or evaluated by Massachusetts Historical Commission staff through the National Register Eligibility Opinion process. Exhibit 1 at 2. Many of the properties she identified are turn-of-the-century summer resort communities that were planned and sited to take advantage of proximity to Nantucket Sound and the views thereof. Exhibit 1 at 2.

(iii) MMS is Required to Undertake to Minimize Harm to Both the Nantucket Island NHL and the Kennedy Compound NHL

Under relevant federal law, including the provisions of Section 110f of the NHPA, 16 U.S.C. § 470h-2(f), and Section 800.10 of the regulations of the ACHP, 36 C.F.R. Part 800, where the potential for such adverse effects are found, MMS is required, to the maximum extent possible, to undertake such planning and actions as may be necessary to minimize harm to both the Nantucket Island NHL and the Kennedy Compound NHL.

Section 110f of the NHPA places special obligations on federal agencies when undertakings they license or permit may cause direct adverse effects to NHLs. The responsible federal agency is directed by law to minimize harm to such landmarks "to the maximum extent possible." Section 110f provides:

> Prior to the approval of any Federal undertaking which may directly and adversely affect any National Historic Landmark, the head of the responsible Federal agency shall, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark, and shall afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.

16 U.S.C. § 470h-2(f).

In its DEIS, the Corps acknowledged that the proposed project will cause adverse visual effects to the Kennedy Compound NHL and to Nantucket Island NHL. In its Visual Impact Assessment, PAL described the specific nature of the adverse effect to the Kennedy Compound as follows:

> The interruption of the natural horizon line by the [wind turbine generators] WTGs and related structures will significantly alter the historic Nantucket Sound setting of the Kennedy Compound, which served as the Summer White House for President John F. Kennedy. It will also impact water views from the Kennedy Compound. These changes constitute a [sic] alteration of the historic character, setting, and viewsheds of this historic property and features make it nationally significant and designated as an NHL, as well as eligible for inclusion in the National Register. Therefore the Cape Wind Project will have an *Adverse Effect* on the Kennedy Compound.

Corps DEIS, Appendix 5.10-F at 38 (emphasis in original).

The direct effect described in the Visual Impact Assessment from the addition of the proposed project to the setting for the Kennedy Compound NHL is obvious. Moreover, the visual effect from this physical change is not limited to views *from* the Kennedy Compound. This significant alteration of the Kennedy Compound's setting will have an effect on views looking toward the Compound from a variety of locations, both on and off shore. The addition to Nantucket Sound of 130 wind generators, each over 400 feet in height above the water, will cause a massive alteration and diminishment of the setting of the Kennedy Compound, and will severely diminish the ability of this landmark to convey its historic feeling and significance.

Similarly, regarding the adverse effect to Nantucket Island NHL, PAL said as follows:

> The interruption of the natural horizon line by the [wind turbine generators] WTGs and related structures will alter the historic Nantucket Sound setting of the Nantucket Historic District NHL, a historic early settlement, maritime and premier whaling village, and summer resort. These changes constitute a [sic] alteration of the historic character, setting, and viewsheds that make Nantucket nationally significant and eligible for inclusion in the National Register and a NHL. Therefore the Cape Wind Project will have an *Adverse Effect* on the Nantucket Historic District.

Corps DEIS, Appendix 5.10-F at 42 (emphasis in original).

The alteration of setting described in the Visual Impact Assessment is a physical alteration of the Nantucket Sound setting for both these NHLs, and therefore it constitutes a direct adverse effect.

In order to protect these two exceptionally significant landmarks as required by law, MMS should begin immediately to undertake the required "planning and actions" necessary to minimize harm to them from the proposed project "to the maximum extent possible." The MMS DEIS must address the impacts of the proposed project on the national historic landmarks and eligible properties. New evaluations are necessary, due to the inadequacy of the previous review as well as changes in the preferred alternative and the alternatives under review by MMS.

g. Compliance with the Marine Mammal Protection Act

It is likely that the proposed project will result in the take of several species of marine mammals as defined in the Marine Mammal Protection Act of 1972 (MMPA), 16

U.S.C. §§ 1361-1407. When an activity will result in the take of marine mammals, the taking is unlawful and subject to injunction, unless a determination has been made that the taking will have biologically insignificant effects and taking authorization has been obtained beforehand. *Kokechik Fishermen's Ass'n*, 839 F.2d 795 (D.C. Cir. 1988). The Corps' DEIS failed to determine the numbers of different marine mammal species that could be taken incidental to the construction and operation of the proposed project. Further, it provided no evidence or substantive rationale for concluding, as it did, that the taking would have negligible population effects. The currently available baseline information concerning the demographics, habitat use patterns, and vital behaviors of marine mammals present in and near the proposed project site clearly is insufficient to design a monitoring program capable of confirming that the project has negligible effects if it goes forward.

MMS must avoid these shortcomings. Among other things, it must identify and assess the potential effects of the frequencies and levels of sounds that would be generated during the installation of the 130 turbines. Those sound levels are likely to be substantially greater than the 125 dB that was anticipated to be produced during installation of Cape Wind's data tower. According to a recent study (Madsen et. al., 2006), wind turbine environmental impact analysis with regard to marine mammals should include effects of noise from construction overall, not just pile driving. The effectiveness of porpoise pingers and seal scarers should be investigated for the Cape Wind project. The potential for overall loss of fitness of animals must be addressed as a component of the construction impacts.

MMS must also consider how construction and operation of the proposed project could affect marine mammal movement patterns and other behavior. If, for example, sounds from pile driving or associated activities cause animals to stop vital activities such as feeding or mating, or to abandon or avoid essential feeding, breeding, nursing, or resting areas, the consequences could be biologically significant. On the other hand, if animals do not abandon or avoid areas where pile driving or other noise producing activities are occurring, they could be exposed to potentially harmful sounds for extended periods of time. Further, while there is reasonable evidence that exposure to sound levels of less than 180 dB re 1μPa will not result in permanent hearing damage or other physical injury to marine mammals, there also is reasonable evidence that exposure to much lower sound levels can affect behavior, sometimes in biologically significant ways – e.g., startling or frightening animals and causing them to beach themselves or to be more vulnerable to predation and ship strikes.

Recent radio-tagging studies (Mate et al. 1997) have documented the presence of highly endangered right whales in areas where they possibly could be affected by the construction and operation of the proposed plant. Humpback whales, pilot whales, harbor porpoise, and other cetaceans also are known to occur at least occasionally in

Nantucket Sound and adjacent areas where they could be affected. However, the numbers of these species likely to be present in and near the Sound at different times of the year is not known. Likewise, neither the activities of these animals in and near the Sound, nor the importance of these areas to their welfare, are known. There also are harbor seal and gray seal haul-outs and pupping sites around Nantucket Sound. However, the in-water movements of the seals have not been documented and they may well routinely move through and possibly feed in and near the area where the wind plant is proposed to be constructed. Substantial numbers of fish may be killed, injured and stunned in proximity to the pile driving operations and, if so, may attract fish-eating predators including seals and several species of small cetaceans to areas where they could be exposed to sound levels above 180 dB. If constructed, the turbines and pilings for the transformer platform, and the associated scour control mats are likely to function as artificial reefs or new habitat for fish and other marine organisms, and attract predators including seals and other marine mammals. If the food base is increased, the habitat carrying capacity for these predator populations may increase. If the structures are later removed, the predator carrying capacity may be reduced substantially, which would cause the collapse of the populations.

Because taking of marine mammals incidental to the construction and operation of the proposed project would be inevitable, a taking authorization in accordance with the provisions of the MMPA will be required. The Corps did not address this fact in its DEIS. While application of the proposed 500 m safety zone would reduce the likelihood that marine mammals would be killed or injured seriously incidental to the construction activities, it is possible that the taking would not be by harassment only. Given the scope and duration of the proposed project, relatively large numbers of animals may be affected and the population-level effects may not be negligible, which would mean that section 101(a)(5) authorization is not available. In that case, the project could not occur without a waiver of the MMPA take moratorium under section 101(a)(3). *Id.* § 1371(a)(3).

h. Compliance with the Oil Pollution Act of 1990 and other Spill Prevention Requirements

The introduction of industrial structures into the marine environment that require oil and lubricating fluids, raises the risk of hazardous spills from the turbines, from the transformer platform and through the construction process. The EPA has stated:

> All oils, including animal fats and vegetable oils, can harm the environment in many ways. Oil can coat the feathers of birds, the fur of mammals and cause drowning and hypothermia and increased vulnerability to starvation and predators from lack of mobility.

> Oils can act on the epithelial tissue of fish, accumulate on gills, and prevent respiration. The oil coating of surface waters can interfere with natural processes, oxygen diffusion/reaeration and photosynthesis. Organisms and algae coated with oil may settle to the bottom with suspended solids along with other oily substances that can destroy benthic organisms and interfere with spawning areas.
>
> Oils can increase biological or chemical oxygen demand and deplete the water of oxygen sufficiently to kill fish and other aquatic organisms.
>
> Oils can cause starvation of fish and wildlife by coating food and depleting the food supply. Animals that ingest large amounts of oil through contaminated food or preening themselves may die as a result of the ingested oil. Animals can also starve because of increased energy demands needed to maintain body temperature when they are coated with oil.
>
> Oils can exert a direct toxic action on fish, wildlife, or their food supply. Oils can taint the flavor of fish for human consumption and cause intestinal lesions in fish from laxative properties. Tainted flavor of fish used for human consumption and the causation of rancid odors are public health or welfare concerns within the scope of our rules. Tainted flavor of fish used for human consumption may indicate a disease in the fish which could render them inedible and thus have a substantial impact on the fishermen who harvest them and communities who may rely on them for a food supply.
>
> Oils can foul shorelines and beaches. Oil discharges can create rancid odors. Rancid odors may cause both health impacts and environmental impacts. For example, the 1991 Wisconsin Butter Fire and Spill resulted in a discharge of melted butter and lard. After the cleanup was largely completed, the Wisconsin Department of Natural Resources declared as hazardous substances the thousands of gallons of melted butter that ran offsite and the mountain of damaged and charred meat products spoiling in the hot sun and creating objectionable odors. The Wisconsin DNR stated that these products posed an imminent threat to human health and the environment. 62 FR 54526.

67 Fed. Reg. 47076 (July 17, 2002).

The proposed project will include a 10-story, 40,000 gallon oil-filled transformer platform. This 20,000 square foot platform will contain four step-up generators, each

containing 10,000 gallons of Naphthenic Mineral Oil.[10] In addition, there will be a 1,000-gallon diesel fuel tank for the back-up generator. And the turbines will collectively hold 27,820 gallons of unidentified lubricant and cooling fluid. MMS must address these issues in the DEIS.

Under the Oil Pollution Act of 1990 (OPA), 33 U.S.C. §§ 2701-2762, 104 Stat. 484, offshore facilities must develop a Facility Response Plan (FRP) that provides a plan for responding, to the maximum extent practicable, to a worst-case discharge, and to a substantial threat of such a discharge, of oil or a hazardous substance.

In addition, Walter D. Cruikshank, the Deputy Director of Minerals Management Service, has stated the need for a four-seasoned oil spill trajectory map in accordance with MMS regulations. The letter stated:

> In accordance with Minerals Management Service regulations (30 C.F.R. Part 254) we have determined that the operator of the proposed Cape Wind offshore facility must submit an oil spill trajectory analysis identifying offshore and onshore areas that a discharge could potentially affect. This analysis must consider seasonal oceanographic conditions so that worse case impacts can be assessed.

Letter to Mr. Clifford G. Carol from Deputy Director Walter Cruikshank (Nov. 24, 2004).

An FRP should include an assessment of the risks from all of these sources of fuel, and must be reviewed and approved by MMS prior to the installation and operation of the proposed facilities under MMS regulations. *See* 30 C.F.R. § 254.1. The FRP must identify offshore and onshore areas that an oil spill could potentially affect. The analysis must assess worst-case impacts. As part of the FRP, the DEIS should require an oil spill trajectory and biological effects maps to help identify adverse impacts to Nantucket Sound (and environs) resulting from the worst-case scenario of an oil spill.

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[10] It is important to note that mineral oils is still regarded as a hazard to the marine environment, "EPA interprets the definition of oil to include all types of oil, in whatever form, solid or liquid. That includes synthetic oils, *mineral oils*, vegetable oils, vegetable oils, animal fats, petroleum derivatives, etc." 67 Fed. Reg. 47076. regarding 40 C.F.R. §112. Oil Pollution Prevention and Response; Non-Transportation-Related Onshore and Offshore Facilities; Final Rule (Emphasis added). Again, the EPA goes on to state that "*All* … can harm the environment in many ways." Id.

The Oil Spill Impact Assessment maps and corresponding analysis should include the following:

- Spill trajectories for spills occurring during each of the four seasons with respect to seasonal winds, currents, and tides;
- Number of miles of shoreline, estuaries and marshes that would be affected in each season;
- Effects during each season on resident vulnerable biota (i.e., fish, invertebrates, reptiles, birds and mammals at each life stage;
- Breeding grounds, fish nursery areas, seasonal fish and invertebrate spawning seasons and areas, aquaculture farms, shellfish beds, bird rookeries or flyways, and critical habitats affected;
- Maps and quantification of biomass killed from the worst case spill scenarios (i.e., from a tanker collision with a wind turbine generator, and from a complete release from the electrical service platform (ESP)) modeled during each of the four seasons of the year;
- Quantification of future losses of biomass due to spill mortalities (i.e., production foregone); and
- Identification of "economic zones" that could be affected.

A component of this analysis should be a comparison of spill impact areas to locations of sensitive or threatened and endangered species distribution, spawning areas, nesting areas, important public use areas, areas of important commercial use, natural resource management areas (e.g., marine sanctuaries) and other areas of priority protection due to their sensitivity and vulnerability to oil and hazardous substance spill impacts. Use of NOAA's Environmental Sensitivity Index (ESI) mapping as a data layer coupled with resident species and diversity and abundance data from the Natural Resource Damage Assessment Model for Coastal and Marine Environments approved for use by the U.S. Department of Interior for the spill impact analysis can accomplish much of this task.

The DEIS should also identify which transformer oil would be used. Transformer cooling oils are quite varied in nature, but can possess toxic properties to marine life. For example, the offshore transformer oil used in Horns Rev, Demark is NYNAS X-10. This oil is identified as "hazardous to marine environments" and is considered "non-biodegradable," because it remains in a marine environment for long periods of time. The DEIS should require that the name, manufacturer, and quantity of all oils,

lubricants, cooling and heating fluids be made public and that safety data sheets for each be provided for public review and comment. The same information should also be required for all anti-fouling agents placed on the project structures.

In commenting on the Corps' DEIS, MMS stated:

> Water Quality, Analysis of Impacts: The description of the SPCC identifies the requirement that a plan will be in place to respond to spills of lubricating fluids or oils that are part of the wind turbine generator (WTG) or electrical service platform (ESP) design and operation. There is no discussion in section 5.9.4 of the characteristics and quantities of these fluids (or range of characteristics and quantities that are among the options for which a choice is to be made) that are aboard each WTG or quantities involved as a total project. There are no discussions in section 5.9.4 of 1) the likelihood for a spill to occur, 2) reference to spill histories of like or similar WTGs, 3) dispersion and weathering characteristics of candidate fluids, 4) aqueous toxicity of spilled fluids, or 5) impacts on biological resources that might contact a slick should a spill occur, such as finfish or birds that tend to rest or feed on the water surface. These discussions are necessary in this section.

The DEIS conducted by MMS should ensure that all of these issues are addressed and made available for public review.

In addition to the risks to the environment from hazardous fluids present as part of project operations, the DEIS must also address the potential risk of collision posed by petroleum tankships and barges that transit Nantucket Sound. One such oil tanker is called the *Great Gull*. The *Great Gull* delivers 1,290,000 gallons of fuel to Nantucket. It travels the Main Shipping Channel, which is within a few hundred feet of the proposed project. OPA and the Coast Guard regulations require tankships and tank barges to plan for and prepare an oil spill response plan based on a worst-case spill from vessels. Because of the potential environmental disaster of the *Great Gull* running or drifting into or striking a wind turbine foundation, the entire contents of the *Great Gull* should be used in the calculation of a worst-case scenario under Coast Guard guidelines and should be included in the DEIS as a reasonably foreseeable impact of the proposed project. Additionally, to account for the most probable and realistic pollution risk, a scenario should be developed modeling the loss of contents from two adjacent cargo tanks on the *Great Gull* to address the probable result that cargo tanks could be damaged in a tankship collision with a turbine, emptying the contents of the cargo tanks on either side of the cargo boundary.

A tanker collision with a wind turbine, whether rupturing two or all of the tanker's cargo tanks, or a spill from the transformer platform, would severely impact the Nantucket Sound ecosystem, killing sensitive fish and shellfish resources and wildlife, and significantly impacting tourism, fishing, recreational use and aquaculture operations in the region. A ship or plane collision or an overheating transformer fire could reasonably result in spills from the proposed offshore facility.

Oil spill impact assessment mapping and quantification of impacts is the most accurate way to characterize the potential risk presented by the proposed project. As required under OPA, MMS must complete and publish in its DEIS the results of oil trajectory and biological impacts mapping based on worst-case discharges from a tanker/turbine collision and from a completed release of oils from the transformer platform.

APNS previously commissioned its own study of this issue, which is attached as Exhibit 2. This report demonstrates the significant oil spill risk posed by the proposed project and should be used as the basis for the MMS review.

Finally, a bond based on the cost of the clean up, closing of fishing grounds and the restoration of our economic zones should be required by the DEIS to ensure that local communities do not bare the cost of oil-related hazards from the project.

i. Compliance with the Marine Protected Area Executive Order

Pursuant to Executive Order 13158, Nantucket Sound qualifies as a marine protected area (MPA) and consequently must be accorded additional protections by MMS during the federal decision-making process. This additional protection must be addressed in the DEIS. An MPA is defined as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." 65 Fed. Reg. 34,909 (May 31, 2000). Not only does Nantucket Sound qualify as an MPA under the definition set forth in the Executive Order, but it also is currently included on the marine managed area list prepared by the MPA Center by virtue of the state marine sanctuary waters and the gill net fishery regulations that extend throughout the Sound, including all federal waters. *See* Marine Managed Areas Inventory, at http://www.mpa.gov.

Under the Order, all federal agencies are directed by the President to avoid harming the MPA. The Order directs:

> Each Federal Agency whose actions affect the natural or cultural resources that are protected by an MPA shall identify such actions. To

> the extent permitted by law and *to the maximum extent practicable*, each Federal agency, in taking such actions, shall avoid harm to the natural and cultural resources that are protected by an MPA….

Id. (emphasis added). The proposed project will "harm" the "natural and cultural" resources of the CIOS. MMS should deny the authorization within the middle of those protected State waters. *See* Baur, Irvin, Misenko, *Putting "Protection" Into Marine Protected Areas*, 28 Vt. L. Rev. 497, 498-502 (2004).

The DEIS should discuss how MMS intends to comply with the Executive Order. The DEIS must evaluate the impacts of the proposed project while taking into account the Executive Order, by providing an assessment of the impacts on the values that the laws which qualify Nantucket Sound as a marine sanctuary were enacted to protect.

j. Compliance with Executive Order on Cooperative Conservation

On August 26, 2004, President Bush issued Executive Order 13352, entitled "Facilitation of Cooperative Conservation." The stated purpose of the Executive Order was to "ensure that the Department[] of the Interior…implement laws relating to the environment and natural resources in a manner that promotes cooperative conservation, with an emphasis on appropriate *inclusion of local participation in Federal decisionmaking.*" Exec. Order No. 13,352, 69 Fed. Reg. 52,989 (Aug. 30, 2004) (emphasis added). The Order calls on the Department of the Interior, which includes MMS, to "take[] appropriate account of and respect[] the interests of persons with ownership or other legally recognized interests in land and other natural resources." MMS must ensure that Federal decisions are not imposed on local communities, especially when the adverse impacts of a decision will have significant local impacts. The proposed project is contrary to state environmental regulations and is opposed by all local governments in the area. State officials have consistently weighed in their objections to the project. Just recently, for example, testimony was presented on behalf of Massachusetts Attorney General, Tom Reilly at a MMS public hearing. The testimony, attached as Exhibit 3, includes concern over, and objection to, moving forward with the proposed project before a comprehensive siting plan and national regulations are in place; it also stresses the point mentioned above that the project is contrary to state environmental interests and law.

MMS must take seriously its obligations under Executive Order 13352 and must ensure that the concerns, like those outlined in the attached testimony, and the concerns of those impacted locally by the project, including local chambers of commerce and local property owners, are addressed fully.

k. Compliance with Policies Regarding Native American Consultation and Environmental Justice

The federal government has a trust relationship with Indian tribes. Under this relationship, the United States serves as the trustee and must fulfill a fiduciary obligation to the beneficiary Indian tribes. These duties bind all federal agencies, and the obligations are enforceable. The courts have construed the trust responsibility duty to require federal agencies to administer laws under their jurisdiction in a manner that does not interfere with Indian rights.

The proposed project will impact the rights, customs, culture and values of at least two Native American Tribes: the Wampanoag Tribe of Gay Head (Aquinnah), which is a federally recognized tribe, and the Mashpee Wampanoag Tribe which has been granted a proposed acknowledgment decision, a precursor to federal recognition. The DEIS must therefore address each of the obligations outlined in the following laws and regulations, summaries of which are provided:

Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f) and implementing regulations (36 C.F.R. Part 800)

- Requires federal agencies with jurisdiction over proposed
- federal or federally assisted undertakings to "take into account the effect of the undertaking on any district, site, building structure, or object that is included in or eligible for inclusion in the National Register."
- The implementing regulations clarify that agencies must consult with tribes that attach religious and cultural significance to historic properties that may be affected by an undertaking. 36 C.F.R. § 800.2(c)(2).

Archaeological Resources Protection Act of 1979 (16 U.S.C. § 470aa-mm)

- Establishes a permitting scheme for the excavation or removal of archaeological resources located on public lands.
- Requires the federal land manager to notify Indian tribes before issuing a permit when the proposed excavation or removal of archeological resources may result in harm to or destruction of any site that has religious or cultural importance to a tribe.

The DEIS is also subject to the following Presidential Orders and Memoranda:

Consultation and Coordination with Indian Tribal Governments, Exec. Order No. 13,175, 65 Fed. Reg. 67,249 (Nov. 6, 2000)

- Orders each agency to have "an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications."

- Requires each agency "to the extent practicable and permitted by law" to consult with tribal officials early in the process of developing regulations that have tribal implications or impose direct compliance costs on Indian tribal governments.

Indian Sacred Sites, Exec. Order No. 13,007, 61 Fed. Reg. 26,771 (May 24, 1996)

- Implements in part the American Indian Religious Freedom Act, Pub. L. No. 95-341 (Aug. 11, 1978), 42 U.S.C. 1996 and 1996a.

- Orders each agency to the extent practicable and permitted by law to "avoid adversely affecting the physical integrity of [Indian] sacred sites."

- Requires each agency to implement procedures including procedures to ensure reasonable notice is provided of proposed actions or land management policies that may "adversely affect the physical integrity of sacred sites."

Environmental Justice, Exec. Order No. 12,898, 59. Fed. Reg. 7,629 (Feb. 11, 1994)

- This order calls on each federal agency to make achieving "environmental justice" for minority populations part of its mission.

- To meet this duty, an agency must identify and address "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations…."

Presidential Memorandum, Memorandum for the Heads of Executive Departments and Agencies: Government-to-Government Relationships with Tribal Governments (Sept. 23, 2004)

- Reiterates support for Exec. Order No. 13,175.

- Orders each agency to "continue to ensure to the greatest extent practicable and as permitted by United States law that the agency's working relationship with federally recognized tribal governments fully respects the rights of self-government and self-determination due tribal governments."

Presidential Memorandum, Government-to-Government Relations with Native American Tribal Governments, 59 Fed. Reg. 22,951 (Apr. 29, 1994)

- Directs each executive department and agency to "consult, to the greatest extent practicable and to the extent permitted by law, with tribal governments prior to taking actions that affect federally recognized tribal governments. All such consultations are to be open and candid so that all interested parties may evaluate for themselves the potential impact of relevant proposals."

- Directs each executive department and agency to "assess the impact of Federal Government plans, projects, programs and activities on tribal trust resources and assure that tribal government rights and concerns are considered during the development of such plans, projects, programs, and activities."

The DEIS is also subject to Administrative Policy Orders of the Secretary of the Interior, including:

Advisory Memorandum to All Department of Interior Bureau and Office Heads from Assistant Secretary of Interior of Indian Affairs (Feb. 24, 1995)

- Implements 1994 Presidential Memorandum regarding government-to-government relations with Native American tribal governments.

- Instructs DOI bureaus and offices to "identify whether any of their planned activities, undertakings, rule-making, or other actions will affect tribes, tribal rights, or tribal resources" and to consult with tribes regardless of whether tribal interests are direct or indirect.

Nantucket Sound is a sacred place to the local Native American peoples. In a letter to the Corps, the Wampanoag wrote:

> As the "people of the first light," many of our sacred sites and many historic and current locations of individual worship, as well as spiritual gatherings and ceremonies are on the shorelines of these lands, oriented to look out over the waters of Nantucket Sound towards the rising sun. The insertion of the scores of massive wind turbines of the Cape Wind project in the middle of this important spiritual landscape and seascape will significantly adversely affect the sacred sites and historic properties of the Wampanoag.

Letter to the Corps from Cheryl Andrews-Maltai, Tribal Historic Preservation Officer of the Wampanoag Tribe (June 9, 2005).

The DEIS must ensure early and engaging consultation with the local tribes and must address their concerns under the myriad of laws, regulations and policies of the United States intended to protect Native American culture as outlined above. To ensure that options are available which would not conflict with the concerns raised by affected tribal entities, the DEIS needs to include a series of alternative locations that would not present the conflicts that have been raised in response to the Corps' DEIS.

l. Radar Studies under the National Defense Authorization Act

Congress has recognized the potential risk of radar interference from windpower turbines.[11] In January 2006, Congress passed the National Defense Authorization Act for Fiscal Year 2006 (Pub. L. 109-163). Section 358 of the Act requires the Department of Defense (DOD) to report to Congress within 120 days on the effects of wind turbines on military readiness and on technologies to address mitigation. MMS should address radar interference issues that are involved in the DOD study. Since Congress mandated the DOD study, the DOD, the Department of Homeland Security and the Federal Aviation Administration have issued statements indicating that development of wind projects near radar installations should not move forward until the congressional report has been completed. MMS should follow the same approach on this important national security and public safety issue particularly in light of international studies identifying cases of interference.

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[11] Diagrams and explanations of radar interference as reported by the UK can be found later in this document in several sections relating to risks and impacts.

2. State and Local Authority

In addition to the above-cited federal laws and authorities, a number of state reviews apply to the proposed project. MMS and the Commonwealth have agreed to run the MEPA and NEPA processes concurrently. The NOI, however, states that MEPA applies only to the proposed project's upland and submarine cable system components in Nantucket Sound out to the three-mile boundary. That statement is incorrect. Cape Wind voluntarily filed (within the meaning of Section 11.05 (8) of the MEPA regulations) an Environmental Notification Form to allow MEPA review of the entire project, including the turbine array. *See* Certificate of the Secretary of Environmental Affairs on the Environmental Notification Form, EOEA #12643 (Apr. 22, 2002) and Certificate of the Secretary of Environmental Affairs on the Draft Environmental Impact Report EOEA #12643 (Mar. 3, 2005). Once Cape Wind has committed to undergoing MEPA review for the entire project, it cannot withdraw without permission from the MEPA office. *See* 301 C.M.R. 11.05 (8). Thus, the DEIS must meet all MEPA requirements for the entirety of the project in order for the document to satisfy state law.

Continuing a concurrent process and joint review will allow for maximum public and agency understanding of the proposed project, the fullest disclosure of potential impacts of the project, the most informative study of feasible alternatives, and the best opportunities to avoid, reduce or mitigate environmental impacts to the maximum extent practicable.

a. Concurrence from the Massachusetts Office of Coastal Zone Management Federal Consistency Certification Statement

A Coastal Zone Management Act (CZMA) consistency review is required for the project. Section 307(c)(3)(A) of the CZMA provides that "any applicant for a required Federal license or permit to conduct an activity, in or outside the coastal zone, affecting any land or water use or natural resource of the coastal zone of that state shall provide…a certification that the proposed activity complies with the enforceable policies of the state's program and that such activity will be conducted in a manner consistent with the program." Section 4A of M.G.L. c. 21A establishes the policies of the Massachusetts Coastal Zone Management Program. The policies are found at 301 C.M.R. 21.98.

For the project to proceed, it must be determined to be consistent with the enforceable policies of the Massachusetts Coastal Zone Management Program under the CZMA, 16 U.S.C. § 1456(c). The DEIS will have to address those impacts relevant to the CZMA consistency determination, which include:

Energy Policy #1: "For coastally dependent energy facilities, consider alternative coastal locations. For non-coastally dependent energy facilities, consider siting in areas outside of the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites." *The Secretary for the Executive Office of Environmental Affairs has determined that the facility is not a coastally-dependent facility*. The DEIS must consider alternative sites outside of the coastal zone to meet this requirement.

Energy Principle #1: "Encourage energy conservation and the use of alternative sources such as solar and wind power in order to assist in meeting the energy needs of the Commonwealth."

Habitat Policy #1: "Protect coastal resource areas including salt marshes, shellfish beds, dunes, beaches, barrier beaches, salt ponds, eelgrass beds, and fresh water wetlands for their important role as natural habitats." The DEIS must address the impacts of the proposed project on these features.

Coastal Hazard Policy #1 and #2: "Restore degraded or former wetland resources in coastal areas and ensure that activities in coastal areas do not further wetland degradation but instead take advantage of opportunities to engage in wetland restoration." The DEIS must address the impacts of the proposed project on wetland resources.

Ports Policy #3: "Preserve and enhance the capacity of Designated Port Areas (DPAs) to accommodate water-dependent industrial uses, and prevent the exclusion of such uses from tidelands and any other DPA lands over which a state agency exerts control by virtue of ownership, regulatory authority, or other legal jurisdiction." The DEIS must address the impacts of the proposed project on ports.

Public Access Policy #1: "Ensure that developments proposed near existing public recreation sites minimize their adverse effects." The DEIS must address the adverse impacts on public recreation sites.

Ocean Resources Policy #2: "Extraction of marine minerals will be considered in areas of state jurisdiction, except where prohibited by the MA Ocean Sanctuaries Act, where and when the protection of fisheries, air and marine water quality, marine resources, navigation and recreation can be assured." The DEIS must assess the impacts of the proposed project on marine mineral extraction.

Ocean Resources Policy #3: "Accommodate offshore sand and gravel mining needs in areas and in ways that will not adversely affect shoreline areas due to alteration of wave direction and dynamics, marine resources and navigation. Mining of sand and gravel, when and where permitted, will be primarily for the purpose of beach nourishment." The DEIS must address how the proposed project will affect this policy.

Growth Management Principle #1: "Encourage, through technical assistance and review of publicly funded development, compatibility of proposed development with local community character and scenic resources." The DEIS must thoroughly evaluate how the proposed project will impact the local community character and scenic resources.

Massachusetts Ocean Sanctuary Act: Part of Massachusetts CZM's enforceable policies, 301 C.M.R. 21.98(12), the MOSA prohibits the construction of wind farms, including their associated transmission cables, within the Cape and Island Ocean Sanctuary. The MOSA is listed in the CZM Program under "Authorities for Program Policies." 301 C.M.R. 21.98. The DEIS must address how, if at all, the proposed project can be made consistent with the MOSA.

The entirety of the proposed project, within or outside of state sanctuary waters, must be consistent with the enforceable policies of the Massachusetts CZMA. The DEIS must address the impacts of the proposed project on these policies and the MOSA.

b. Approval from the Massachusetts Energy Facilities Siting Board

The Massachusetts Energy Facilities Siting Board (EFSB) must approve the construction of two approximately 18-mile, 115 kilovolt underground electric transmission lines along the primary route identified by Cape Wind and NSTAR. The EFSB has conditionally approved the cables, but that decision is under appeal. The APNS brief is attached as Exhibit 4. All aspects of the EFSB review must be covered by the DEIS. The DEIS should indicate how it will coordinate remaining or renewed review with the EFSB.

c. Compliance with the Massachusetts Ocean Sanctuaries Act

The Commonwealth designated all of Nantucket Sound as part of the CIOS under the MOSA. The Commonwealth's MOSA statute qualifies any waters designated as state

ocean sanctuaries for MPA status. *See* M.G.L. c. 132A. Those waters include Nantucket Sound. Section 13(c) of the MOSA establishes the CIOS, which is described in relevant part as follows:

> Beginning at a point on the mean low-water line at the southernmost point of Monomoy Point; ...and meaning and intending to include the area seaward of the mean low-water lines of Nantucket, Martha's Vineyard, Elizabeth and other islands; and *meaning and intending to include the following bodies of water: Nantucket Sound*, Vineyard Sound, Buzzards Bay, the Cape Cod Canal, Pleasant Bay, and portions of the Atlantic Ocean.

M.G.L. 132A, § 13(c) (emphasis added).

The MOSA protects Nantucket Sound "from any exploitation, development, or activity that would significantly alter or otherwise endanger the ecology or the appearance of the ocean, the seabed, or subsoil thereof." *Id.* 132A § 14. It also prohibits "the building of any structure on the seabed or under the subsoil; [and] the construction or operation of offshore or floating electric generating stations." *Id.* § 15. *See* 302 C.M.R. §§ 5.00-.09.

The DEIS must address how the proposed project will impact those values protected by the MOSA, particularly with respect to its obligations under Executive Order 13158.

d. Variance from the Public Waterfront Act from the Massachusetts Department of Environmental Protection

The Massachusetts Public Waterfront Act (Chapter 91) is the Massachusetts public trust statute. M.G.L. c. 91. The Waterways Regulations under Chapter 91 promote the preservation of tidelands for water-dependent uses that require direct access to the water. In addition, the regulations ensure that the areas in the jurisdiction are maintained for public use and enjoyment when privately developed. *See* 310 C.M.R. 9.00. The MEPA Draft Environmental Impact Report (DEIR) certificate stated, "DEP has thus determined that the portion of the submarine cable located in state waters is a nonwater-dependent use of tidelands, and will therefore require a variance from Chapter 91 and 310 CMR 9.00." New non-water-dependent structures are not permissible over flowed tidelands. *See* 310 C.M.R. 9.32(1)(a). Therefore, the DEIS must address the values protected by the Public Waterfront Act, as well as the standard for granting a Chapter 91 variance, as set forth in 310 C.M.R. 9.21(1).

The MEPA Secretary requested information to aid in the non-water-dependent determination, including the following:

- The specific regulatory provisions from which the proponent will seek variances;
- Alternative designs, locations, or construction methods that would allow the project to proceed without a variance (the EIR should also explain why these alternatives are unreasonable);
- The detriments to public interests in waterways due to the project, the proposed means by which the proponent will minimize these impacts;
- Proposed measures to compensate for any remaining detriments to public interests in waterways; and
- The overriding public interest served by the project, with provision of adequate supporting documentation.

The MEPA Secretary also required the project proponent to do the following:

- Address the standards for Non Water Dependent Infrastructure Facilities, including analysis of impacts to maritime commerce, industry, recreation, and associated public access, living marine resources and water quality; and public views, visual quality of the shoreline environment, and historic and cultural resources near waterways;
- Propose mitigation for potential detriments to waterway interests;
- Consult with state agencies and affected communities on appropriate compensatory measures and present proposals in the Final EIR; and
- Discuss in detail how the project meets the applicable provisions of the MOSA.

See Certificate of the Secretary of Environmental Affairs on the Draft Environmental Impact Report EOEA #12643 (Mar. 3, 2005). The DEIS must address each of the issues raised by the MEPA Secretary.

e. Water Quality Certification under the Clean Water Act from the Massachusetts Department of Environmental Protection

The CWA requires a Water Quality Certificate for certain activities in wetlands and waters. The CWA gives states the authority to review projects that must obtain federal licenses or permits and that result in a discharge to state waters. The proposed project requires a Water Quality Certificate, which MA DEP requires for certain activities that involve dredging. MA DEP requires this certification to ensure that such activities will comply with the state water quality standards and other appropriate requirements of state law. *See* 314 C.M.R. 9.04. The DEIS must provide information about how it complies with the Massachusetts Surface Water Quality Standards, the Massachusetts Wetlands Protection Act, and otherwise avoids or minimizes individual and cumulative impacts to water and wetlands.

f. Massachusetts Endangered Species Act

The Massachusetts Endangered Species Act, M.G.L. c. 131A, and regulations, 321 C.M.R. §10, set forth procedures for listing Endangered, Threatened, and Special Concern species native to Massachusetts and for designating Significant Habitats for such species. The Act also establishes rules and prohibitions regarding activities which "take" such species or alter their habitats. The DEIS must address species that are Endangered, Threatened, or of Special Concern under the Massachusetts Endangered Species Act.

g. Massachusetts Wetlands Protection Act

The Massachusetts Wetlands Protection Act, M.G.L. c. 131 § 40, prohibits filling or other alteration of areas subject to jurisdiction, except by an Order of Conditions. The local conservation commission is delegated the authority to determine the initial applicability of the Massachusetts Wetlands Protection Act and to issue an Order of Conditions with which the applicant must comply. The DEIS must address the requirements of the Massachusetts Wetlands Protection Act.

h. Cape Cod Commission

The Cape Cod Commission (CCC) also has review authority over the proposed project as a Development of Regional Impact (DRI) pursuant to Sections 12 and 13 of the Cape Cod Commission Act, Chapter 716 of the Acts of 1989, as amended, and the Enabling Regulations governing review of DRI adopted as Barnstable County Ordinance 90-12, as revised through March 2005.

Section 1 of the Act provides that the CCC shall serve as a regional planning and land use commission with authority to implement regional land use policy for all of Cape Cod and, *inter alia*, to review and regulate DRIs. The CCC is charged with the conservation and preservation of natural undeveloped areas, wildlife, flora and habitats for endangered species; the preservation of coastal resources including aquaculture; and the protection of groundwater, surface water and ocean water quality, as well as other natural resources of Cape Cod. Section 1C of the Act provides that the CCC is charged with preserving of historical, cultural, archeological, agricultural and recreational values and overseeing balanced economic growth and the provision of adequate capital facilities. The CCC reviews projects which constitute DRIs and grants or denies a DRI permit.

The applicant has, in conformance with a Memorandum of Understanding entered into by and between the CCC and the Secretary of Environmental Affairs for the Commonwealth of Massachusetts, filed the DRI permit application seeking joint review at the state, federal and regional levels. Pursuant to this joint review process and its Enabling Regulations, the CCC has appointed a subcommittee and held public hearings regarding the joint DEIS/DEIR prepared in November 2004. The CCC has further commented on the DEIS to the Army Corps of Engineers via correspondence dated February 22, 2005.

Sections 12 and 13 of the Act set forth broad standards and a comprehensive process for review of a project deemed a DRI. The project has been deemed to be a DRI requiring a DRI permit. The DRI permit may be granted *only* if the CCC finds:

- The probable benefit of the proposed development is greater than the probably detriment.
- The proposed development is consistent with the Regional Policy Plan (RPP) and the Minimum Performance Standards promulgated thereunder.
- The proposed development is consistent with any applicable Local Comprehensive Plan (LCP).
- The proposed development is consistent with municipal development bylaws.

The RPP provides a series of Minimum Performance Standards (MPS) that require full and complete compliance by an applicant in order to obtain approval. Areas within which MPS compliance is required include land use, water resources, coastal resources, wetlands, wildlife and plant habitat, air quality, economic development,

community facilities and services (including transportation, solid and hazardous waste, capital facilities and infrastructure and energy), and historic preservation and community character.

The MPS criteria require impact-based analysis and the establishment of appropriate mitigation and/or the application of a flexibility clause providing for mitigation sufficient to meet in an equal fashion the requirement of the applicable MPS.

The Act, the Enabling Regulations and the provisions of the RPP (including the MPS) supersede local and municipal bylaw requirements. Pursuant to Section 12H of the Act, any municipal agency's review of the project shall be suspended until the CCC has reviewed the proposed development and rendered a final DRI decision. Local ordinances and bylaws may provide more stringent requirements than the DRI standards following the CCC's approval process. In the event of a denial of a DRI permit, municipalities may not proceed with permitting.

Pursuant to Section 2(A)(3i) of the Enabling Regulations, in applying the DRI standards and criteria, the *entire* proposed project (including future expansion) shall be considered, and not separate phases or segments thereof. Based upon that specific regulatory language, together with the joint review process undertaken voluntarily by the applicant, the entirety of the proposed project is subject to review and approval by the CCC pursuant to the DRI process and criteria. Further, the CCC will undertake a comprehensive review and analysis in accordance with the Local Comprehensive Plan adopted by the Town of Barnstable and the municipal development bylaws and ordinances in effect in the Towns of Yarmouth and Barnstable.

The CCC has traditionally deferred review and application of the DRI criteria until final completion of the EIS. Accordingly, the CCC Subcommittee is expected to hold additional public hearings relating to the DRI component of the application for the proposed project. In addition, the Subcommittee will vote to make a recommendation and forward a draft decision to the full CCC, which consists of nineteen members (15 members appointed, one from each town, and four at large appointments [minority, Governor's appointee, Native American and County Commissioner]).

i. Other State Laws

The DEIS should identify and address all other state land use, environmental, and health and safety laws and regulations that apply to the project.

V. Scoping Comments

A. Conducting a Fair and Objective Review of the Proposed Project

The review process must be protected from undue influence by the applicant. An EIS must "be prepared directly by or by a contractor selected by the lead agency…." 40 C.F.R. § 1506.5(c); *see also Communities Against Runway Expansion, Inc. v. FAA*, 355 F.3d 678 (D.C. Cir. 2004). The regulations explain that "[i]t is the intent of these regulations that the contractor be chosen solely by the lead agency, or by the lead agency in cooperation with cooperating agencies, or where appropriate by a cooperating agency to avoid any conflict of interest." 40 C.F.R. § 1506.5.

CEQ guidance provides that "[i]f a federal agency uses 'third party contracting,' the applicant may undertake the necessary paperwork for the solicitation of a field of candidates under the agency's direction, so long as the agency complies with Section 1506.5(c)." CEQ, Forty Most Frequently Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18,026 #16 (Mar. 23, 1981). After the lead agency selects the contractor, the contractor must execute a disclosure statement prepared by the lead agency "specifying that they have no financial or other interest in the outcome of the project." 40 C.F.R. § 1506.5. It is the duty of the action agency to ensure that the consultant has no self-interest in the ultimate fate of the project during the selection process, which requires a broad assessment of the relationship between the consultant, the applicant, and the proposed project. *Id.* CEQ defines self-interest "broadly to cover any known benefits other than general enhancement of professional reputation. This includes any financial benefit such as a promise of future construction or design work on the project, as well as indirect benefits the consultant is aware of…." CEQ 40 Questions, #16.

Proper insulation of the applicant from the review process is critical:

> As the CEQ suggests, true conflicts of interest impair the objectivity of decision makers. *Unabated perceptions of conflicts of interest undermine public confidence in decisions possibly tainted by avarice and greed*. The court fully appreciates the possible ramifications of a conflict of interest affecting the objectivity of the analysis of the project; a serious conflict of interest in and of itself could compromise the environmental process and require a complete reevaluation of a project….

Northern Crawfish Frog (Rana Areolata Circulosa) v. Federal Highway Admin., 858 F. Supp. 1503, 1528 (D. Kan. 1994) (emphasis added).

As demonstrated by the record developed by APNS before the Corps, the review of the proposed project suffered significantly from the failure to abide by these principles. Cape Wind and the third-party contractor, ESS, improperly influenced the Corps' NEPA and permitting review, leading to a biased and conclusory DEIS.

MMS has taken the precautionary step of developing an MOU to define the roles of the respective parties (although our FOIA request of May 31, 2006, for that document remains unanswered, so we cannot comment on its sufficiency). Adherence to a sufficient MOU should help to protect the NEPA process from undue influence by the applicant. APNS remains deeply concerned, however, over the choice of EIS contractor. MMS selected the TRC consulting firm and wind energy project proponent. As discussed in our letter of February 2, 2006, to MMS, TRC is not an appropriate choice for this task due to its past involvement in the review of the proposed project and its advocacy for wind energy projects.

In addition, MMS appears to have selected TRC without the assistance of the cooperating agencies and without regard to the objections of the public. MMS should select a different, independent third-party contractor, using the assistance of the cooperating agency team.

B. Purpose and Need

The NOI states that the "purpose of this project is to provide a utility-scale wind energy facility providing power to the New England power grid." If this is the statement MMS intends to use for its DEIS, the statement is inadequate. As documented in our comments on the Corps' DEIS, the limitations of a "utility-scale renewable facility" designed to deliver electricity solely to "the New England grid" do not reasonably reflect the purpose of the project and impermissibly restrict the range of alternatives to be considered.[12] A broader purpose and need statement is required.

1. Legal Requirements for the Purpose and Need Statement

The purpose and need statement is a critical component of an EIS. The purpose and need statement determines the scope of review by limiting the universe of reasonable alternatives an EIS must consider. Because MMS is proceeding without the benefit of the PEIS and is unable to "tier" its review from that document, it must necessarily adopt a much broader purpose and need statement to enable it to review the full range

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[12] APNS's comments on the Corps' DEIS, which have already been provided to MMS, set forth the history of the purpose and need debate among APNS, the Corps and Cape Wind. Documents supporting that discussion are incorporated into the exhibits to APNS's comments. We hereby incorporate by reference our comments on the Corps' DEIS into these scoping comments.

of issues and alternatives necessary. *See* 40 C.F.R. § 1508.28. In addition, because MMS is proceeding with its review of the proposed project without the benefit of any regulations, standards or guidance, its approach must necessarily be broader than with projects postdating the development of the program to avoid failing to review issues that will be material under the eventual regulations.

CEQ regulations provide that the purpose and need statement "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 C.F.R. § 1502.13. How the purpose and need statement is drafted is critical inasmuch as the purpose and need statement shapes the scope of the entire review. "The stated goal of a project necessarily dictates the range of 'reasonable' alternatives…." *City of Carmel-By-The-Sea v. U.S. Dep't of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1995) (*citing Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 192 (D.C. Cir. 1991)).

Courts do not permit agencies to define the purpose and need statement to minimize review obligations. An agency may not "define [a] project so narrowly that it foreclose[s] a reasonable consideration of alternatives." *Davis v. Mineta*, 302 F.3d 1104, 1119 (10th Cir. 2002). Nor can NEPA review be limited by arguing that an alternative is not acceptable because it is not desirable, or even feasible, for the applicant itself. *Van Abbema v. Fornell,* 807 F.2d 633, 638 (7th Cir. 1986). Many courts have concluded that an agency's "evaluation of alternatives mandated by NEPA is to be an evaluation of alternative means to accomplish the general goal of an action; it is not an evaluation of the alternative means by which a particular applicant can reach his goals." *Id.*

The starting point for defining the purpose and need statement is the agency mandate under the particular statute involved:

> [A]n agency should always consider the views of Congress, expressed, to the extent that the agency can determine them, in the agency's statutory authorization to act, as well as other congressional directives…. Once an agency has considered the relevant factors, it must define goals for its action that fall somewhere within the range of reasonable choices.

Citizens Against Burlington, 938 F.2d at 196. *See also City of New York v. Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983) (explaining that "[s]tatutory objectives provide a sensible compromise between unduly narrow objectives an agency might choose to identify to limit consideration of alternatives and hopelessly broad societal objectives that would unduly expand the range of relevant alternatives").

Keeping in mind these legal requirements, MMS should shape the purpose and need statement with the idea of increasing domestic energy supplies, one of the primary purposes of the Energy Policy Act. The purpose of the proposed project is to generate clean energy; it is not to generate clean energy of a specific size in one specific location. By so limiting the purpose and need statement, MMS violates NEPA requirements.

2. Problems with the Purpose and Need Statement

The statement used in the NOI includes three unreasonably restrictive limitations on the review of alternatives. First, the statement refers to utility-scale projects, which is not necessarily problematic, unless MMS adopts the same definition of "utility-scale" that the Corps did for its DEIS. The Corps defined utility-scale to mean projects generating between 200 and 1500 MW. The Corps' limitation to projects falling within this range (a range that the proposed project does not fall within, as its actual annual output is estimated to be 170 MW) was specious when one considers the capacity range of utility-scale projects that are connected to the New England grid. The 2006 ISO New England CELT report, issued on April 18, 2006, lists approximately 230 electric energy resources greater than 5 MW and under 200 MW that provide power to the New England grid. *See* 2006-2015 Forecast Report of Capacity Energy Loads and Transmission, http://www.iso-ne.com/trans/celt/ report/2006/ 2006_CELT_Report.pdf. The Corps arbitrarily ignored the sources that generate between 5 and 200 MW. Many projects producing between 20 and 200 MW have been added in the last 10 years, and many renewable projects proposed in New England would produce less than 200 MW. If these commercial projects are not utility-scale, then what are they? MMS should not make the same mistake in its review.

The Corps' excessively restrictive choice of definitions for "utility-scale" becomes more of a problem when applied in combination with the Corps' geographic limitation. The purpose and need statement limited the area from which alternatives could be considered to those that would interconnect with the New England grid. The problem with requiring more than 200 MW generating capacity *and* limiting the area to New England is that wind energy plants occupy large geographic areas, as do other forms of renewable energy. Land is scarce in New England. If MMS only considers massive renewable energy projects in New England, it unreasonably limits the options reviewed under the alternatives analysis.

The Corps' approach does not comply with NEPA, and the MMS should not adopt the same approach. Limiting both the acceptable geographic region to New England *and* using the >200 MW definition of utility-scale fundamentally disregards the nature of

renewables and the need to follow a broader approach to promote renewable energy development.

In addition, it is incongruous to limit the region considered to New England when the key justification for the project is the lack of air emissions. The proposed project will not affect air quality in New England. Air quality in the Northeast is directly affected by activities in the Midwest. If MMS intends to treat air quality as a benefit of the project, it should acknowledge that air quality is directly influenced by states outside of the region. Indeed, the Regional Greenhouse Gas Initiative (RGGI) recognizes the broader impact of greenhouse gases. The RGGI is a cooperative effort by Northeastern and Mid-Atlantic states to reduce carbon dioxide emissions. There are seven states currently in the RGGI, including Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York, and Vermont. MMS should follow a similar approach and look regionally when assessing project alternatives, particularly in regard to the issue of local air quality. This can only happen if the purpose and need statement is written broadly enough to consider all significant and viable alternatives.

The Corps also limited its review by including "renewable technologies" in its purpose and need statement, excusing itself from having to review any alternatives that rely on other technologies, when, in fact, NEPA requires the evaluation of alternatives in order to minimize environmental impacts, including air emissions. The purpose is to produce clean energy, not to produce energy only from renewable sources. There are other energy projects that, on balance, generate energy in a more environmentally sound manner than does the proposed project. These options should be considered in the alternatives analysis.

Another NEPA requirement is that the purpose and need statement properly reflect the need for the proposed project. Defining the need requires an evaluation of the established demands for renewable or non-renewable power within the New England grid and the connected region. One of the arguments advanced by the project proponents is that, because New England is badly in need of more electric generating capacity, this project should be built despite the serious environmental problems that it would create. However, it is now clear that the proposed project is not needed to assure supply adequacy in the region.

Even without the addition of a 170 MW facility, the regional need for power is not anticipated to meet supply capacity until 2014. *See* 2006-2015 Forecast Report of Capacity Energy Loads and Transmission, http://www.iso-ne.com/trans/celt/ report/2006/ 2006_CELT_Report.pdf. The New England region currently has a 17% energy surplus, and a significant amount of additional MWs are proposed to be added to the grid in the next eight years. Furthermore, in June 2006, the Federal Energy Regulatory Commission (FERC) approved a settlement agreement among over 100

companies, state commissions and consumer advocates in New England, which established a new mechanism for assuring supply adequacy in the region, called the Forward Capacity Market (FCM). As the many parties to this settlement and FERC recognized, the problem faced in New England is not a generating capacity shortage, but rather an inadequate revenue stream which acts to discourage the full and efficient use of existing generating resources. The new agreement and subsequent rule, RM06-04 (June 2006), provide attractive financial incentives to utilities and others for building new transmission facilities. These incentives include higher rates of return, accelerated depreciation, assured cost recovery and other features. The new rule also provides incentives for reducing energy demand through efficiency upgrades. Coupled with other actions recently taken by FERC to assure resource adequacy, this rule will surely add capacity, thus affecting the assessment of the need for any intermittent power the proposed project could supply. As the Chairman stated in the FERC News Release, "the forward looking nature of the Forward Capacity Market will provide appropriate price signals to investors when new infrastructure resources are necessary with *sufficient lead time to allow that infrastructure to be put in place before reliability is sacrificed*." FERC News Release (June 15, 2006) (emphasis added).

Further, FERC found that the new FCM approach would resolve the capacity market problems faced in New England over both the short and long terms. As the Commission found in the order approving this settlement agreement, "The results [of the settlement], including the long-term FCM and short-term transition mechanisms, resolve the deficiencies in New England's existing capacity market identified by the Commission and the parties to this case." Devon Power LLC, 115 FERC 61,340, at ¶ 62 (June 16, 2006).

Thus, this agency should not simply approve the proposed project siting because, despite its many serious environmental and other problems, it believes the project's power is desperately needed in New England. As the FERC has recognized, that is simply not the case. Instead, the deficiencies of the proposed project should be fully considered and the project should rise or fall based solely on its own merits.

MMS should carefully assess the need for the type and amount of power generation proposed by the applicant. Any statement regarding the need for electricity should be rejected unless it is supported by documentation and studies by the Massachusetts Department of Energy Resources, Independent System Operator New England and other groups. Additionally, all assessments of need should be evaluated in the context of the new FERC developments as described above.

MMS should also consider what the regulatory or economic drivers are that are fostering the demand for renewable power and should look broadly at what other

options are available to meet that need. Properly identifying the demand for renewable power is a prerequisite to determining the project need and will provide the basis for answering questions concerning the proposed size of the facility, and for determining project benefits and costs.

Based upon these considerations, APNS recommends the following purpose and need statement:

> *The purpose of the proposed project is to develop a clean energy facility producing more than 20MW to supply power to states within the area covered by the Regional Greenhouse Gas Initiative.*

C. Alternatives Review

The NOI indicates that it will consider the following alternatives:

- Proposed Action
- Phased installations and operations of wind turbine generators
- Alternative locations
  - South of Tuckernuck Island
  - Nantucket Shoals
  - Monomoy Shoals
  - Deepwater Alternative – East of Nauset Beach
- No Action

This approach is insufficient. A project this large, covering approximately 24 square miles, and affecting so many people and such a valuable ecosystem for the indefinite future, should be extremely carefully scrutinized to ensure that it is sited in an environmentally appropriate location. The DEIS must consider a wider range of alternatives, both within federal waters and elsewhere, including those listed below.

1. Legal Requirements for Alternatives Review

The analysis of alternatives is the heart of the environmental impact statement. 40 C.F.R. § 1502.14; *see also Andrus v. Sierra Club*, 442 U.S. 347, 358 (1979). The review of alternatives must "include alternatives that appear reasonable and

appropriate for study…, as well as significant alternatives suggested by other agencies or the public during the comment period." *Dubois v. U.S. Dep't of Agriculture*, 102 F.3d 1273, 1286 (1st Cir. 1996). "[F]ederal agencies must '[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.'" *All Indian Pueblo Council v. United States*, 975 F.2d 1437, 1444 (10th Cir. 1992) (quoting 40 C.F.R. § 1502.14(a)). Indeed, "the failure of an agency to consider obvious alternatives has led uniformly to reversal." *Oceana, Inc. v. Evans*, 384 F. Supp. 2d 203, 241 (D.D.C. 2005) (quoting *Yakima Valley Cablevision, Inc. v. FCC*, 794 F.2d 737, 746 n.36 (D.C. Cir. 1986)); *see also Dubois*, 102 F.3d at 1287 ("The existence of a viable but unexamined alternative renders an environmental impact statement inadequate.") (internal quotations omitted) (quoting *Resources Ltd. v. Robertson*, 35 F.3d 1300, 1307 (9th Cir. 1993)). For alternatives that "were eliminated from detailed study, [the EIS must] briefly discuss the reasons for their having been eliminated." 40 C.F.R. § 1502.14(a).

Agencies must include "reasonable alternatives not within the jurisdiction of the lead agency." 40 C.F.R. § 1502.14(c). *See Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800 (9th Cir. 1999) (finding that the Forest Service should have considered the alternative of purchasing land outright with funds from the Federal Land and Water Conservation Fund even though ability to obtain the funds was speculative). In *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827 (D.C. Cir. 1972), for example, the court addressed a challenge to an oil and gas general lease sale of leases to approximately 80 tracts of submerged lands located off eastern Louisiana. The government argued that the only "alternatives" required for discussion under NEPA were those that could be adopted and put into effect by the official or agency issuing the statement. The government also stressed that the objective of the Secretary's action was to carry out the directive in the President's clean energy message of June 4, 1971. The court rejected the government's position, explaining:

> While we agree with so much of the Government's presentation as rests on the assumption that the alternatives required for discussion are those reasonably available, we do not agree that this requires a limitation to measures the agency or official can adopt. This approach would be particularly inapposite for the lease sale of offshore oil lands hastened by Secretary Morton in response to the directive which President Nixon set forth in his message to Congress on the Supply of Energy and Clean Air, as part of an overall program of development to provide an accommodation of the energy requirements of our country with the growing recognition of the necessity to protect the environment.

Id. at 834-35. "*The mere fact that an alternative requires legislative implementation does not automatically establish it as beyond the domain of what is required for discussion, particularly since NEPA was intended to provide a basis for consideration and choice by the decision-makers in the legislative as well as the executive branch*." *Id*. at 836 (emphasis added).

Based on NEPA regulations and case law, MMS must review all reasonable alternatives to the proposed project, even if some reasonable alternatives are outside MMS's jurisdiction. Section 388 is only a small part of the massive Energy Policy Act of 2005, which encourages energy development of all types, not merely alternative energy. Proponents of the Act describe it as an attempt to combat growing energy problems by providing tax incentives and loan guarantees for energy production of various types. The Act provides incentives for traditional energy production as well as newer, more efficient energy technologies, and conservation. Non-alternative energy development alternatives must be considered, if reasonable, as well as alternative energy development on land and conservation. All qualify as reasonable alternatives.

2. Screening Criteria Cannot Be Applied in an Unreasonably Restrictive Manner

MMS has not indicated whether it intends to use screening criteria (or whether it has already done so) to arrive at its ultimate list of alternatives to be evaluated in the DEIS. If it does so, MMS should apply the screening criteria flexibly, rather than follow the Corps' approach to screening.

The Corps' DEIS employed screening criteria that were too restrictive and applied those criteria in an unreasonable and inflexible manner. The Corps chose five screening criteria: 1) wind class of class 4 or better; 2) water depth < 50 feet; 3) extreme storm wave (ESW) < 18 feet; 4) accessibility to grid interconnect; and 5) no legal restrictions.

In applying these criteria, the Corps did not account for the differential risk of onshore wind versus offshore wind. The Corps applied the criteria without regard to trade-offs that exist between different elements of the criteria. For example, land based sites can often be economic with less wind than offshore, yet the same wind class screen is used for both. Likewise, immediate proximity to the grid is not a technical requirement; it is an economic consideration. A major concern is how the Corps treated transmission bottlenecks. The Corps relied on "transmission bottlenecks" to rule out sites in Maine, Vermont and Connecticut, suggesting that power cannot get through the "bottleneck." This suggestion is false, especially as it relates to low marginal cost resources, such as wind power. Because the transmission lines are

subject to congestion, a generator in Maine, for example, will occasionally need to pay "congestion charges" when too much power is available in the region and that power becomes "bottlenecked" in Maine. When this "bottleneck" occurs, the generator in Maine obtains a lower price for his product than a generator in southeast Massachusetts. However, the power still gets sold and delivered, albeit at a lower price to the generator. This is an economic issue—not a transmission issue—and, as such, should not be used as the basis for exclusion of any land-based wind power alternative site.

MMS must take a more reasoned approach if it applies screening criteria. MMS should consider that the various criteria are not absolute requirements, but rather are sliding scales dependent on how a proposal meets other criteria.

3. Offshore Alternatives

The only alternatives that MMS indicated that it would consider are offshore wind energy facilities. The NOI lists the proposed action, phased installation and operation of the turbine generators, South of Tuckernuck Island, Nantucket Shoals, Monomoy Shoals, East of Nauset Beach and no action. This list is insufficient.

a. Offshore Wind Alternatives

Numerous other reasonable alternative sites exist that must be considered. MMS must justify its decision to exclude alternatives that the Corps considered as reasonable alternatives. In addition, MMS is ignoring obvious, reasonable alternatives. For example, there is a new proposal to build a wind energy facility in Buzzards Bay that would include 120 wind turbines off Fairhaven and Dartmouth. MMS must include that site as a reasonable alternative.

In addition, MMS should also consider alternatives the Corps screened out inappropriately, including: 1) Block Island, Rhode Island; 2) South of Martha's Vineyard, Massachusetts; 3) Cape Ann, Massachusetts; 4) Vinalhaven Island, Maine; 5) Boston Harbor and vicinity, Massachusetts; and 6) Portland Harbor and vicinity, Maine. APNS also recommended a number of sites that the Corps never addressed, including: 1) Long Island Power Authority – site runs from the West End of Jones Beach to the West End of Robert Moses State Park; 2) Davis Bank, Massachusetts; 3) Jones Beach, New York; 4) Plum Island, New York; 5) Smith Point, New York; 6) Fire Island, New York; 7) Hampton, New York; 8) Great Egg, New Jersey; 9) Asbury Park, New Jersey; 10) Five Fathom Bank 1, New Jersey; 11) Five Fathom Bank 2, New Jersey; 12) Five Fathom Bank 3, New Jersey; 13) Isle Of Wight, Maryland; 14) Indian River, Delaware; and 15) Smith Island, Virginia.

Obviously, some of these sites are located some distance from Nantucket Sound. However, because of the manner in which regional ISOs work together, that distance is not a problem. For example, with respect to projects in New York, most of the proposed projects would connect into the New York electric grid at a number of proposed locations on Long Island. The LIPA project site and the associated area is clearly an alternative to the proposed project, and the fact that MMS is proceeding with a separate NEPA analysis for that very closely-related site demonstrates the flaws in failing to conduct a programmatic review before undertaking individual project proposals. Power could readily reach New England by flowing across Long Island from its southern shore and connect into the New England grid through the existing Cross Sound cable that runs underwater from Long Island to Connecticut. In addition, the New England states have or are creating mechanisms to facilitate compliance. For example, energy providers in one state may be able to purchase clean resources produced in another state to meet the RPS.

Moreover, as noted above, it is improper to limit the alternatives review to the New England grid. The climate change issue that the proposed project and its supporters argue will be addressed by this proposal is international in scope. It certainly arises beyond New England, and there is no rational basis for imposing this geographic constraint. This is especially true inasmuch as a regionally-based regulatory mechanism, RGGI, has already been established to deal precisely with this problem. MMS must therefore expand the geographic scope of its review to correspond with the broader area reflected in the RGGI program.

b. Deepwater Sites/Deferral

It is now clear that deepwater offshore wind technology has come of age. The United Kingdom Department of Trade and Industry (DTI) has approved the development of a deepwater wind facility demonstration project 15 miles off the east coast of Scotland. The Scottish project, a joint venture between Talisman Energy (UK) Limited and Scottish and Southern Energy, will involve installing turbines at depths of over 145 feet—a depth more than four times greater than that of existing offshore turbines. The Chief Executive Officer of one of the companies involved in the project was quoted as saying: "We are now in the final stages of fabrication and assembly and plan to install the turbines within the next few months." Talisman Energy Inc. Press Release, *Talisman Energy Inc.: World's Deepest Offshore Wind Turbines Given Green Light* (July 4, 2006), Calgary and Alberta, Canada. *Last accessed at* http://www.ccnmatthews.com/news/releases/show.jsp?action=showRelease&searchText=false&showText=all&actionFor=602349 on July 8, 2006.

This is key because, in 2004, National Renewable Energy Laboratory (NREL) statistics showed that more than 70% of offshore wind resources in the U.S. occur in

deep water (>30 m) sites located more than 20 Nm offshore. *See*. W. Musial and S. Butterfield; *Future for Offshore Wind Energy in the United States* at 3 (June 2004), *last accessed at* http://www.nrel.gov/docs/fy04osti/36313.pdf on July 27, 2006.[13] The same report shows that for the New England region such deepwater sites account for more than 75% of the available offshore wind resource.[14]

Furthermore, deepwater offshore wind development may resolve many of the contentious issues which surround near-shore projects like the proposed project. For example, deepwater projects would have less impact on commercial fishing, tourism, economics, aesthetics, ship navigation, and transportation ferry routes.

As deepwater sites tend to be further from the coast, they would also most likely have significantly less impact on migratory birds, which tend to hug the coastline during their seasonal journeys. Deepwater projects would also be less likely to impact local coastal bird life. While the bases of the deepwater turbines would likely still function as Fish Attracting Devices (FADs), their position away from coastal areas and therefore away from coastal birds suggests that they will not simultaneously become bird magnets, resulting in fewer coastal bird strikes. Deepwater projects would have minimal if any impact on tribal and historical resources, recreational boating and fishing, or tourism. By all accounts, the wind is also stronger and more consistent in deepwater, which can compensate for additional expenses associated with deepwater maintenance. The impact of pile driving and operational acoustics on marine life and benthic species would still need to be properly assessed, but as an alternative, deepwater wind development would appear to be a significant improvement over near-shore wind development.

Given the huge resource potential; the fact that deepwater sites offer a significantly preferable alternative and the short amount of additional time needed for this technology to be established and refined, the DEIS should include an alternative to simply defer action until these sites become feasible. In considering this option it should be emphasized that it appears that the technology is currently available for deepwater site development and that considering that the proposed project is so strongly opposed, and will certainly be contested if ever approved, deepwater

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[13] Table 2, U.S. Offshore Wind Energy Resource by Region for Shallow and Deep Water, shows 668 GW out of a total of 907 GW (sum of Totals), or 74%, of offshore wind resources in the US can be found in deepwater sites more than 20 nm from shore.

[14] *Id.* (showing 166,300 GW out of a total of 220,500 GW, or 75.4 %, of offshore wind resources in the New England Region can be found in deepwater sites more than 20 nm from shore).

technology will clearly be commercially available before the proposed project could proceed.

c. Offshore Non-Wind Alternatives

The DEIS should consider the contribution of liquefied natural gas (LNG) facilities to the energy production. LNG is far cleaner than other fossil fuels. The DEIS should address increased reliance on LNG, particularly in light of the eight projects being proposed for New England: 1) AES Battery Rock, Outer Brewster Island, Massachusetts; 2) Keyspan, Providence, Rhode Island; 3) Weaver's Cove, Fall River, Massachusetts; 4) Quoddy Bay, Passamaquoddy Tribe, Pleasant Point, Maine; 5) Downeast LNG, Robbinston, Maine; 6) Broadwater, Long Island Sound; 7) Northeast Gateway, Massachusetts Bay; and 8) Neptune, Massachusetts Bay.

If MMS moves forward with the review of the proposed project prior to the development of national regulations, the DEIS will not be able to be tiered from the PEIS's evaluation of tidal and ocean current technologies. As such, the DEIS will need to evaluate these technologies as part of the alternatives analysis.

4. Onshore Alternatives

In addition, there are a number of onshore wind energy facilities that are reasonable alternatives to the proposed project and should be addressed in the DEIS.

a. Onshore Wind

There are at least 15 proposed expansions of existing wind facilities and major new proposed projects: 1) Deerfield Wind, Searsburg, Vermont (20 to 30 additional turbines on National Forest land); 2) Berkshire Wind, Hancock, Massachusetts (15 MW); 3) Hoosac Wind, Monroe, Massachusetts (30 MW); 4) Evergreen Wind, Mars Hill Maine (50 MW); 5) Redington Wind, Phillips, Maine (52 MW); 6) Equinox Wind, Manchester, Vermont (9 MW); 7) East Haven Wind Farm, East Haven, Vermont (6 MW); 8) Glebe Mountain, Londonderry, Vermont (30 MW); 9) Lowell Mountain, Lowell, Vermont (40 MW); 10) Sheffield, Vermont (18 MW); 11) CEI New Hampshire Wind, Lempster, New Hampshire (25 – 30 MW); 13) Berlin New Hampshire (2–3 MW); 14) Flat Rock, Tug Hill, New York (30 MW); and 15) Prattsburgh Windfarm, Prattsburgh, New York (75 MW).

The Corps ruled out several of these alternatives for a variety of reasons that do not comport with NEPA. The Corps' DEIS screened out a number of reasonable alternatives on the basis of the "bottleneck" in the transmission system in New England. For example, the Corps ruled out the following proposals, claiming that there was not sufficient surplus electric transmission capacity to transport 200-1,500

MW to load centers throughout the ISO-NE transmission system: Skinner/Kibby Townships, Maine; Redington Pond/Black Nubble Mountain, Maine. As noted above, the bottleneck does not actually block power, but rather changes the value of the power ultimately sold. In addition, the Corps ruled out the Connecticut Department of Transportation Site, claiming that there was not sufficient surplus electric transmission capacity to transport 200-1,500 MW to load centers throughout the ISO-NE.

These sites are reasonable alternatives to the project. Further, because MMS is considering phased projects, it clearly is anticipating reduced generating capacity. Thus, the lower amounts of energy these facilities are anticipated to generate are not grounds for determining that the alternatives are unreasonable.

Also, MMS is apparently not going to consider the Massachusetts Military Reservation (MMR) as a reasonable alternative, despite the Corps' assessment that it is a reasonable alternative. MMS has not provided an explanation as to why it is not going to consider this alternative. MMR, a military training facility, is located on the upper western portion of Cape Cod, immediately south of the Cape Cod Canal in Barnstable County. It includes parts of the towns of Bourne, Mashpee, and Sandwich and abuts the town of Falmouth. MMR covers 22,000 acres (30 square miles).

The industrial area in the southern part of the reservation is where the U.S. Coast Guard, Army National Guard, and Otis Air National Guard Base facilities are located. Aircraft runways, maintenance areas, access roads, housing, and support facilities are found in this 5,500-acre area. The northern 14,700-acre area, also known as Camp Edwards, is used primarily by the Army National Guard. This area contains the 2,200-acre Impact Area, associated military training ranges, and the Coast Guard's Air Station Cape Cod. The 750-acre VA Cemetery is located in the southwest corner of the reservation.

In 2005 the Base Closing and Realignment Commission (BRAC) issued a final report directing that the MMR remain open but that it be "realigned." The site will continue to be an operating Air National Guard Base but may also be open to new uses as well. These recent developments may mean that more turbines could be placed on the site than originally assessed under the Corps' DEIS. MMS should reassess MMR's viability as an alternative.

As MMS looks to onshore wind alternatives, the following should be considered:

1. Land-based sites are less costly to develop: $1,000 vs. $1,700-$2,000/kw for offshore;

2. The Corps' DEIS evaluation mistakenly used the same wind class for evaluation of both onshore and offshore wind projects. However, land-based projects can be economically viable with less wind than offshore projects; and

3. Land based projects have less risk and a longer operating history and should be more highly weighted.

b. Reliance Upon Transmission Capability To Utilize Ideal Wind Power Sites

Any analysis of potential sources of electricity available to serve New England loads and markets, whether from conventional or renewable generating resources, must consider not only electric generating facilities located in New England, but also electric generating facilities sited in other adjoining or electrically interconnected regions. Over the past decade, the electric transmission systems for all of New England, New York, and most of the Mid-Atlantic and Midwest States have become interconnected. As a result, thousands of megawatts of electricity flow freely each day into New England from electric generating plants located in many different states. This means that New England is not limited to relying on electric generators located solely within its borders; rather, electricity from generators located in many other states can be transmitted into New England to serve end-use loads on a long-term, hourly or daily basis.

The transmission of electricity into New England from many different states has been facilitated by the development and use of non-profit organizations, referred to as independent system operators (ISOs) or regional transmission organizations (RTOs). These ISOs and RTOs are regulated by FERC and operate both the transmission systems for their state or region and the wholesale electricity markets for their area. These wholesale markets enable electric generators to send the electricity they produce to utilities, marketers and other buyers, including purchasers located hundreds or even thousands of miles away from the generation plant site. In 2005, for example, the Canadian ISO (EISO) exported over 9,000 gigawatt hours of electricity into the United States, enough to power 900,000 average American households. Significantly, ISOs and RTOs operate all of the electric transmission facilities in the state or region that are used to move electricity for sale at wholesale or across state lines. Additionally, all of the East Coast, Mid-Atlantic and Midwest ISO and RTO systems are contiguous and either directly connected, allowing electricity to flow freely from one state or region to another, or interconnected, allowing electricity to flow through one ISO/RTO system to another. According to a report prepared by the national ISO/RTO council, two-thirds of Americans live in regions served by RTOs and ISOs, and in 2004 ISOs/RTOs delivered 2.19 million gigawatt hours of

electricity, approximately 62 percent of the electricity consumed in the United States. The Value of Independent Regional Grid Operators, ISO/RTO Council (Nov. 2005) at 9. *Last accessed at* http://www.nyiso.com/public/webdocs/newsroom/press_releases/2005/nr11142005_isorto_whitepaper.pdf on July 24, 2006.

Although there are a total of nine RTO/ISO systems in the United States and Canada, the primary ISO and RTO systems that are used to transmit electricity into the New England states include:

1. ISO New England: operates the electricity markets and transmission grid for Maine, New Hampshire, Vermont, Connecticut, Rhode Island, and Massachusetts. (*See* www.iso-ne.com);

2. ISO New York: operates the electricity markets and transmission grid for New York State, and is directly connected with ISO New England. (*See* www.nyiso.com);

3. PJM Interconnection: the RTO that operates the electricity markets and transmission of electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and Washington, D.C. The PJM system is also interconnected with ISO New York and other ISO and RTO systems, allowing electricity to flow from PJM through the New York ISO to New England, as well as to and from other regions and states. (*See* www.pjm.com); and

4. Midwest ISO: a fully integrated electricity market and transmission organization that includes parts or all of Wisconsin, Illinois, Michigan, Manitoba, Canada, Kentucky, Montana, Ohio, Missouri and parts of several other states. According to the Midwest ISO website, this system controls over 100,000 miles of transmission lines covering 1.1 million square miles. The Midwest ISO system is also interconnected with PJM, allowing electricity to flow from the Midwest to New England. (*See* www.midwestiso.org).

Thus, through these ISO/RTO transmission systems, New England can draw on electric generation produced in over 25 states, as well as from Canada.

The growth in ISO/RTO systems has completely changed the traditional analysis for assessing available electric generation to serve New England electricity loads. Rather than merely looking to the New England states, any analysis of available sources of renewable or conventional electric generation must consider the generation available

in the states listed above. Through interconnected transmission systems, integrated market and transmission systems, low-cost or postage-stamp transmission rates, and Federally-mandated policies that encourage electricity to move freely between regions, it is now relatively easy for generators to sell electricity to loads located hundreds of miles away from their plant sites. Additionally, all of the ISO/RTO systems operate day-ahead, same day and hourly energy markets, allowing electricity to be bought and sold freely. The development and growth of these ISO/RTO systems has opened up a huge range of generating resources available to serve New England consumers. MMS should review the most recent Regional System Plan document which, along with supporting documents, describes all of the studies/activities that are occurring or have already taken place to address transmission updates. *See* ISO-NE, 2005 Regional System Plan, *last seen at* http://www.iso-ne.com/trans/rsp/2005/05rsp_es.pdf on July 25, 2006. As previously discussed, MMS should also consider the rule recently issued by FERC on July 20, 2006, (RM06-04) which provides considerable incentives for adding more transmission facilities to the system.

As a consequence of these changes, the location of generating plants within the interconnected ISO/RTO systems is no longer a controlling factor. In today's East Coast and Midwest electricity markets, generation follows price and is not tied to the geographic region where the actual generating plant is located. This is a huge step forward for both consumers and electric generators.

The DEIS therefore must go beyond the narrowly focused review of sites in New England or adjacent thereto. As these transmission systems demonstrate, there are readily available mechanisms to provide New England markets for renewable energy facilities in other locations, including those as far away as the Midwest and Plains States, where there are many suitable sites for large-scale wind energy project development. These sites and transmission systems are viable, reasonable, and available alternatives that must be evaluated in the DEIS.

c. Other Renewable Technologies

Biomass for electric power generation is a commercially proven technology that is available today. According to the Energy Information Administration (EIA), in its 2002 Annual Energy Outlook, there was about 11 GW of installed biomass generation in the United States. By the end of 2002, the State of California alone had 35 biomass power plants in operation, representing a total of 685 MW of generating capacity.

According to a report published for the CONEG Policy Research Center involving the Northeast Regional Biomass Program, New England has the potential to produce annually approximately 12 million MW of power based on available feedstock

supplies at less than $3.50 per MMBTU. This represents roughly 8% of the total electric usage in New England. In New England, there are numerous proposals that should be considered.

Public Service New Hampshire (PSNH) has proposed to replace a coal fired unit at PSNH's Schiller Station in Portsmouth, New Hampshire with a 50 MW, fluidized bed, biomass fired generation unit. In addition, there are a number of other biomass plants proposing to retool to qualify for renewable energy credits, including Pinetree Power in Center Barnstead, New Hampshire (4.8 MW); Boralex Power in Livermore Falls, Maine (35 MW); McNeil Station in Burlington, Vermont (50 MW); Greenville Steam in Greenville, Maine (16 MW); and Hemphill Power in Springfield, New Hampshire (16 MW). Recently, Laidlaw Energy Group (LLEG) and EcoPower LLC entered into a joint venture that will involve the development of two biomass energy projects to be located in the New England power market. One of the projects involves the construction of a new 20 MW biomass energy facility in Massachusetts that will use certain types of wood waste. The second project involves technology upgrades to an existing biomass generation facility, as well as an expansion of existing plant capacity, in order to provide an additional 20 MW of renewable biomass energy in the New England region. Those projects are reasonable alternatives to the proposed project.

d. Upgrades

Consideration must be given to the costs and benefits of upgrading existing energy facilities, such as the two older plants in Massachusetts. One is the Canal Electric plant located on the Cape Cod Canal, and the other is the Brayton Point plant located in Fall River. Both are in close proximity to Cape Cod and are integral parts of the southeast power grid in Massachusetts. According to a report commissioned by the Alliance to Protect Nantucket Sound in 2004, upgrading facilities to higher-efficiency, cleaner-burning fuels is much more cost-effective than building new offshore capacity, and in the case of Canal Electric, the cost of upgrades is just 10% of the cost of building offshore capacity. *See Analysis of the Cape Wind Project: A Comparison of Alternative Sites and Technologies form the Public's Perspective*, Prime Directions, LLC, Needham, MA, (September 2004). Upgrades are therefore a reasonable alternative that must be considered.

e. Conservation

On October 28, 2005, EPA issued a study entitled "Renewable Energy in New England." *Last accessed at* http://www.mos.org/powerup/docs/Museum%20of%20Science%20-%20Renewables%20Oct%202005.ppt. The report addressed the role of conservation

and energy in New England. The report notes that technology is rapidly becoming cheaper and more efficient. Lighting, variable frequency drives, and control systems are now twice as efficient and less than half the cost compared with ten years ago. In addition, the report estimates that new federal energy efficiency standards for commercial and residential products including ceiling fans, refrigerators, clothes washers, and traffic signals will save Americans $8.24 billion per year, and reduce the energy use equivalent to that produced by 100 power plants. The North East Energy Partnership, Inc. (NEEP) issued a study specific to New England which showed that if New England can capture 48 percent of the energy efficiency potential in the area by 2013, it is possible to offset projected energy growth over the same time period. *Economically Achievable Energy Efficiency Potential in New England*, prepared by Optimal Energy Inc. for Northeast Energy Efficiency Partnership, Inc., updated May 2005, at 5. *Last accessed at* http://www.neep.org/files/Updated_Achievable_Potential_2005.pdf on July 20, 2006. The report also found that "saving electricity costs 67 percent less than supplying it." *Id.* at 9.

In addition, the DEIS should evaluate demand side management (DSM). DSM is the implementation of measures at a customer facility that reduce the need for electricity and thereby reduce the need or demand within the system. One broad class of DSM is the installation of passive devices that are more efficient than the devices they replace, such as energy-efficient light bulbs, energy-efficient motors. Another broad class of DSM is building controls that moderate electric use only to what is actually needed, such as daylighting controls, better temperature controls, or better air handling controls. Others include combinations of the two, such as variable speed drives. These are the same measures EPA discussed in its report.

Conservation is a cost efficient, reasonable alternative that should be addressed in the DEIS.

5. State Requirements for Alternatives

The MEPA Office also had several alternatives which it has determined require consideration. According to the MEPA DEIR Certificate, the review of alternatives should address alternative configurations for the turbine array at Cape Wind's preferred alternative site. It should vary the configuration of the project to understand the relative benefits/detriments to the public interest of each configuration, irrespective of the desires of the proponent, and it should evaluate configurations in the following ways to explore the relative impacts of different configurations:

- Reduced number of turbines or phased-in construction – include a project with a significantly reduced facility and/or a phased-in approach to installation. If it is uneconomic to construct a smaller

facility or employ phased-in construction, the FEIR should clearly articulate why, so that the public may fully understand why the project is the size proposed.

- Alternate configurations – if the proposed facility is to remain at its current size, it is imperative that the alternatives analysis explore functional alternatives in project configuration and assesses their impacts. The FEIR should evaluate the following:
    - a configuration that maintains the size of the facility but places the turbines further away from shore;
    - whether alternative turbine spacing would be preferable to that currently proposed for the project; and
    - what potential might exist for maintaining the number of turbines, but instead utilizing a mix of turbine sizes.

In addition, the MEPA Secretary required that the alternatives analysis consider comments received relative to navigational safety when updating alternative configurations for the turbines. The Coast Guard bill requires MMS to consult the Coast Guard regarding navigational safety. In addition, MMS should consult with the Steamship Authority to strive to provide a suitable distance for placement of the turbines from established navigation channels and ferry routes. The DEIS should demonstrate that protection is afforded to prevent large ship, ferry, and tanker collisions with the turbines proposed, adjacent to the Nantucket Sound Main Channel and to established island ferry routes including those transited by high speed passenger ferries, by complying with the reasonable conditions established by the Coast Guard. Further, the DEIS should reevaluate the South of Tuckernuck Island alternative at a greater level of detail, with respect to engineering design and environmental resources, so that a more instructive comparison of shallow water and deeper water sites can be undertaken. Finally, the MEPA Certificate indicated that the Office required clarification of the wind classification of Nantucket Sound and South of Tuckernuck alternatives.

D. Cumulative Impacts

An EIS must assess cumulative impacts in sufficient detail to be "useful to a decision maker in deciding whether, or how, to alter the program to lessen cumulative impacts." *City of Carmel-By-The-Sea*, 123 F.3d at 1160. A "cumulative impact" is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions." 40 C.F.R. § 1508.7. Cumulative impacts can result from "individually minor but

collectively significant actions taking place over a period of time." *Id.* § 1508.7. "To consider cumulative effects, some quantified or detailed information is required. Without such information, neither the courts nor the public, in reviewing [an action agency's] decisions, can be assured that the [agency] provided the hard look that it is required to provide." *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1379 (9th Cir. 1998). The "determination of the extent and effect of [cumulative impact] factors, and particularly identification of the geographic area within which they may occur, is a task assigned to the special competency of the appropriate agencies." *Kleppe*, 427 U.S. at 414.

The DEIS must consider the range of ongoing and foreseeable actions that are affecting and could affect the marine environment. Those actions include LNG, wind, tidal, and aquaculture development, submarine cable and pipeline installations, dredging activities, commercial and recreational fishing activities, commercial shipping, whale watching, recreational boating, and other activities. It is not sufficient for the DEIS to simply list the activities with possible cumulative environmental impacts, as was done in the Corps' DEIS. The DEIS must assess the nature and significance of possible cumulative effects, as well as identify the ongoing and foreseeable activities with possible environmental impacts.

Among the concerns are the cumulative impacts of other renewable energy facilities. Had MMS decided to wait until completing the PEIS, this analysis would have been less burdensome. The analysis of cumulative impacts is one of the essential reasons that a PEIS is needed. Comprehensive EISs are useful in that they "reflect[] the broad environmental consequences attendant upon a wide-ranging federal program. The thesis underlying programmatic EISs is that a systematic program is likely to generate disparate yet related impacts." *Nat'l Wildlife Fed'n v. Appalachian Reg'l Comm'n*, 677 F.2d 883, 888 (D.C. Cir. 1981). A "program statement has a number of advantages. It provides an occasion for a more exhaustive consideration of effects and alternatives than would be practicable in a statement on an individual action. It ensures consideration of cumulative impacts that might be slighted in a case by case analysis. And it avoids duplicative reconsideration of basic policy questions." *Scientists' Institute for Public Information, Inc. v. AEC*, 481 F.2d 1079, 1087 (quoting CEQ Memo on Improving EISs) (emphasis added).

However, because it is proceeding with the review now, MMS will have to consider the cumulative impacts of offshore wind energy development now. As MMS noted in its comments on the Corps DEIS, the *"DEIS does not contain adequate information regarding the cumulative impact of the current proposed action and future offshore wind farms in the action area. Massachusetts continues to be an ideal U.S. east coast location for these offshore wind farms since wind conditions and water depth are more suitable than other locations."* Other such projects are clearly on the horizon,

and reasonably foreseeable. The prospect that all of the Nantucket Sound sites would be developed must be analyzed as well. If MMS authorizes the proposed project for Horseshoe Shoal, development of the other locations can be expected to occur as well. In fact, a proposal has already been made for a large wind energy project in Buzzards Bay. TRC, the EIS consultant for this project, is also the permit advocate for a tidal energy project in the Cape and Islands area. In addition, the LIPA project is located very close to Nantucket Sound. These possibilities as well as other ongoing and foreseeable activities in the area must be addressed in the cumulative effects analysis.

The impacts caused by offshore wind plants are likely to be far-reaching. Wind energy plants are extraordinarily space-intensive. As other plants are permitted, hundreds of miles may be covered with grids of turbines. Commercial and recreational fishing interests, commercial shipping, and recreational boaters heavily use areas that wind energy developers will want to develop. If close to shore, energy projects will fall in the middle of the bird migration range. If two or more offshore projects are built in close proximity to each other, as is proposed in several areas off the coast of the United Kingdom, the navigational radar interference they produce can increase almost tenfold the distance at which aircraft and ship radars are degraded. The cumulative negative impacts of these industrial facilities on the economic, recreational, biological, and aesthetic resources of coastal states will be tremendous.

Taken together, these projects, which are located along the entire East Coast from Massachusetts to Virginia, will form an obstacle course for migratory birds, marine mammals, fish, sea turtles and other species. They will have serious, negative cumulative effects on recreation, aesthetics, historic and cultural resources, navigation, national security, fishing and tourism, and many other factors. The DEIS must present a discussion of these impacts.

E. Consideration of Project Benefits

The MMS DEIS must properly assess the benefits claimed for the project. The DEIS must consider project benefits in the proper regulatory context. It is misleading to compare the emissions of a wind energy plant against the emissions of coal, oil and gas, without recognizing the overall regulation of air emissions. Addition of a non-emitting energy source will not offset regional emissions. The DEIS must evaluate project benefits using the updated studies. Because the Corps' DEIS did not evaluate project benefits in the proper context, MMS cannot rely on that portion of the Corps' DEIS and must conduct its own independent analysis.

1. The DEIS Should Evaluate Project Benefits While Accounting for the Regulation of Emissions Under "Cap and Trade" Programs

Air emissions are regulated under "cap and trade" programs, which forbid covered power plants, in the aggregate, to emit more than a defined "cap" amount of pollution. The government issues "allowances" to emit that set amount and allocates the allowances to individual power plants. No power plant can legally emit pollutants without first obtaining and then retiring allowances to cover those emissions. Power plants can sell and exchange allowances among themselves, or transfer them to third parties. Cap and trade programs are central to the regulation of power plant emissions under the Clean Air Act, particularly in New England and the states whose emissions influence air quality in New England.

The development of renewable energy projects will not affect the allocation of allowances or the cap on emissions. In fact, because of the cap and trade program, the addition of a renewable energy facility will have no effect on overall emissions, which is already set by law. Renewable energy development will not result in a reduction of air emissions; whether increased demand is met by a clean energy facility or by a fossil plant, emissions will remain the same.

Evaluating project benefits in the proper regulatory context is necessary to ensure that the public benefits of a proposed project are appropriately measured against a project's detriments. The Corps' DEIS failed to account for the cap and trade project, instead finding that the proposed facilities would lead to reductions in emissions of health-damaging pollutants from other New England power plants. The Corps' DEIS estimated the value of the resulting health benefits at $53 million per year, after assuming that the proposed project would generate 1,489,200 megawatt hours of electricity a year that would "back out" an equal amount of electricity from fossil generation.

Even if a renewable facility would back out equivalent amounts of electricity generated by traditional plants, which it will not, it is also not sound to assume that the back out would come from the dirtiest suppliers in the region, as the Corps' DEIS erroneously assumed. In fact, if any emissions are backed out, they would be emissions from the marginal producer, a fact that would result in a reduction of claimed benefits in the Corps' DEIS of approximately two-thirds. MMS's DEIS should characterize air quality analysis in a more precise manner than was done in the Corps' DEIS.

MMS's comments on the Corps' DEIS recommend that the DEIS evaluate the air emissions from an oil-fired facility and a coal-fired facility. *See* DOI Comments at 5.

While it is appropriate to consider the various rates of emission for different energy sources, MMS cannot view those numbers in a vacuum. They must be considered in the context of the exiting regulatory structure: the cap and trade program.

Furthermore, any purported public health benefits and air quality improvements must be characterized in a precise manner. The DEIS, which should be prospective in nature, should be based on a dispatch model that integrates realistic assumptions about conventional and renewable energy growth, electricity imports/exports, and fuel prices to project emission benefits for the years when the project would be in operation.

2. Climate Change

An ancillary consideration which the DEIS must address is the relationship of the project to greenhouse benefits. The information provided in the Corps' DEIS is not accurate and should not be incorporated into the DEIS.

For example, the Corps DEIS claims that "once online the [Cape Wind] project could displace equivalent energy production from fossil plants that would otherwise annually emit on the order of 1,000,000 tons of carbon dioxide." This estimate is based on outdated information. Over 7,400 MW of generating capacity was added to the NEPOOL power supply between 2002 and 2005, an amount that represents over 20% of the total generating capability within New England. Most of this capacity comes from highly efficient, natural gas-fired, combined-cycle generating facilities with state-of-the-art emission control equipment. Carbon dioxide emissions were only 79% of the amount cited in the Corps' DEIS by 2003, sulfur dioxide a mere 32% of the amount cited, and nitrogen oxides were 37% of the amount cited. The DEIS must use updated information to reflect 2006 numbers.

The DEIS must also put the proposed project into proper perspective. The contribution of 170 MW of emission-free power will have a negligible effect on climate change. The values cited in the Corps' DEIS, even if accurate and even if there were no cap and trade program in place, represent but a tiny fraction of total annual world greenhouse gas emissions. The air pollution and global warming benefits the Corps' DEIS claims for the proposed project are exaggerated by at least one order of magnitude. The DEIS should identify potential climate change benefits more accurately. Reduction of greenhouse gas emissions is a critically important objective and underscores the importance of developing a PEIS that will place the proposed project within the context of a broad program aimed at reducing emissions.

3. Regional Need for Power

The DEIS must also evaluate the regional need for power. The Corps' DEIS claims that by 2008, there will be a need for power. However, an updated and geographically relevant analysis demonstrates that no additional power will be needed until the 2013-2015 timeframe. The 1.9% growth rate in electricity demand quoted in the Corps' DEIS refers to growth rate for electricity for the United States, not the growth rate of demand in New England, which is projected at only 1.3% over a ten-year analysis period. In addition, the Corps' DEIS relies on assumptions regarding unit retirement that are unsubstantiated.

Other sources of energy generation, including renewable power, are planned to come online in the interim. The DEIS must take into account these projects and must evaluate the regional power needs using updated studies and substantiated assumptions.

F. Wildlife Impacts

1. Avian and Bat Impacts

The proposed project raises numerous issues concerning impacts to avian communities. Two of the most important issues are: 1) siting considerations and characterization of Horseshoe Shoal for bird use; and 2) methods of assessing both the direct and indirect effects of the proposed project on birds. The Corps' treatment of avian issues did little to further any understanding of how the proposed project will impact avian species. The methods the Corps used to collect the avian data for its DEIS were not adequate. Additional studies are needed to understand the project's impact. Where data are absent, MMS must collect data as part of the DEIS process. Like others who have tried to forge new technological applications, MMS will need to work with the third-party contractor to develop creative and innovative means to address the data gaps.

Recently, Cape Wind has attempted to address these deficiencies by "stopgap" measures. The Massachusetts Audubon Society has also identified data gaps, and granted qualified support for the project if those gaps are filled. These efforts are not sufficient. FWS has stated clearly that three consecutive years of radar study are needed. The Service also has rejected Cape Wind's and Massachusetts Audubon's approaches. MMS must adhere to the Service's requirements, which also comport with the national guidelines for wind turbine siting.

a. Nantucket Sound Provides Critically Important Avian Habitat

Site selection is an essential step in minimizing the avian risks presented by wind facilities. The DEIS must objectively evaluate the viability of the Horseshoe Shoal site, based on the environmental impacts of the proposed project on the region. This requires proper characterization of the site.

Horseshoe Shoal is a regionally important feeding site for seabirds and shorebirds. Coastal Massachusetts is a critical location in the migratory corridor along the Atlantic Coast and hosts higher than normal densities of migratory birds, making violations of the MBTA almost certain. During the fall and winter, thousands of eiders, scoters, red-breasted mergansers, and brant congregate in offshore areas. A detailed characterization of Horseshoe Shoal and understanding of habitat use by birds is needed.

In addition to its location along the migratory corridor and the impacts to migratory species, Horseshoe Shoal provides important habitat for feeding birds. As noted in the Corps' DEIS, two important species that utilize the Shoal for feeding are the roseate tern, a federally- and state-listed endangered species, and the piping plover, a federally- and state-listed threatened species. The proposed project is centered in the regional populations of both of these species, raising important ESA questions. Nearly half of all the North American nesting roseate terns nest in Buzzards Bay. Roseate terns spend significant amounts of time feeding in the shallow waters of Nantucket Sound and stage in the area in preparation for migration. Piping plovers will be at risk of collision with the structures when flying through the project area, especially during late-summer migrations. The status of these species underscores the significance that the additional mortality risk of just a few individuals might have on the overall populations. The data the Corps has provided on these species are simply inadequate, for purposes of both NEPA and the ESA.

Horseshoe Shoal also provides habitat for large concentrations of seaducks, the impact on which the Corps was far from evaluating sufficiently. The shoals of Nantucket Sound accommodate some of the largest winter concentrations of common eiders and long-tailed ducks (oldsquaw) on the Atlantic coast. Long-tailed ducks move back and forth between inland bays and Nantucket Sound by the thousands. Since the mid-1970's, a minimum of 50,000 long-tailed ducks have wintered in Nantucket Sound. These seaducks are drawn to the shallow waters of Nantucket Shoals to feed on the rich marine life. Every day, just after dawn and just before dusk, large flocks of long-tailed ducks make a short migration flight between their nightly quarters in Nantucket Sound to the north and their feeding grounds on the Nantucket shoals to the south. Long-tailed ducks feed mainly on small mollusks and

crustaceans that they scoop up from the ocean floor. Horseshoe Shoal provides the perfect feeding grounds for long-tailed ducks because they are shallow and food is plentiful. Long-tailed ducks are known to alter their exact flight patterns from night to night. This spectacular event generally lasts from November through February. MMS must develop fuller and more precise information on their distribution and movements within Nantucket Sound, including heights of flight of any birds that may pass through the project area, especially at night.

Likewise, shorebirds and waterfowl migrate through Nantucket Sound in August by the thousands. Monomoy National Wildlife Refuge, located east of the project site on the "elbow" of Cape Cod, is nationally recognized as a migratory stop-over and nesting and staging site for shorebirds. The refuge annually hosts some of the largest concentrations of Hudsonian godwits seen anywhere on the Atlantic Coast. The bird migrations bring an influx of fall warblers through Nantucket Sound. The potential impacts to the avian community associated with the proposed project could result from both direct effects, such as collision risks, and indirect effects, such as habitat fragmentation, including the disturbance of seasonal migration and daily movements and disturbance of foraging and resting areas.

b. MMS Must Address Both Direct and Indirect Impacts to Avian Species

In evaluating impacts to these species, the DEIS must address both direct and indirect impacts. The Corps' DEIS is not sufficient for that purpose. The construction and operation of towers, including wind turbines, has the potential to create significant impacts on migratory birds, especially some 350 species of night-migrating birds. With respect to methods of assessing both the direct and indirect effects of the wind plant on birds, most of the research and monitoring of the impacts of wind facilities on birds has focused on mortality caused by birds striking the rotor blades and associated structures – i.e., on direct impacts. Yet, the indirect impacts caused by, among other things, disturbance and changes of behavior associated with feeding and migratory activities have not been well-documented. MMS will need to conduct the necessary studies on indirect impacts.

Two independent mechanisms of bird collision mortality could occur at the proposed wind facility. The first is when birds flying over water in poor visibility do not see the structure in time to avoid it (i.e., blind collision). This risk would be more of a threat for faster flying birds such as waterfowl or shorebirds. Slower, more agile flying birds, such as songbirds, are not as likely to succumb to blind collisions. While the likelihood of an individual bird colliding with a single wind turbine is relatively low under daytime conditions with good visibility, the collision risk to birds will increase during dark nights with bad weather and during twilight hours.

The wind turbines will be equipped with lighting for aviation and navigation safety. Towers that are lighted may help reduce bird collisions caused by poor visibility, but they bring about a second mechanism for mortality. In poor weather conditions where there is low cloud ceiling or fog, lights can refract off water particles in the air creating an illuminated area around the tower. Migrating birds can loose their celestial cues for nocturnal migration in these conditions. In addition, poor weather can influence birds to fly at lower altitudes beneath the low cloud ceiling and into the towers that they might otherwise avoid. It has been well documented that nocturnal migrants are attracted to lights. When passing a lighted structure, the increased visibility around the tower becomes the strongest cue the birds have for navigation. Mortality can occur when birds fly into the structures or even other migrating birds as more and more passing birds congregate into the relatively small, lighted space. The phenomenon is such that the lights do not attract birds from afar, but rather tend to attract birds that pass within a certain illuminated vicinity. The blades of wind turbines may further increase this hazard compared to stationary structures.

The Federal Aviation Administration (FAA) tracks the number of towers across the continent to monitor aviation hazards. Generally, once a tower reaches 200 feet or higher, the FAA considers it a potential aviation hazard. As of November 2, 1998, according to the FAA's Digital Obstacle File, Massachusetts had a total of 231 tower sites of which 40 contained more than one tower. Due to concentrations of birds that regularly occur along the coastal region, FAA does not recommend the construction of new towers within ten miles of the coast unless they are freestanding (no guy-wires), unlighted, and below 200-feet in height. Based on FAA records, there are 94 towers in all of Massachusetts greater than 300 feet tall. The proposed project, with its 130 wind turbine towers, would more double this number and consequently significantly increase the potential for bird collisions associated with these new structures.

On June 26, 2006 the United Kingdom's Royal Society for the Protection of Birds (RSPB) published an article on the devastating impacts of a wind plant on Smøla, an island off the coast of Norway. *See* Wind Farm Strikes at Eagle Stronghold, http://www.rspb.org/policy/windfarms/eaglestrike.asp. The article reported that the wind turbine blades were responsible for the deaths of nine white-tailed eagles in a ten month period. The mortalities included all of the chicks that fledged the previous year. The article quoted Dr Rowena Langston, Senior Research Biologist at the RSPB saying, "Smøla is demonstrating the damage that can be caused by a wind farm in the wrong location. [T]he deaths of adult birds and the three young born last year make the prospects for white-tailed eagles on the island look bleak."

RSPB blamed the bird mortalities, which are threatening the survival of the white-tailed eagle, on the Norwegian government for ignoring warnings of the impact the

wind facility would have on wildlife. Dr Mark Avery, Conservation Director at the RSPB said, "The eagles' deaths confirm the fears we expressed at that time and show how devastating a poorly sited wind farm can be."

According to the article, the RSPB is now backing a new four-year study at the site by the Norwegian Institute for Nature Research at the site to assess the effects of turbines on other bird populations. But the RSPB emphasized the need to address the cumulative impacts of wind turbines on bird populations at the proposal stage of project: "Developers and governments should be taking note; these types of impact must be properly considered and acted upon when proposals are first made to avoid the unnecessary losses we are witnessing on Smøla."

Some have suggested that birds will be able to adapt to the presence of the wind turbines. The capacity for bird populations to adapt to wind facilities, however, is not well established and if, as the Smøla incidents suggests, fledglings are killed by turbine strikes before they are able to adapt, then for some species adaptation may be too slow to be a viable solution. As the Smøla situation also indicates, the cumulative effects of individual strikes can have a significant impact on the ability of the species to survive.

The bird mortalities of Smøla and the statements of the RSPB should inform the DEIS as it assesses direct impacts on birds from the proposed project.

The proposed project would also have additional indirect effects on birds resulting in changes of behavior associated with feeding and migratory activities. Birds crossing the proposed wind facility during the day will likely be able to adjust flight path disturbance effects. Most migrating birds tend to fly higher over water (>300 feet) during their seasonal migrations. However, most waterfowl and seabirds are known to fly closer to water during daily trips to allow for feeding in arid staging areas. Although spaced at least 0.3 miles apart, the large array of turbines over Horseshoe Shoal could affect both daily and seasonal migratory birds.

Structures located in shallow water, such as the bases of the towers, could act as fish-aggregating devices, where fish are known to school. It is likely that terns and other seabirds will be attracted to these structures to feed on fish. The construction of a wind energy facility will likely change the use of the shoals for foraging. Birds that will be attracted to areas surrounding the wind turbines to feed on fish congregating at the bases of the structures will be at greater risk of collision.

Because of the inclement weather conditions common to Nantucket Sound as well as the height, lighting and number of the turbines, the potential for the proposed project to have a significant impact on bird populations is high and must be assessed thoroughly by MMS. The Corps' DEIS does not adequately address direct and

indirect impacts of the proposed project on birds. MMS should follow the example of the RSPB and the recommendation of FWS and conduct cumulative impact studies of the direct and indirect effects of wind turbines over a number of years before conducting the DEIS for the proposed project.

c. MMS Must Conduct Studies Where Insufficient Data Are Available

Despite the increase in the number of offshore wind energy facilities, most studies regarding the impacts of wind facilities on avian species come from land-based facilities. Studies regarding sites such as Altamont Pass Wind Resource Area (WRA), east of San Francisco, CA (6,000 turbines), San Gorgonio Pass, WRA, near Palm Springs, CA (3,500 turbines), and Tehachapi Pass, east of Bakersfield, CA (5,000 turbines) are available, but there remains little definitive information on the impact of offshore wind turbines on bird movements. The availability of such studies has been increasing, however, and MMS must obtain all up-to-date data on the potential impacts of wind energy facilities.

Because the proposed project would be the largest in the world, the studies that are available involve much smaller facilities. Most offshore facilities are, in fact, comprised of fewer than 20 turbines. Recent studies indicate that offshore wind can have devastating impacts on eagle populations (*see, e.g.,* http://www.rspb.org.uk/policy/windfarms/eaglestrike.asp), but again, those studies address an offshore facility of 68 turbines, slightly more than half the number of turbines (and smaller in size) comprising the proposed project. MMS will have to review studies such as the one cited above and extrapolate from them based on the unique characteristics of Nantucket Sound, the biological populations present there, and the substantially larger size of the proposed facility.

As MMS noted in its comments on the Corps' DEIS:

> The DEIS needs to provide further information and data when assessing the potential impact of bird collision mortality. The small amount of information known on bird collisions is from land-based farms. Although this information can be used to interpret effects to marine and shore birds, it cannot fully assess the impact as collisions are likely to have a higher mortality rate in offshore farms (i.e., unconscious birds would likely drown before being able to regain consciousness). The applicant should further incorporate the most recent data on bird collisions from existing offshore wind farms in Northern Europe but in doing so keep in mind that the Cape Wind project is much larger than these farms in Northern Europe.

Recommendations

The Corps' review of avian impacts was inadequate. Although some of the studies the Corps directed can be salvaged, MMS has a substantial task in front of it to meet federal requirements. The following list of recommendations incorporates recommendations originally made to the Corps, which were not followed, and identifies specific deficiencies in the Corps' review that must be corrected.

- MMS should conduct the three years of radar studies recommended by FWS to evaluate the risks the project poses to avian species. The radar studies used in the Corps' DEIS took place for two one-month periods, with predictions of avian impact extrapolated from these abbreviated studies. These studies are simply insufficient, failing entirely to meet the review requirements set forth by FWS and supported by numerous entities with expertise in avian issues. The Commonwealth has also required three years of survey work under the MEPA Certificate. As MMS noted in its comments on the Corps DEIS: *"A more appropriate approach would have been for the applicant to conduct a three-year, year-round biological assessment of bird and bat species in the preferred site, as previously recommended by the Department."*

- MMS must address the discrepancies in data collection techniques. For instance, the difference in birds counted by radar versus aerial surveys in the rotor swept zone from 2002 to 2004 was 127,332. Such discrepancies cannot be glossed over, but instead must be addressed through further study. The MEPA Office is also requiring that the DEIS address this issue.

- A thorough inventory of the bird and bat species present at the proposed site is required. Such data are needed to determine the impact on the biology and behavior of each species. Additional surveys of Horseshoe Shoal are necessary to better characterize the habitat, including the migratory and feeding activity by the many types of birds within the project area. The surveys should encompass periods of seasonal migrations, various times during the day and targeted for specific species of concern (roseate tents, seaducks and neotropical migrants). The surveys should encompass both the Horseshoe Shoal site as well as alternative locations.

- The Corps' DEIS lacked the empirical data needed to address the proposed project's impact to birds during bad weather, early morning, night, and other times when birds are most vulnerable. MMS noted these deficiencies in its own comments, stating that:

> Overall, the DEIS does not contain a thorough inventory of the bird and bat species present in the preferred site. Some very short-term biological assessment studies have been conducted by the applicant and other organizations but these are not sufficient to adequately determine which species occur in the preferred action area on a year-round basis. This information must first be gathered before any general or specific determinations can be made on how the proposed action will affect the biology and behavior (e.g., flight and staging patterns) of any of these species, how to place the wind farm to create the least impact and which measures would be best to mitigate impacts.

In addition, MMS commented:

> The applicant should address any mitigation measures that would be set in place to reduce the effects of motion smear, especially with the slower rotating turbines proposed for the project. The applicant should also further address mitigation measures for minimizing collisions in bad weather or low visibility and how confusion can occur when visual disturbance is compounded by noise disturbance. This is especially important for over- water migrations of passerines where adverse weather conditions have resulted in high mortality rates.

Berthold, P. 2001. Bird Migration: a general survey. H. Bauer & V. Westhead, Trans. Oxford: Oxford University Press. (Berthold 2001).

MMS further stated:

> We appreciate the Corps' acceptance of the FWS request (March 25, 2004 letter) to include a discussion of the possible effect of the wind farm on bats (p.5-93). However, the impact evaluation on pages 5-98/99 makes some assumptions and conclusions that we do not believe are supported by data. The first assumption/conclusion is that few bats would be expected in Nantucket Sound because it is not known as a bat flyway. According to the literature, this is not correct (Cryan 2003, Carter 1950). Red bats in particular are known to migrate over coastal waters, and some bats have been observed on the islands near Nantucket Sound (page 5-96). The DEIS does not include any site-specific information to document bat activity or lack thereof in Nantucket Sound. The DEIS also argues that bats would use their eco-location sensory system to avoid collisions with the

> wind turbines. This is also not substantiated by the data. Recent studies at the Mountaineer wind farm in West Virginia confirm that large numbers of bats were killed in 2003 and 2004 (Kearns & Kerlinger 2004, Kearns 2004). Merely having an eco-location system clearly does not eliminate collision risk. The reasons why extensive bat mortality occurs at some wind farm sites but not others are imperfectly understood. However, the first step in developing an adequate impact evaluation is to collect data using bat detection equipment to document the spatial and temporal use of the airspace over Horseshoe Shoal. These studies should be combined with the traditional boat and aerial surveys and remote-sensing (radar, etc.) studies of birds that are expected to be conducted by the applicant (p.5-128).
>
> The DEIS should include current relevant information on the spatial and temporal use of the airspace over Horseshoe Shoal, that will support an analysis of potential interactions between bats and the proposed wind farm.

- Further analysis is needed on the effects of turbine lighting as a bird and bat attractant, and the additional deaths that may result from such lighting. There should be an evaluation of alternative lighting and painting schemes for the turbines and rotor blades to minimize potential collision hazards. MMS must review the literature and/or conduct studies on the use of color and lighting and then propose a scheme that minimizes the impact on birds during poor weather and at night.

  As MMS stated in its comments on the DEIS:

  > The DEIS should explain why red flashing lights are proposed for the turbines rather than white strobe lights as previously recommended by the FWS. The applicant should also consider and include any mitigation measures to alter lighting during peak nocturnal migrations.

- Additional data are needed on bird collision, particularly with respect to the proposed project's impact to ducks, migratory passerines, the piping plover population and roseate tern nesting/staging seasons. The MEPA Office is requiring that the DEIS provide an objective analysis and discussion of bird mortality at wind facilities and further assess the collision risks for birds passing through the project area. These studies should be conducted utilizing all available data. Risk should be presented as a range of

probabilities. In addition, the Office has directed that at least one year of additional radar data be completed to examine migratory passerines during spring and fall migrations and it must provide information on annual variation in numbers and timing and the heights at which they pass over the project site during a variety of whether conditions.

- The surveys should include a waterbird and waterfowl survey in winter, songbird migration survey in spring, shorebird (roseate tern and piping plover) foraging survey in summer and migratory survey in fall. The surveys should utilize aerial surveys, radar observations, observations from boats and auditory surveys. Radar and sound surveys can be conducted simultaneously to provide data on migratory patterns of nocturnal migrants. Sound recordings can be more accurate in identifying species while radar provides information on the numbers of birds traversing the area during different times of year. Additional aerial and boat surveys should be conducted to better document use of the area by shorebirds, particularly terns and seaducks. These surveys will supplement the existing winter waterfowl surveys of the Sound and should focus on documenting the potential variation on bird activity on daily and seasonal bases. The aerial and other visual surveys should be focused on wintering seabirds and foraging activities that occur during daylight hours. The combination of the radar and sound surveys will be most useful for migratory species that are most active during dusk and twilight hours. The MEPA Office is likewise calling for additional study on access, egress and evening roosting areas in and around Nantucket Sound to characterize the presence of long-tailed ducks in Nantucket Sound. The roseate tern radar data presented in the DEIS must be reanalyzed and additional surveys must be undertaken during periods when the roseate terns are arriving at and departing from Nantucket Sound and the proposed project site area.

- MMS must look at the indirect effects on bird and bat behavior, including avoidance behaviors. As MMS stated in its comments on the DEIS:

> Within the DEIS, there are a number of references by the applicant to situations where certain bird species were reported to avoid flying through offshore wind farms. The applicant needs to further assess the negative effects, if any, of avoidance of these areas, especially for species which migrate through the preferred site, capitalize on food sources within the site, or use the site as a staging area. It is not sufficient to say that other areas outside the preferred site could meet these needs (i.e., the birds could go elsewhere). Even if this were to occur, there would certainly be

more energy expended to alter behavior patterns and it is not a guarantee that alternate suitable locations would be available.

- In addition to these pre-construction surveys, a detailed avian monitoring program must be designed for post-construction implementation. These monitoring programs should be developed to accurately document actual bird collisions with the wind turbines in Nantucket Sound. The MEPA Office has also requested that the DEIS propose a detailed post-construction monitoring plan to continue assessment of avian movements and track collisions with structures and include mitigation designed to significantly enhance breeding activities to offset mortality. The DEIS should discuss in detail mitigation for avian impacts.

- The MEPA Office is requiring that the DEIS reanalyze the radar data on bats to provide information on the use of the Sound as a flyway by migratory bats.

2. Marine Species Impacts

a. Impacts Generally

Construction of the proposed project would involve the installation of 130 wind turbines, a transformer platform, and miles of underground transmission cabling. Among other things, pile driving and other activities associated with construction will produce sounds that can be transmitted long distances in both air and water, and affect the movements, habitat-use patterns, and other biologically significant behavior of a variety of marine mammals, sea turtles, and fishes. After construction, the wind turbines and supply and maintenance activities also will produce sounds that may adversely affect a range of marine species in the Sound and adjacent areas. The Corps' DEIS did not provide a thorough or accurate assessment of the possible effects of either construction or operation of the proposed project on marine species. The comments on the Corps' DEIS submitted by Kimberly Amaral, a Marine Mammal Program Consultant for the International Wildlife Coalition, pointed out that:

> The National Marine Fisheries Service (NMFS) has identified 180dB *re* μPa as the threshold level for preventing injury or harassment to marine mammals and sea turtles.... [S]ound source levels of similar pile driving efforts in Europe ranged from 150-236dB at the source, and in Denmark, pile driving activities were recorded at 190 dB *re* μPa at a distance of 500m. We are understandably concerned about pile driving activities for the actual turbines....

See Exhibit 5. Comment 004815 submitted by CWI to Corps on February 24, 2005.

Further, the DEIS contained few site specific data on the use of the project site by sea turtles and marine mammals. Likewise, it did not address the potential for the project's monopiles and other structures to become attractants to sea turtles and other marine wildlife, which would increase the risk of animals being hit and killed or injured by maintenance vessels and other vessels operating near them. In addition, it provided only a superficial assessment of the measures, such as the use of passive and active acoustic monitoring, which would or might be required to minimize the risk of collision and other injuries during both construction and operation of the proposed project.

b. Site Evaluation

Humpback whales, fin whales and northern right whales are known to occur at least occasionally in Nantucket Sound. Each of these species is listed as endangered by both the federal and state governments. The harbor seal and gray seal are also known to be present in the area. Leatherback turtles regularly migrate through the Sound and often reside there for periods of time feeding on jellyfish. Ridley, loggerhead and green sea turtles all take advantage of the Sound's food resources, such as crabs, shellfish and eelgrass.

Potential impacts to these species during construction may include direct impacts from tower and cable installation activities and indirect impacts from sediment disturbance on food sources. Long-term operational impacts could result from changes in the distribution and abundance of finfish, shellfish, and benthic species resulting from the presence of the wind turbines, noise and vibration effects, electromagnetic fields, shadows, or gear entanglement.

One of the most significant issues is the potential impact of low frequency sounds and vibrations that would be generated during operation of the proposed project. Loud noise, whether generated above or below the water, can adversely affect the organisms that are present in the vicinity of the project. While it can be demonstrated that many species appear generally tolerant of many human-produced sounds, little is known about the affects of low-frequency sounds on marine mammals, sea turtles or fishes. Low frequency sounds may adversely affect vital behavior of animals, particularly of baleen whales, which use sound to communicate, sense their environment, and find food. The effects of acoustic "masking," in which the presence of a sound within a particular range of frequencies interferes with an organism's ability to use that same range of sound for its own applications, is virtually unknown and of particular concern for species such as the North Atlantic right whale, which is in danger of extinction.

The Corps' DEIS does not adequately address these concerns. MMS will have to do so in its DEIS.

Recommendations

- MMS must conduct a comprehensive study of mammal and reptile use of the area to determine the current use of the project area by these species. The study should include evaluation of the temporal aspects of the use, including feeding, nursery, and breeding uses, if any. The study should also include a thorough evaluation of whether transmission cables installed by proposed methods will remain buried in an area traversed by large "sand waves," including procedures for post-construction confirmation that cables remain buried, rather than becoming suspended between wave crests or other structures (as described by Morro Group (2000), *Final Environmental Impact Report, MFS Globenet Corp./Worldcom Network Services Fiber Optic Cable Project, SCH 98091053,* submitted to County of San Luis Obispo, Department of Planning and Building), thereby creating entanglement hazards for mammals, as reported by B.C. Heezen (1957), *Whales entangled in deep sea cables, Deep-Sea Research 4: 105-115.* These studies should extend for at least one complete annual cycle. The Corps' DEIS did not establish baseline studies of marine species; without such studies, a more complete literature review, and accurate species accounts, the risk to marine mammals cannot be reasonably predicted nor can impacts be monitored following construction.

- Identify the sensitivities to noise sources of the marine mammals and reptiles potentially present and assess whether project-generated noise is likely to damage the hearing or affect the behavior of these organisms. Identify potential mitigation measures to ensure that mammals and reptiles are not adversely impacted by project-related noise.

- Potential construction impacts such as turbidity causing damage to eelgrass and shellfish beds that provide sea turtle food sources should be evaluated and avoidance measures identified. Sea turtles may also be attracted to the new structures, and the project risk assessments should evaluate potential positive or negative impacts on turtles. The impact of the structures' lights on turtle activities should be specifically addressed.

- The DEIS should evaluate whether there are convergent zones of currents in the project area. Convergent zones tend to concentrate certain food

species, such as jellyfish (a leatherback food source) and these resource features might be affected by the array of turbines on the Shoal.

- MMS must evaluate the potential impact of electromagnetic fields (EMF) from the buried cables on the aquatic environment, particularly to marine mammals, and must examine a range of exposure cases. From a practical standpoint, consistent burial to the target burial depth is impractical. Changes in subsoil conditions, adverse sea state conditions, and equipment failures will result in varying burial depths. In addition, the dynamic state of the seabed is likely to result in movement of sand waves and the shoal itself over time. Therefore, a sensitivity analysis or multiple burial scenarios should be evaluated as part of the EMF assessment.

- The DEIS should consider the possibility that the monopoles have a potential to form a fouling community, becoming attractants to turtles and increasing their collision risk with vessels.

- The DEIS must more thoroughly review the potential of vessel impacts associated with array construction and maintenance. The conclusions set forth in the Corps DEIS are not consistent with the literature. As noted by MMS:

  > The section incorrectly concludes that there is "no evidence of long-term effects to these marine mammals due to the physical disturbance of the motor vessels." However, no longitudinal studies have been done to assess potential long-term effects of vessel disturbance on marine mammals.

  In addition, MMS commented:

  > Each species (and even individual) tends to show a different level of tolerance for vessel traffic. Although gray seals may have been reported to be tolerant of construction activities at a wind farm in Sweden, harbor seals are known to more quickly leave haul out sites when disturbed. Over time, repeated flushing can increase the potential for injury and mortality of pups (especially during pupping season), result in abandonment of preferred haul out sites, and cause an increase in energy costs.

- MMS must accurately and fully describe the applicable provisions of the MMPA. The MMPA does not allow the incidental taking of marine mammals, as discussed above.

- The DEIS must incorporate the biological assessments required under the Endangered Species Act and thoroughly address the potential impacts.

- The DEIS must propose mitigation if impacts to rare species or their habitat are unavoidable, as determined in consultation with The Natural Heritage & Endangered Species Program (NHESP).

- In the DEIS, MMS should consider requiring the applicant to establish a safety zone during the installation of the monopiles and make every effort to limit construction during periods of peak protected marine mammal migration.

3. Fisheries Impacts

a. Fisheries Impacts Generally

The construction and operation of the proposed project will affect fishery populations in Horseshoe Shoal. Major fishery populations found around Horseshoe Shoal include winter flounder, scup, squid, summer flounder, black sea bass, channeled whelk and lobster. Recreationally, the area is fished primarily for scup, bluefish, and striped bass. The site of the proposed project is designated as essential fish habitat for some 16 species including winter flounder, summer flounder, squid, scup, and mackerel. Horseshoe Shoal is known to be productive grounds for spawning, nursing and feeding, as reflected by the constant fishing effort in the vicinity.

The installation and construction phase of the proposed project may dramatically alter the marine ecosystem of Horseshoe Shoal. Potential disturbances caused by project installation include noise, waste, sediment resuspension, and poorly graded resettling of sediments. These disturbances are likely to be temporary, displacing some populations of fish and attracting or repelling others due to altered feeding opportunities. The perception of noise by fish is not well understood, making their reactions difficult to predict, but it is known that many species readily detect sound, which has potential for affecting behavior – e.g., feeding behavior is exploited in the positive direction by fishing lure manufacturers. In addition, waste created during installation, including fuel emissions from the construction vessels, cementing materials and construction sewage and refuse, could contaminate the marine environment and disturb the seabed and benthos. Vessel anchors, monopile vibratory drilling, and the installation of the power cables will cause sediment resuspension, which will affect water quality and impair the vision of feeding fish populations. For some fish species, the survivability of larvae can be impacted by activities lasting only for short periods of time. It possible that localized disturbances such as noise, waste

and sediment resuspension could displace individuals from preferable environments and cause high levels of mortality.

The impact of the installation process on benthic species such as lobster and shellfish may be very severe. Small or immobile benthic organisms will be destroyed and significant sediment resuspension will occur during the drilling process for the establishment of the tower pile foundations. Larger and more mobile organisms are likely to relocate temporarily, and may or may not return. Depending on the amount of sediment resuspension, organisms could have problems feeding and those with limited mobility could be buried.

The towers will also impact fish populations. Changes in currents and effects of noise and vibration may decrease habitat value and result in decreased species abundance and diversity. In addition, a common fishing method for attracting populations of fish into a specific area is the employment of fish-aggregating devices (FAD). It is likely that once the wind turbines have been installed they will act like FADs. Congregation around the bases of the turbines has ramifications for bird populations as well as for the commercial fishing industry.

b. Commercial Fishing Impacts

The DEIS must consider the impacts of the proposed project on the commercial fishing industry. While there are many Massachusetts-based vessels that fish in offshore waters, there is a significant fleet that fishes Nantucket Sound exclusively. Although the majority of fishing in this region occurs in Vineyard Sound and Nantucket Sound as a whole, many vessels fish primarily in Horseshoe Shoal. Fishermen who traditionally fish in the Sound have estimated that 50 to 60% of their annual income is from the Horseshoe Shoal area, according to a survey assessment of the impacts of Cape Wind on fishing in Nantucket Sound. *See* Madeleine Hall, Commercial Fishing in Nantucket Sound: Considerations pertinent to the proposed wind facility on Horseshoe Shoal (Dec. 2004). Horseshoe Shoal does have extremely shallow areas, but existing deeper areas accommodate large stocks of commercially-valuable finfish. As commercial fish stocks have steadily declined and fishing grounds have been reduced, many vessels have been forced to range wider and farther offshore. Inshore fishermen work on vessels that are too small to consider this alternative and the loss of near-shore fishing grounds is likely to have a major impact on their livelihood.

Vessels that fish in the vicinity of Horseshoe Shoal employ trawl gear, lobster pots, fish pots and whelk pots. Bottom trawlers target winter flounder from March through April, squid from May through June, scup from July through October, and summer flounder from June through September. Pot fishermen target scup and black sea bass

from July to October. Lobstermen frequent the area from April until November, and whelk fishermen fish the area from May through September. Horseshoe Shoal is also a popular area for recreational and charter fishermen, who target scup, bluefish and striped bass.

The proposed project can significantly impact commercial fishing activities. For example, there is a length limit of 72 feet for scallop dredges and demersal trawlers. It is doubtful that the spread produced between a set of otter boards would be greater than 600 feet. Theoretically, if towed in a straight line, this spread would pass through the identified distance between the proposed towers. Nonetheless, the arrangement of the towers combined with the impact of wind and current will make it unlikely that vessel captains will risk the vessels and gear trying to navigate through the tower field.

During the installation process, which will last many months, all vessels may be prevented from using the area around the drilling and erection equipment. Compensation will likely be sought for the lost income. In addition, disturbance of the seabed and benthos will be caused by anchors, anchor wire, drills and plows which will re-suspend sediment and destroy or displace some fish food organisms living in the benthos. Sediment resuspension caused by large drills and jet plows has produced anoxic conditions in which fields of shellfish are killed. Finally, some commercially harvested fish will avoid the area during construction due to noise and sediment resuspension.

During the operation phase of the proposed project, the turbines will produce noise over the expected 20-year useful lifespan of the project, potentially impacting the species of fish using the area. Some fish currently present may permanently relocate, while others may be attracted to the area, which could impact the stock and value of the catch. For fish attracted to the sound and shadow, the base of the towers will act as FADs, where fish are known to school, causing fisherman to fish as close to the towers as possible. When fishing around static structures, gear is likely to become snagged on the structure and possibly lost. Derelict gear accumulating around the towers will continue to catch fish, pose an entanglement threat to other species, and create a safety problem.

While the number of trawl and pot fishermen that currently operate on Horseshoe Shoal may be reduced, some will continue to work in the area, increasing the likelihood that fishing gear will become snagged on wind turbine structures. The potential for derelict gear causing entanglement affects all large marine animals, including whales, sharks, seals, dolphins, sea turtles, fishes and diving shorebirds. Derelict nets and pots will continue to capture their target species long after they have been abandoned. The presence of fish caught in derelict gear combined with the

potential for the tower structures to act as a FAD will present an "attractive nuisance" for large marine mammals, heightening the likelihood of entanglement.

The safety of fishing boats and their crews continuing to work the area will likely be impacted with ship collisions with any of the 130 structures. Fishing boat operations near the facility area will increase the risk that wind, fog, current, ship system failures, navigation interference or human error will cause boat collisions leading to injury or death to their crews and damage or loss of the boats, as well as pollution resulting from such accidents.

Another major fisheries concern is the possibility that over time the cables connecting the turbines to the transformer and the transmission cables to land will be uncovered. Horseshoe Shoal is strongly affected by tides and it is constantly shifting. The Corps' DEIS referred repeatedly to large and constantly moving sand waves. The greatest risk that submarine cables will pose to fishing vessels is the situation in which a vessel's gear gets entangled on an exposed cable and the vessel attempts to recover the gear. When attempting to recover the gear, a vessel's center of gravity is often compromised and in a worst-case scenario the vessel may capsize. There have been several cases in which a vessel has capsized during gear recovery and lives have been lost. Fishermen are consequently wary about fishing around cables. Cables would have to be buried to adequate depths (of not less than two to three meters) to guarantee safe long-term burial. Determination of those precise depths should be based on re-examination of previous cable burials in similarly dynamic environments, and is part of the work that must be included in the DEIS.

Other concerns include the monetary costs of the loss of fishing gear, and lost income due to loss of effort in the form of time and valuable catch. As the proposed project and cables will occupy such an extensive area of the Sound, consultation with the fishing industry in the planning stages of the project is warranted, and the EIS must adequately identify and address the potential impacts of the project on the commercial fishing industry.

Recommendations

- MMS should consult with the following organizations to gain an improved understanding of specific areas of concern: Massachusetts Fishermen's Partnership; Massachusetts Lobstermen's Association; Massachusetts Division of Marine Fisheries; National Marine Fisheries Service, Northeast Regional Office; Massachusetts Commercial Fishermen's Association; Massachusetts Office Coastal Zone Management; and the Coast Guard.

- MMS must conduct a major stock assessment survey (including commercial, recreational and non-target fish and shellfish species) to establish an understanding of species habitat use, distribution, diversity, and abundance to support the impact assessment in the DEIS. The survey should collect data over the course of a full year in order to understand changes in the fishery throughout the different seasons. The Corps' DEIS inappropriately limits itself to spring and fall trawling surveys; such data are not regarded by fisheries managers as stand-alone measures of overall species diversity and year-round abundance. Data collection should occur each month, with a frequency of 2-4 days chosen randomly throughout the month for each type of fishing vessel. Communication with fishermen will provide information on the most common fishing areas of Horseshoe Shoal. Sample areas must be established in the construction area and at a distance from the proposed site.

  These studies should not only consider adult fishery target-sized fish. They should also consider whether any of the habitats in the development area are used as spawning or nursery areas by commercial species. This may be accomplished by plankton hauls to directly sample juveniles, or by associating recent and thorough habitat mapping with known habitat-spawning/nursery use behaviors if this information is adequately provided in the scientific literature. Results should then be related to the anticipated effects of the proposed project on those habitats and in turn on the fisheries supported by those habitats.

- Data collected should include length-frequency and catch per unit effort information. It is preferable to sample the entire catch, but if the obtained catch is too large, it should be possible to take a sub-sample of a known volume. The individual species should be identified, weighed, counted and measured. Environmental data that should be collected include the condition of the sea (wind and weather), surface water salinity, temperature and sediment content. Sample methodologies and protocols must be developed that reflect seasonal changes in fish populations.

  The Corps' DEIS only evaluated the landings data for commercial fisheries in the Sound only up to the year 2000, even though there have been shifts in commercial fishing effort since that time. The Corps' DEIS also mistakenly equates landings data with the total catch for NMFS area 075 (MDMF Area 10) and as a result underestimates the commercial catch in the Sound. The Commonwealth is also requiring a targeted resource survey to assess the distribution and abundance of commercial and recreational shellfish species, in addition to non-target shellfish species. Because of

failures in the Corps' DEIS, the MMS DEIS must reexamine the resource characterizations developed from state and federal finfish data in consultation with fisheries agencies to accurately represent conclusions.

- MMS must conduct research on the effects of noise on the behavior of fish. An understanding of the power of the sound, in terms of magnitude and frequency as well as pressure, is essential. The measurements of wind facility-generated sound must by compared to known sensitivity thresholds of fish species that can be expected to be in the project area.

- MMS must examine alternative tower locations to minimize impacts on spawning species and nursery areas. Side-scan sonar and video surveys should be used in conjunction with bottom contour mapping to identify areas where higher value habitat occurs. Turbines should not be located in areas of high habitat value. Tower installation should also consider species spawning periods. Critical spawning times for sensitive species in and around the proposed lower locations should be identified and avoided.

- In determining the likelihood of the towers acting as FADs, alternate tower location, structure and orientation should be considered. The shadow impact of the service platforms on each tower also must be considered in the analysis.

- The DEIS must consider the fishing seasons when planning the installation of the project. Installation should be planned to avoid the large groundfish trawl fisheries to minimize lost effort claims as well as derelict gear. The lowest fishing effort is observed between October and February. Restricting construction to this time frame would minimize impacts to commercial fishing activities.

- When planning the locations of the towers, adequate consideration must be given to the passage of fishing vessels and their towed gear. The towers should be arranged so as to allow customary fishing vessels and techniques to continue to fish these waters. The orientation should provide space for vessels to maneuver, as trawlers rarely fish in straight lines. Consultation with the fishermen who frequent Horseshoe Shoal would provide an idea of normal trawl paths. Modern GIS plotting units are used on many fishing vessels and fishermen are able to save past trawl routes electronically. An examination of this data will provide examples of normal routes and densities of tows in specific areas. The Corps' DEIS inadequately discusses the project's impact to active fishing vessels; in particular, while the DEIS states that fishing vessels will be able to travel in a straight line

through the project site, fishing vessels attempting to maneuver in alternate courses may be impacted and their efficiency may be reduced.

- The DEIS must fully characterize the potential socio-economic impacts from the project, which includes an estimate of lost effort likely to result during both the installation phase and for the long-term life of the project. The resulting direct and indirect economic impact on the commercial fishermen, shipyards and marine suppliers, and the secondary impacts to the Cape and Islands' economies must also be determined. The Corps' DEIS does not attempt to estimate the economic value of commercial landings; people fish for dollars not pounds.

- The DEIS should evaluate the likelihood for continued trawl and pot fishing within the project area. The potential for the towers and cables to either snag fishing gear or serve as an accumulation point for derelict gear must be a focus of the analysis. Once installed, as long as commercially-valuable fish are present in the turbine field, commercial fisherman will continue to attempt to harvest them. Anchors, pots, and other bottom gear potentially will snag on cables exposed by shifting sands. Lines and nets are likely to get caught on rivets, seams, or other protrusions on the turbines. Derelict or "ghost" gear may accumulate around the turbines. In addition to the direct cost impact to the vessel owner from losing gear, these lines and nets could provide a source of entanglement for marine mammals feeding on fish that may aggregate around the towers, or for sea birds or sea turtles using the area. The Corps' DEIS neglects the proposed project's potential to adversely affect fishing activities due to the uncovering of cables or entanglement issues. If a cable becomes exposed or moves toward the surface, commercial fishing activities may be excluded from the area due to potential conflicts with trawling gear; further analysis is needed in the event that the target cable depth becomes problematic. Furthermore, the monopoles and scour mats may preclude certain types of fishing, such as weirs and mobile gear. MMS must investigate this issue.

- As a mitigation measure against expected claims of lost effort due the presence of the project, a system should be established for dealing with fishermen's claims of lost effort and time. By creating a standardized method to investigate claims, no fishermen can claim bias or suggest they were treated unfairly. A pre-construction baseline must be established so that claims arising out of construction and operation period impacts can be fairly assessed.

- A field study should be performed on the sediment resuspension levels expected to be experienced during the anchoring of each tower and nacelle and during jet plowing. At present, only limited research has been conducted, and additional field studies are required to adequately estimate the sediment impacts from the significant amount of cable and monopile installation proposed as part of this project. The conclusion in the Corps' DEIS that the construction impacts to benthic resources would only result in temporary displacement and habitat modification is not supported by the data; there are little site-specific data in the Corps' DEIS that would substantiate the claim that all benthic habitats will return to pre-project conditions after cable laying and construction are complete; the baseline pre-project conditions are not even adequately defined or mapped; the impacts to benthic habitats during construction have not been fully evaluated.

- MMS should develop cable awareness charts to be overlaid on National Oceanic Atmospheric Administration (NOAA) charts and show the cable route along with a route posit on list. The chart should provide a toll free number for vessels that believe they're hung up on a cable to call and be advised on how to proceed. If it is determined that: a vessel is caught on a cable, it may be advisable for the vessel to release the gear for safety reasons. In the case where gear is sacrificed, full compensation of the gear tends to be the industry policy. The DEIS should identify a monitoring and recovery procedure to ensure that abandoned fishing gear is quickly recovered, and the potential entanglement risks to marine animals are minimized.

4. Benthos and Sediment Impacts

The proposed project may affect the hydrodynamic and sedimentary processes of Nantucket Sound through direct construction impacts and by altered current and tidal flows and changes in the wind regime. The project could cause wave and current interference patterns that would likely alter the sediment composition and distribution of Horseshoe Shoal. These long-term hydrodynamic effects may have far reaching implications that could affect the sediments of adjacent areas of Nantucket Sound, nearby shorelines and benthic communities.

Short-term increases in suspended sediment concentrations are anticipated to occur as a direct result of the proposed installation of monopiles and jet-plowing of submarine cables. Operational impacts to Nantucket Sound sediment distribution and composition may also occur due to scour around turbine structures and exposed cables.

Potential environmental risks associated with sediment disturbances include the following:

- Impacts to marine organisms living in the sediment (infaunal benthos) to be altered as a result of installation of the submarine cables.
- Impacts to nearby marine habitats due to altered hydrodynamics.
- Diminished water quality resulting from the re-suspension of sediments.
- Impacts to marine organisms due to the deposition of re-suspended sediments.
- Possible erosion/accretion along coastal areas due to altered sediment transport and deposition.

Recommendations

In light of considerations raised in the preceding section and in addition to suggestions made as part of that discussion, the following recommendations are made for inclusion in the DEIS:

- The MMS should conduct its own studies of benthos in the project area, and not utilize any of the benthos components in the Corps' DEIS, which were utterly inadequate and invalid, useful for producing only species lists but not for quantitative or statistical comparisons or forecasts of any kind. In the Corps' DEIS, the field sampling design was inadequate, the field sampling procedures were incapable of producing statistically comparable data, and the laboratory analyses of benthos samples were highly questionable. Benthos evaluations must therefore be redesigned and conducted to provide new and more useful data.
    - The new sampling design must include sediment sampling for particle size distribution analyses at every sampling station, so that infaunal habitat correlations can be established relative to the benthos community components found in the benthos samples. Definition of these relationships is crucial to forecasting the impacts on infauna benthos of particle size redistributions caused by sediment resuspension and re-settling in the development area. In addition, particle size distributions will be useful in analyzing resettling rates and distributions of resuspended sediments following site disturbance, as well as in sediment transport modeling efforts. The Corps' DEIS tried to apply sediment analyses intended for

structural input to benthos analysis, which is neither effective nor appropriate. The new particle size analysis should be conducted using at least 8 size categories, but preferably more.

- Replicate benthos samples (minimum three) should be collected at each sampling station to account for inter-sample variation when defining the benthos community occurring at each station.

- The Corps' DEIS reported that the benthos grab sampler used in those studies sometimes failed to successfully sample some areas, presumably because the habitat in these areas was for undefined reasons not amenable to sampling with the equipment being used. Rather than defining the habitat in these areas, the field team simply moved on to the next station, and the DEIS ignored the possibility of habitat variation, assuming in its benthos analyses that the entire development area consisted of sand. It is therefore recommended that different sampling gear be utilized, such as a Smith-MacIntyre grab, which is a heavier and framed grab with a spring-driven closure capable of sampling more resistant habitat than does the gear used for the Corps' DEIS. (*Smith, S.I. and A.D. McIntyre. 1954. A spring loaded bottom sampler. J. Mar. Biol. Assn. UK 33: 257-264.*)

- As samples are collected in the field, each entire sample should be sieved on board the research vessel suing seawater, and the materials retained by the sieve should be collected and preserved in sample containers and labeled. This will assure quantitatively comparable samples. In the Corps' DEIS studies, the entire benthos sample including sediment was retained, and when more material was collected than could fit into the pre-prepared sample containers, the excess was apparently discarded, resulting in quantitatively non-comparable samples. In addition, only the top layer of sediment was sampled by hand from each grab, with the thickness of the layers being inexact ("1 ½ - 2 inches") and variable among samples. These errors must be avoided by the MMS DEIS.

- In the laboratory, either all the organisms (excepting nematodes) from each sample should be sorted, taxonomically identified and counted, or this should be conducted on sample aliquots accurately achieved using an appropriate sample splitting procedure. Data from the Corps' DEIS was created by counting and identifying only the first 100 organisms sorted from each sample, and the specific

methods applied to this process are to this day obscure to us. The benthos studies should be redesigned and re-conducted.

- Nematodes are rightly considered meiofauna and occur in such great numbers that they should not be counted in these studies; nor should their numbers be mixed with macrofaunal data, lest they skew statistical analyses, rendering them valueless – as was done in the Corps' DEIS.

- To account for seasonal variation, benthic surveys should be conducted at least twice - i.e., summer and winter. An improvement would be three surveys: early- to mid-spring, mid-summer, and mid- to late-fall.

- Models should be utilized to forecast the mechanisms of resettling of resuspended sediments in cable laying trenches to predict the sedimentary habitats that will exist following development. These results should be related to the community types naturally occurring in similar habitat types in order to predict the kinds of infaunal benthic communities that are likely to occur in the altered habitats.

- Detailed bottom habitat maps of the development area should be made using appropriate technologies. The benthos sampling design should assure that all identified habitat types are sampled sufficiently to characterize the benthic communities inhabiting them, thereby providing a baseline characterization of the development area's benthic resources. The Corps' DEIS referred to areas of submerged aquatic vegetation, and the common occurrence of patch reef, rubble, gravel and glacial till areas, but failed to indicate their extent, locations, or associated benthic or fish communities. These maps should be used to site cable courses with the last environmental impact. They should also be related to experimental results from studies of jet-plow effectiveness to assure that the cables will in fact be uniformly buried, without high points that might lead to sections of resuspended cable strung between hard habitat areas, as was found in California. (*Morro Group. 2000. Final Environmental Impact Report, MFS Globenet Corp. / Worldcom Network Services Fiber Optic Cable Project, SCH 98091053. Submitted to County of San Luis Obispo, Dept. of Planning and Building.*)

- The new benthos study should also include a program of sampling appropriate for characterizing populations of invertebrates too large

to be adequately sampled in the infaunal surveys described in previous recommendations. The populations include lobsters, crabs, whelks, and large clams. Lobsters, crabs and whelks can be sampled with bottom trawls or pots, but clams will likely have to be sampled with clam dredges. These data will be appropriate for estimating population impacts, and perhaps for enabling development to avoid particularly productive areas.

- The DEIS must include a detailed baseline analysis of local hydrodynamic factors in Nantucket Sound, including a description of tidal flows, the local wave regime and a detailed bathymetric survey of the sea floor over the project site and environs, including existing seabed features. A detailed discussion of the seasonal wave climate must be included in the baseline analysis, including a determination of the significant seasonal wind directions and intensities.

    - The potential impacts of jet-plowing to install transmission cables should be determined by experimental studies in various bottom types and current regimes. These experiments should include definitions of the particle size distribution of sediments both before and after cable installation, as well as the transport and distribution of sidecast sediments. The Corps' DEIS made numerous statements that jet plowing is the least environmentally intrusive means of laying buried cables in the proposed development, but no foundation for thee statements was ever provided. These studies should also be done for the PEIS.

    - These jet-plow studies should also examine the jet-plow's effectiveness in benthic habitats other than sand that are expected to occur within the development area.

    - These jet-plow studies should also be designed to clarify the fate of benthic infauna resident in the jet-plow's path. For example, are whelks and large clams buried by the jet-plow to depths they cannot recover from and therefore destroyed? If so, the numbers of these animals anticipated to be destroyed by construction should be included in impact estimates.

    - The MMS DEIS should include a provision for future periodic monitoring of cable routes to determine whether the cables remain buried or not, with assurance that ascending cables will be reburied as they occur.

- The DEIS should analyze hydrodynamic impacts, and coordinate that study with a coastal processes study that includes a detailed analysis of the interactions between local hydrodynamic factors and the sedimentary environment of Nantucket Sound. Impacts of the proposed project on the rate and pattern of sediment movement on Horseshoe Shoals should be quantified over an annual period. For example, what are the likely impacts on local and far-field sediment deposition or erosional patterns resulting from the interactive hydrodynamic impacts from 130 towers, particularly in the dynamic seabed of Nantucket Sound? What changes to the existing interaction of waves and currents and subsequent mobilization of sediments during storms will occur as a result of the installation of the 130 towers? Wave climate analyses should use the appropriate wind regime data to determine wave characteristics in the project arcs, as well as within other nearby areas of Nantucket Sound. The analyses should consider seasonal external events, such as winter Nor'easters or summer hurricanes.

- The DEIS must consider the potential constructive/deconstructive interference with the existing wave regime, and must include detailed wave refraction modeling, quantify potential wave diffraction between towers, and quantify potential scour effects (both wind-driven and attributable to tidal currents) at the base of the towers. The potential of the proposed project to alter existing Nantucket Sound carrying waves, as well as an assessment of any potential reduction in wave energy reaching the shorelines of Cape Cod, Martha's Vineyard and Chappaquiddick, and Nantucket must be included.

- Although it is generally recognized that wake effects from structures are limited to distances of 10 times the diameter of the structure, local wake effects must be quantified so that the potential impacts to recreational and commercial boat traffic can be better assessed.

- Benthos is an important component of habitat for waterfowl in Nantucket Sound. The DEIS should conduct detailed analyses of waterfowl and their associated food resources that will be affected by the proposed project.

- The DEIS must quantify the anticipated impact to benthos due to monopile and cable installation, including anchor and anchor cable effects, and as a result of sediment transport and deposition. The proposed project involves the installation of 130 towers, a transformer platform, 78 miles of array cable and 2 transmission cables running to shore. Almost 2,200 acres of sea bottom will be impacted by construction activities. The DEIS must properly consider the impacts of the construction, including the rates of

recovery and ultimate benthic community types expected to become established in impacted areas.

- MMS must characterize the existing sediment pathways, re-suspension, transport and deposition, and evaluate how these pathways may be altered due to wave interference from the proposed project. A coastal process study should be undertaken to address these concerns. The DEIS should identify nearby coastal areas that are currently prone to erosion and accretion, and evaluate how these coastal processes may change as a result of the project. In addition, the DEIS must thoroughly address the impacts associated with anchor sweep.

- The DEIS should characterize the temporary construction impacts on water quality due to increase of suspended solids.

- The DEIS must undertake more detailed benthic habitat mapping analysis that identifies eelgrass beds, shellfish habitat, sand waves, and other habitat types such as the rocky outcroppings and rock and cobble habitats reported in the DEIS within the project area, including the path of the transmission cables and the location of monopiles and associated structures.

    - The DEIS must describe and quantify the impacts that will be imposed by changes in bottom topography by the >6,000 4 ft deep anchor scars and the >800 deep holes left by jack-up platform legs. As examples, will these holes affect commercial fishing methods? Will they affect jet-plow operation as the plow encounters 4 ft. deep sheer-walled scars? If models indicate that holes will refill from naturally available sediment transport, how long will this require?

    - Considering the benthic community and habitat associations clarified by the new benthos survey, the DEIS should quantify the direct benthos mortality caused by anchors, anchor line sweep, jack-up legs, and monopole installation, including impacts on larger epifauna such as crabs, lobsters and whelks.

- In the MEPA Certificate on the DEIR, the MEPA Secretary required that the key elements of the dredge plan and related measures should be fully described. This should be addressed in the DEIS.

- The DEIS must develop a large-scale oceanographic model to characterize the likely scour so that the cable burial depth can be determined properly.

- The plastic filaments attached to the mats of the proposed scour protection are non-biodegradable and, even with a maintenance plan in place to assure the integrity of each mat unit, will eventually dislodge and disperse within the marine environment. The proposed mats will contain a total of approximately 588 million four-foot long plastic filaments. A rate of loss of only 1% represents 5.8 million pieces of marine debris in Nantucket Sound. Therefore, the DEIS must evaluate the need for the scour control at the base of the monopiles using appropriate oceanographic modeling.

- The DEIS should consider the use of riprap or similar materials, which will require the proponent to recalculate habitat impacts, if modeling and/or engineering calculations determine that scour protection is necessary.

- Hard structures and hard natural habitats in the area should be examined to clarify the kinds of communities are supported by these habitats. These findings should then be related to the anticipated new submerged habitats being provided by the 130 monopole structures and other project construction. These will be new habitats that will support some kind of biological community, with potentially positive and potentially negative impacts, which should be understood and anticipated. While they could provide habitat and food beneficial to local fisheries, they could also provide habitat for undesirable exotic species such as the sea squirts proliferating on Georges Bank.

- The DEIS must provide for a schedule of post-development benthos community monitoring to validate predictions and to enable corrective actions as problems and issues are identified. This monitoring should include a schedule of sediment chemistry monitoring in the areas of representative monopoles and other structures.

- Decommissioning impacts should be characterized and quantified.

5. Terrestrial Impacts

The proposed project will have direct terrestrial impacts associated with cable transmission installation activities. The DEIS must provide information on how storm water will be managed along the cable route during and after construction and how the project will comply with the Regional Policy Plan. In addition, information detailing plans on how direct and infiltrate runoff will be kept outside of the Yarmouth Water Supply Wells should be included. The DEIS should also explain in more detail the significance of each wetland area to the interests enumerated in the Wetlands Protection Act.

The DEIS must address wildlife impacts, including rare species and bats. The fact that the transmission line will pass through, between and near a number of habitat resources that are of such quality that they are identified by the Natural Heritage program suggests that there are likely many common species of wildlife present that should be addressed. The DEIS must address the amphibians and reptiles that are likely utilizing the wetland and pond resources and, depending upon the particular species, may migrate across roadways to get to the other side. If there is a long open trench present during these migration periods, it is likely that a significant number of amphibians and/or reptiles will be found in the trenches each morning when work begins. The DEIS must identify the species likely to inhabit these natural areas and their breeding and migratory patterns, timing of work in relation to those patterns and routine measures that will be implemented to minimize adverse effects to the non-rare residents of the natural communities.

6. Aquatic Vegetation

The proposed project will impact wetlands. The project will affect coastal wetlands through work associated with cable installation and offshore wetlands through the construction, monopole emplacement, and supporting/protective structures. Proper precautions are necessary to mitigate impacts associated with the proposed project.

The DEIS must address discharges that are regulated under section 404 of the Clean Water Act. Section 404 applies to both the cables and to portions of the project that are within the three-mile limit of the territorial seas. The installation of the cable using jet plow technology creates a discharge of dredged material because it relocates or disturbs significant amounts of sand. The DEIS must also consider the potential for sediments to be re-suspended by anchor line sweep. The anchor lines are predicted to scrape the bottom to a depth of 6 inches, probably repetitiously, a process that will propel sediments into the water column. The Corps' DEIS did not estimate how much and how far these re-suspended sediments may be carried under conditions prevailing at the site. MMS must address this issue.

MMS will also have to address the fact that the cables are non-water dependant structures and should not be located in territorial waters at all. Because the cables are regulated under section 404, they must be evaluated against the Clean Water Act's section 404(b)(1) Guidelines. Under the Guidelines, the applicant must evaluate opportunities for use of non-aquatic areas and other aquatic sites that would result in less adverse impact on the aquatic ecosystem. *See* 40 C.F.R. § 230.10(a)(1)(i). The DEIS will have to make appropriate factual determinations regarding the potential short and long-term effects of the proposed discharge and fails to consider such other alternatives. Because the proposed discharge is not water dependent, and because it

would be located in a special aquatic site, there is a presumption that practicable alternatives to the discharge are available. *Id.* at § 230.10(a)(3).

Based on requirements established by the MEPA Office, it will be necessary for MMS to conduct a survey on statewide eelgrass distribution, and provide a map that details the transmission line route with the vegetation mapped. This study must require a discussion of the methods used for this study. Eelgrass is a critically important sub-tidal marine angiosperm, forming extensive underwater meadows. Eelgrass beds act as a nursery, habitat, and feeding ground for many fish, waterfowl, and invertebrates, and consequently, are critically important components of resource management initiatives. MMS must demonstrate that impacts to eelgrass will be avoided or minimized before a compensatory mitigation plan for unavoidable impacts is developed. MMS should also encourage the project proponent to develop a Before Action Control Impact design and include this information in the DEIS.

G. Safety Impacts

The proposed project presents tremendous public safety concerns that must be addressed in the DEIS. Navigation safety and marine environmental protection in the context of offshore energy development are of concern for two main reasons. The first is that some energy facilities, notably wind energy turbines, interfere with aviation, defense and ship navigation radar systems. The second is that large offshore structures can pose a threat to existing and ever growing marine traffic and recreation systems, and that both increase the likelihood of otherwise preventable marine collisions and their ensuing marine pollution incidents.[15]

Nantucket Sound is a main navigation route for cruise liners, tankers, cargo ships, ferries, and fishing boats, as well as recreational boats and tourism vessels. The path a vessel follows is often dictated by unpredictable factors like wind, waves, currents, visibility and the maneuverings of other ships which are also subject to the elements. The presence of just one offshore wind turbine tower adjacent to a major navigation channel or passenger ferry route poses a significant public safety risk for collisions and marine pollution incidents. This is particularly relevant in an area like Nantucket Sound where the volume of marine activity is dense and projected to increase over time, where marine activities are confined by geographic boundaries and shoals,

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[15] As noted in APNS letter of concern to MMS on February 22, 2006: "Government sponsored research in the UK continues to further identify the hazards caused by wind turbine-generated radar interference. In addition to significant civil aircraft navigational interference, the UK's Ministry of Defense, Department of Trade and Industry, Department of Transport and its Maritime Coastguard Agency, the British Wind Energy Association and others have initiated trials to further explore the military, search and rescue and marine offshore safety risks generated by wind energy towers, especially those located in large groupings."

where violent storms are not uncommon, when ice can clog or crowd narrow channels and where fog is experienced as many as 200 days of the year.

1. Aviation Risks

Government sponsored research in the UK continues to further identify the hazards caused by wind tower generated radar interference. In addition to significant civil aircraft navigational interference, the UK's Ministry of Defense, Department of Trade and Industry, Department of Transport and its Maritime Coastguard Agency (MCA), the British Wind Energy Association and others have initiated trials to further explore the military, search and rescue and marine offshore safety risks generated by wind energy towers, especially those located in large groupings. According to the UK Civil Aviation Authority (CAA), wind turbines can interfere with the effectiveness of primary and secondary radar surveillance systems and radio navigation aids. The impact is magnified when turbines are grouped together in a complex.

A recent article by David Learmont sited to the CAA and explained that "There are multiple ways in which wind turbines can interfere with radar surveillance, especially if they are in groups, in radar line of sight, and located within 28km (15nm) or less of the radar head." David Learmont, *UK highlights perils to air traffic surveillance of growing wind turbine 'farms'*, Flight International (July 7, 2006), http://www.flightglobal.com/Articles/2006/07/11/207721/UK+highlights+perils+to+air+traffic+surveillance+of+growing+wind+turbine.html. The article goes on to cite the UK CAA's explanation of different types of interference and provides a schematic of how the interference occurs. The following explanation and diagram is an excerpt from the Learmont article:

According to the CAA the types of interference include:

- Swamping the receivers: this refers to primary radar, and occurs when "the bulk of the wind turbine structure may reflect sufficient energy to swamp any reflected energy of aircraft in the same area."

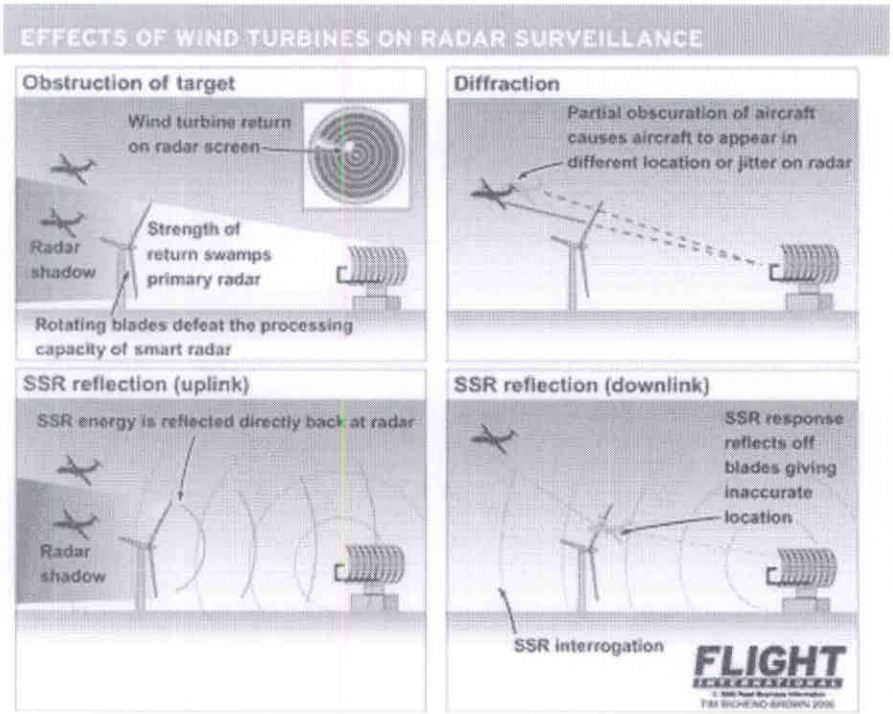
- Defeating moving target processing: "If the rotating wind turbine blades are within or close to the radar line of sight, then the Doppler shift in reflected energy from the blades may defeat any moving target processing and display the blades as targets or tracks that could be mistaken for aircraft."

- Presenting an obstruction: "If the wind turbines are within radar line of sight and aircraft are required to be detected at longer range behind the wind turbines then the following two effects may occur: obstruction – aircraft detection is lost in the shadow of the wind turbines; and diffraction

– partial obscuring of the aircraft radar reflections by the wind turbines causes azimuth errors at the radar [so] the aircraft can be displayed in a skewed position, or appears to jitter in position as it passes behind multiple blades."

- SSR reflections: "SSR energy may be reflected off the structures in both the uplink and downlink directions. This can result in aircraft, which are in a different direction to the way the radar is looking, replying through the reflector and tricking the radar into outputting a false target in the direction where the radar is pointing – in other words, at the obstruction."

- Navigation aid signal effects: depending on the relative position of the wind facility, it "can affect the propagation of the radiated signal from instrument landing systems. As a result, the integrity and performance of these systems can be unacceptably degraded."



The proposed project poses a significant threat to aviation activities on and around the Sound. A July 2006 report by the UK's CAA is incorporated by reference and as Exhibit 6. The report is the most current on the topic and found that radar interference from wind turbines occurred where turbines were located more than 17 miles from the head of the radar. The proposed project is to be sited within 10 to 15 miles of the existing Barnstable Municipal, Martha's Vineyard, and Nantucket Memorial general aviation airports, the 102nd Fighter Wing Unit at the Otis

Massachusetts Air National Guard Base, United States Coast Guard Air Station Cape Cod and the United States Air Force 6th Space Warning Squadron PAVE PAWS facility, and a planned United States Army Space and Missile Defense Command radar facility. The radar installations at these airfields support civilian, commercial, and military air operations. The extensive area that would be encompassed by the proposed project, the height of the turbines, and span of the blades makes it highly likely that there will be some level of line-of-sight interference with microwave and telecommunications transmissions between the Cape and the Islands. As the existing radar, microwave, and telecommunications systems surrounding Nantucket Sound provide critical safety functions, the DEIS must fully consider the potential impacts of the project on aviation activities.

2. National Security Risks

The MMS must also review the proposed project for its impacts on radar used for national security purposes. Of course, the Department of Defense study will be important in this regard. The key issue with respect to the proposed project is its proximity to critical domestic security detection systems. The UK Ministry of Defense (MOD) has blocked five offshore wind plants because of potential interference with military aviation radar and the flight paths of nearby bases. After assessing the impact of wind facilities proposed to be located within the line of sight of air defense, air traffic control, and weather radar, the UK MOD established a list of safeguarded sites, consisting of 40 airports and military sites, where the authorities must formally review any proposed wind turbine installation.

MMS must consider the results of the on-going government research in the UK and evaluate the impacts of the proposed project on the Air Route Surveillance Radar on Cape Cod used by the U.S. Air Force and Homeland Defense. Referred to as PAVE PAWS, this early warning radar is a critical component of the Air Force Space Command. Large offshore wind facilities pose risks to the PAVE PAWS technology, which is the backbone of the East Coast terrestrial air defense system protecting the United States from Canada to Florida. Furthermore, the proposed facility will impact Coast Guard activities to protect surrounding coastal areas from illegal activity and security threats. The DEIS must address these critical issues.

3. Ship Navigation Risks

In addition to interference with aviation and defense radar, studies of offshore wind energy facilities in the UK have also shown that turbines can interfere with radar navigation and collision avoidance functions of vessels. The interference impacts radar on maintenance vessels and other ships moving next to the turbines but also affects ship radar at considerable distances from the periphery of a wind complex. As

a matter of public safety and collision and pollution avoidance, the DEIS must address this issue thoroughly.

To that end, MMS should include an assessment made by the Coast Guard after carefully reviewing guidance provided by the United Kingdom's Maritime and Coastguard Agency (MCA) and the continuing government studies in the UK. The MCA has been the leader in the development of marine safety and environmental protection standards for offshore wind facilities. In August of 2004, the MCA implemented guidelines for critical navigation safety decision factors in site selection for offshore wind facilities, based on its discovery, through navigation and search and rescue studies, of critical marine radar interference attributed to wind facilities. The MCA later revised their standards to include new guidelines restricting offshore search and rescue operations in the vicinity of wind facilities. Offshore wind facilities seriously disrupt basic navigation, collision avoidance and pollution prevention safety measures aboard ships, boats and search and rescue assets for up to 1.5 nm from the periphery of singly located facilities and beyond for co-located facilities. Based on the trials, the MCA proposed that a minimum safe separation distance of 1.5 nm be maintained between offshore wind facilities and shipping routes, and the application of a minimum separation of 700 meters (2,300 feet) between the individual turbines. In areas with significant marine traffic and foggy, such as Nantucket Sound, turbulent weather this is a critical safety and environmental protection issue.

The MCA proposed a new model template in May 2005 for establishing turbine boundaries in relation to shipping routes. In addition, the MCA proposed new guidance in August of 2005 to mariners operating in the vicinity of offshore wind facilities, including consideration of turbine markings, routing options, interference with communication and navigation systems, turbine rotor sweep ranges and potential effects, maintenance of safety or exclusion zones, and various options to consider. Finally the UK Department of Trade and Industry, as the lead UK government entity for wind facility applications, issued the first-ever ship navigation safety assessment model that incorporated the MCA safe separation template. MMS should consider these materials in the DEIS, as well as other issues identified through MMS's consultation with the Commandant of the Coast Guard.

As indicated by an independent study, attached as Exhibit 7, the navigation safety study included in the Corp's DEIS was incomplete and seriously flawed and should not be accepted or included in the MMS DEIS.

4. Helicopter Interference and Search and Rescue Impact

In addition to the issues of radar interference raised above, the proposed project will pose unique and substantial risks to helicopter search and rescue operations.

On July 25, 2006, the Coast Guard conducted a helicopter rescue of a veteran fisherman and his one-man crew after his commercial fishing boat sunk on Horseshoe Shoal.[16] The sinking of the fishing boat by an individual who had 23 years of experience navigating the shoal and the rescue effort that followed demonstrates that accidents will happen. Rescue helicopters, which typically fly and hover less than 100 ft above the water, are an important lifeline on this heavily trafficked waterway. The DEIS must consider the impact that the proposed project will have on such rescue efforts in the future.

Not only do wind turbine developments add physical obstructions to helicopter rescue routes, but according to the recent report by the United Kingdom's Civil Aviation Authority (CAA): "Wind turbine developments within 6 nm of an offshore destination could impact on the ability to conduct some helicopter operations, namely instrument procedures, at the associated facility." This is significant because, in the case of the proposed project, the wind turbine development would not just be within 6 nm of Horseshoe Shoal, it would be on it. The CAA study validates concerns raised in earlier studies by the MCA which published results of a study specifically looking at helicopter search and rescue trials undertaken at the North Hoyle Wind Farm in the U.K. in May 2005. The MCA studies also indicated that the presence of wind energy facilities imposes substantial limitations on the use of helicopters for search and rescue. The MCA reported limitations on target detection, concerns over the general inability to lock turbine blades from a remote location, limitations on the use of radar, thermal imaging, or visual contact, and increased requirements of aircraft power downwind of the turbines. For the safety of Coast Guard rescue teams and the local fishermen, boaters and ferry passengers who may become stranded over Horseshoe Shoal or within 6nm of the proposed project, this issue must be addressed.

The issue of turbine interference with helicopter operations must also be assessed in regards to the safety of the proposed project itself. The CAA report goes on to state: "Moreover, because of the potential to restrict helicopter operations, wind turbine developments within 6 nm, may also threaten the integrity of offshore platform safety cases, where emergency scenarios are based on the use of helicopters to evacuate the platform." In the application material presented on the MMS website, the applicant indicates that the turbine structures will include a helicopter-landing platform for access by maintenance workers in poor weather, and/or rescue personal in the case of an emergency. *See* Application Material Section B: General Information at 5, *last accessed at* http://www.mms.gov/offshore/PDFs/CapeWindProjectPlanFiling.pdf on July 28, 2006. Whatever the reason for the visits to project helipads, the DEIS must

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[16] *See* Gouveia, Aaron; "Boat Sinking Remains a Mystery" Cape Cod Times; July 26, 2006.

assess the collision risk to helicopters destined for the heart of the proposed project, and within 6nm of the proposed project's boundaries.

5. General Public Safety Impacts

The DEIS for the proposed project must address a number of issues that either directly or indirectly affect the public's safety and well-being in the region. These include (but are not limited to) the following: 1) extreme weather impacts on the proposed facility; 2) worker safety and facility access; 3) exposure to oil and hazardous substances; and 4) miscellaneous safety considerations.

a. Extreme Weather Impacts

Nantucket Sound experiences extreme weather conditions that must be addressed in the DEIS. For example, there is substantial ice occurrence in Nantucket Sound, requiring MMS to address: 1) the likely rafting of ice around the offshore structures (and between them during especially harsh winters); 2) partial or full occlusion; and 3) the immediate proximity of the proposed plant to the Main Channel (as well as proximal ferry routes). The DEIS should identify and detail strategies for managing sea and depositional ice at the facility that could pose risks to the facility, hamper (or potentially endanger) proximal vessel navigation, and endanger fishing and facility personnel due to ice thrown from rotor blades. Ice management analysis can be facilitated by quantitative modeling of realistic ice loads on the facility. The facility must be designed to withstand realistic ice loads in order to be safe for facility workers and the public. MMS raised concerns regarding this issue in its comments on the Corps' DEIS:

> Among the considerations are ice impacts and possible accretion from ice drifting out of the harbor areas to the north of the proposed wind farms (minimal) and ice build up on the pylons during extended cold events. Since tides in the area are approximately 6 to 8 feet, ice buildup over time on the cold pylons could form an ice rim on the pylon, but the ice would not create a large rim and would probably not fall off in large masses that could endanger boat traffic in the area. Icing during storm events could cause impacts, but since the pylons are not floating, the major concern would be instability caused by ice on the turbine blades or increase wind loads cause by ice buildup on the superstructure of the support structure.

In addition, the DEIS should address the impacts of a major Nor'easter or hurricane on the proposed project and the public safety. The DEIS should review storm history for the region and evaluate the impacts of a major storm event in the area.

b. Hazards to Workers

Safety hazards associated with working on offshore structures must be addressed in the DEIS. The weather in Nantucket Sound changes rapidly. It is likely that construction work and maintenance will be affected by the difficult weather conditions in the region. The DEIS must address the risks to safety during the construction and operation phases.

Such risks include the risks associated with the transit to and from the facility. Docking in heavy seas and winds may present significant safety hazards. Repair activities may be initiated during periods of good weather, only to change rapidly during maintenance activities. In addition, work on the turbines structures can be quite dangerous. The DEIS must consider the risks associated with subsurface repairs and above surface repairs. For example, monopiles include ladders for access to the nacelle. These structures are very tall, however, with the nacelle hub height at approximately 246 feet. Working at these heights in the marine environment can be quite dangerous. In addition, it is unclear how heavy equipment will be transported to the turbines in general, and nacelle in particular, during servicing of units. Exposure from spilled substances, occupational exposure to oil and hazardous substances must be addressed. A discussion of occupational exposure risks, and corresponding mitigation strategies, stored oil and hazardous substances at the transformer platform and the turbines should be included in the DEIS. Safe access procedures during inclement weather and transport of heavy equipment to the nacelle should be described in the DEIS. As the MMS noted in its comments:

> The Electrical Service Platform (ESP) measures 100' x 200' in 28' of water. It will include ventilation and safety systems, living accommodations, communications, and a helideck. This section should provide detailed information on how the responsibility for maintenance, upkeep, and personnel will be handled.
>
> Number of Vessel Trips: The DEIS should include a discussion of the type and numbers of service vessel trips needed to provide the amounts of lubricating oils, cooling oils (10,000 gallons), diesel oil, and grease that will be needed during the operation of the WTG as described on pages 4-20-4-21. The DEIS should also require Cape Wind to publicly identify the type of oil to be used. Crew boats and service vessel trips are reported for "maintenance." Is maintenance equivalent to the number of trips expected for the whole operations phase? The hydrocarbon carrying capacity of these vessels should also be provided.

The DEIS should also include a description of marine safety measures that will be employed during the construction phase.

c. Exposure to Waste, Oil, and Hazardous Substances

There are a number of other safety risks relating to exposure to waste, oil and hazardous substances. The MMS made a number of observations regarding information missing from the Corps' DEIS that it must now address, including:

> Water Quality: Potential Impacts Outside of Massachusetts Waters: Living accommodations would be equipped with storage tanks for "domestic waste" water for transfer to a service vessel and offloading on shore. Does domestic waste refer to grey water only? Is domestic water stored separately or commingled with sewerage (black water)? What is the capacity of the storage tank?
>
> Any vessel discharge to the sea, or potential discharges to the sea either caused by accidents or improper handling has the ability to affect water quality and therefore must be characterized. They are likely to be largely benign, but a thorough rendering of the impact-producing factors for the Project would need to include them. Overboard discharges from service and construction vessels for construction, operation, and decommissioning phases need quantitative estimates and impacts assessed on water quality and other biological resources that could be affected. Wastes generated on board ship but which are taken to shore for disposal that originate from service and construction vessels during each phase need to be characterized and direct or indirect impacts on onshore water quality discussed.
>
> This section does not: 1) mention if deck drainage, bilge, ballast, or any other liquid discharges from service or construction vessels is to take place, 2) explain how domestic and sewerage waste water is managed aboard these vessels, 3) provide estimates of wastes quantities of grey and black water generated per monopole and as a total Project (requires an estimated crew size for these vessels that should be reported in Section 4.0 or this section), and 4) discuss the regulations and agencies responsible for discharge limitations. We recommend that these data are amenable to a table that could report an estimated quantity per monopole and a cumulative amount for the entire Project for each waste type. MMS has used New England

River Basins Commission (1976) for domestic and sewerage discharge rates per person on service vessels.

This section does not discuss solid waste and trash handling at sea or the regulatory structure designed to restrict it. Provide an estimate for how much solid waste is to be generated per monopole and as a total Project. Also lacking are impacts on biological resources that might contact trash and debris originating from the Project should improper handling occur. Birds or turtles have been known to mistakenly feed on plastic thinking it was prey, and marine mammals or turtles can injured or be killed after becoming tangled up in plastic.

This section does not 1) mention the diesel fuel capacity and number of tanks for the designated ship(s) or class of crew boat or service or construction vessel to be deployed during construction, operation, and decommissioning, 2) discuss the likelihood for diesel spills to occur and causes for typical spill size classes at sea, 3) the physicochemical characteristics of spilled diesel on sea water, 4) aqueous toxicity of spilled diesel, and 5) impacts on biological resources that might contact a slick should one occur, such as finfish or birds that tend to rest or feed on the water surface.

d. Miscellaneous Safety Issues

The DEIS must address the safety impacts associated with other aspects of the project as well. The DEIS should discuss the minimum depth that the inner-array cables will be buried to assess the potential impacts associated with : 1) large vessels anchoring or dragging anchor; 2) fishing vessels dragging on these cables; 3) shifting sand waves on inner-array cable burial.

The DEIS should also address the risk of turbine failure. For example, if a rotor blade should break off the hub at a given point in its rotation, where would it land? How would it vary at different wind speeds? It would seem hazardous to allow any vessels within a given radius of a turbine; the radius should be based on the longest possible trajectory of a blade plus a safety factor.

The DEIS should address the safe approach distance for vessels with masthead heights exceeding 75 feet and the minimum distance for small boats to avoid losing control in eddy currents generated by the turbine foundations. For example, the rotor blades are 164 feet long and the span is longer than a football field (328 feet). When launched, the turbine would have momentum from the rotation and start from a hub height of 105 feet. If a sailboat with a 60 foot mast is the potential victim, a safety

radius of several hundred yards would appear appropriate. Will there be a safety "keepout" radius about the base of the tower, how will it be marked so vessels can avoid it? The DEIS must address all of these issues.

6. Recommendations

In addition to those recommendations outlined in the discussion of safety impacts above, APNS would like to incorporate into the DEIS the following suggestions to MMS and the Coast Guard for addressing some of the safety issues outlined above:

- Coast Guard development of clear/practical marine safety and environmental safeguards that should include at a minimum:
    - National navigation safety standards that protect and enhance the operation of commercial and recreation vessels.
    - Coast Guard detailed review of marine navigation and marine environmental protection risk assessments to a recognized model for each proposed offshore site accounting for the operations of current marine users as well as projected marine use over the proposed life of an offshore facility.
    - Coast Guard detailed review and evaluation of marine radar and other electronic interference attributed to the presence of an offshore facility including proposed mitigating actions and solutions for each site.
    - Coast Guard developed and imposed minimum safety-separation distances and zones between offshore facility sites and vessel/boat operations including transit, anchoring, fishing, emergency maneuvers/recovery, etc.
- Coast Guard review and evaluation of known shortcomings in the navigation safety and marine pollution prevention aspects of the site proposed for Nantucket Sound:
    - Design review to a national marine safety, marine structural integrity and environmental protection standards.
    - Conduct of a marine risk assessment prepared to a recognized standard.

- Realistic assessment of adverse effect on navigation safety or to offshore search and rescue specifically for a proposal whose boundaries lie adjacent to and less than 1,000 feet from the Sound's Main Channel and within 1.5 nm of established passenger and car ferry routes, including high-speed ferry service.

- Assessment of the adequacy of separation of the facility towers from current or projected vessel operations to account for marine radar interference which may extend a minimum of 1.5 nm from individual facility towers.

- Assessment of safe emergency recovery distances and margins for crew or vessel reactions to common casualties such as loss of steering, power, propulsion, dragging anchor.

- MMS consultation with the United States Air Force, United States Coast Guard, United States Army Missile Defense Program and Massachusetts National Guard should occur to determine whether the wind turbine generators have any potential to adversely impact these national defense radar installations and operations.

- MMS consultation should occur with the Massachusetts Aeronautical Commission, and the operators of the Barnstable, Martha's Vineyard, and Nantucket airports to determine whether there are any issues that must be addressed, or technical evaluations that must be conducted. This should be conducted regardless of whether the FAA has issued a no-hazard determination.

- MMS consultation with owners of microwave facilities. Existing microwave relay facilities on the Cape and Islands should be identified, and owners contacted to determine which cross Sound facilities may be impacted by the placement of the towers. Maps of the microwave facilities should be prepared, and the microwave paths plotted to determine whether the turbine nacelle or blade circumference would intersect any microwave paths. MMS should work with these facility owners and operators to determine an appropriate course of evaluation and mitigation.

- MMS should contact and consult with television and radio stations serving the project area. The DEIS should evaluate the potential impact of the proposed project on commercial radio and television services in and around Nantucket Sound.

- MMS evaluation of the potential impact to other noncommercial telecommunications signals such as the Coast Guard's Long Range Aid to Navigation -C facility on Nantucket, the National Weather Service, Massachusetts State Police, and the Massachusetts Emergency Management Agency.

H. Aesthetic/Cultural/Socio-Economic Impacts

1. Socio-Economic Impacts

The MMS must conduct an economic analysis of the proposed project. The Beacon Hill Institute has prepared a number of economic studies that would be useful for this purpose. The DEIS must account for all of the direct costs of the proposed project, including the cost of construction, maintenance, and decommissioning. The DEIS must consider the economic benefits and costs of the project. *See* Exhibits 8 and 9. The DEIS assessment of the socio-economic impacts of the project will need to consider all of the following:

- The tourism/recreation industry. The proposed project is likely to have significant, negative impacts on the value of recreational activities and on the area's tourism industry, with tourists reducing annual spending by $57 - $123 million.

- The fishing industry. Evidence submitted by boat captains indicates that the 130 turbines, located in an area where currents are strong, would pose a significant hazard and cause the industry to avoid the area altogether or incur additional costs and risks to those fishing among the turbines.

- Property owners. A broader review of all the relevant evidence indicates the project probably would lower property values, both directly, by degrading the scenic amenities of properties with views of Nantucket Sound, and indirectly, by depressing the area's recreation/tourism industry.

- The ecosystem's intrinsic value. The DEIS should consider the value associated with people who place an economic value on the undeveloped character of the Nantucket Sound ecosystem.

- State, local, and private investments in the ecosystem. The proposed project will potentially undermine efforts to protect and restore the Nantucket Sound ecosystem, including several decade's worth of effort to prohibit industrial development through state and local

regulations restricting development elsewhere in the ecosystem, and by expenditures to protect the ecosystem from degradation.

The DEIS must also provide a full assessment of risks associated with the proposed project, the DEIS must consider:

- Financial risks. The DEIS should consider the possibility of bankruptcy by looking at the project proponent's lack of relevant experience; uncertainty regarding the availability of subsidies in the future; potential technological failure or weather interruptions, as was experienced in Horns Rev Denmark after only two years of operation,[17] and potential accidents.

- Ecological risks. The DEIS should consider the economic impacts associated with ecological impacts, including the possibility of large numbers of bird deaths; destruction or disruption of habitat; impacts of noise on fish and mammals; impacts on fish larvae; disturbances to the seabed; and collisions with boats or ships. Extensive ecological damage resulting from the project—an oil spill, for example—could have enormous economic costs.

- Navigation risks. The DEIS should address the economic consequences of navigational accidents caused by the project. The installation of 130 turbines in Nantucket Sound could increase the number and severity of wrecks and/or cause regulators to impose restrictions on boat and ship traffic in the area.

- Aviation expansion limitations. According to the CAA:

  > Even in circumstances where a proposed [wind] development may not affect a current [aviation] activity, future expansion may be restricted were [the wind development] to go ahead. This could eventually have an economic impact on the airport or activity and this aspect should be taken into consideration when assessing the impact of any proposed wind development.

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17 "Strong winds delay Horns Reef repairs." *Windpower Monthly*; November 2004:49 reported that unseasonably windy weather slowed the retrofit of 80, 2 MW turbines at the Danish Horns Reef offshore wind facility at considerable expense: "With wind turbines offline for longer than expected, production losses are mounting. … If each turbine is out of operation of a month of average winds, the loss amounts to 26 million kWh, worth about $1.5 million. Added to that is the cost of the retrofit."

This issue should be incorporated into a cost assessment of the project.

2. Recreational Impacts

Cape Cod is an immensely popular recreational site. Of the 24 coastal states, Massachusetts had the ninth largest population and ranked ninth among these states for the number of residents visiting beaches (2,779,169). However, Massachusetts placed a disproportionately high emphasis on coastal viewing activities, which includes bird watching, viewing other wildlife and viewing or photographing scenery, where it ranked third (2,143,198). A conservative estimate would place the annual number of people (including European visitors) seeking a "natural nearshore southern New England seascape" experience in the millions.

In addition, Cape Cod is world-renowned for recreational boating. It is through boat traffic (including recreation boaters, fishermen, and ferry travel to Nantucket and Martha's Vineyard) that a large number of people experience the "natural unified nearshore Southern New England seascape" of Nantucket Sound.

MMS must address the recreational impacts of the proposed project. The DEIS should include estimates of the number of recreational boats using the channels, or other areas in Nantucket Sound. The DEIS should review studies to determine the primary reasons people live in or visit the Cape to determine how the project will impact those interests. The DEIS should provide information about the number of people using the recreational resources of Nantucket Sound and Cape Cod and the Islands within the viewshed of the proposed project. The DEIS should describe the nature of the recreation experience and its sensitivity of impacts from the project.

3. Aesthetic Impacts

The beauty of the Nantucket Sound region is one of its fundamental characteristics, and perhaps the single most important reason Cape Cod and the Islands are a destination for so many. The survey for the Massachusetts outdoor recreation plan found that the *primary* reason for being satisfied with a recreation area is its "attractiveness." MMS must conduct a comprehensive study of aesthetic impacts that will be caused by the proposed project because the aesthetic experience is one of the foundations of the culture and tourist economy of Cape Cod and the Islands. A detrimental impact to this foundation could have devastating effects on the public's needs and welfare.

The proposed project can be expected to be clearly visible from large areas surrounding Nantucket Sound. While the project location is several miles offshore, the height and number of structures will render the project visible from portions of Martha's Vineyard, Nantucket, Barnstable, Falmouth, Chatham, and other towns on

the Cape. The primary visual impacts will be from the nacelles located at 260 feet above sea level, the turbine blades with a 328 feel tip-to-tip diameter (164' radius), and the electrical service platforms. The overall height of each structure will be the height of the support tower plus the radius of the blade or 427 feet. The support tower and nacelle will be the most visible elements since these have a greater cross-sectional area than the blades. Impacts will also result from the presence of aviation lights on each tower located on the nacelle at a height of 263 feet. These will be active during both day and night. During daylight, a 20,000 candela white strobe will be used and at night a lower intensity 2,000 candela red strobe will be used. Both will flash at a rate of 40 flashes per minute. Additional marine navigation lights will be located at the base of each tower and on the service platforms; however these will be located much closer to the water, which will minimize their visual impact from a distance.

Of course, aesthetic impacts are not limited to visual impacts. Nor are impacts limited to those occurring on land. The Sound is an immensely popular location for recreational boating and fishing. Users of the water-sheet will see, hear, and feel the impacts of the wind turbines, through the sound and vibration generated by the structures, and through the lights and horns attached thereto. The presence of the proposed facility will unquestionably alter the character of the Sound. MMS must consider the impacts of the project on these elements.

It is also necessary for MMS to look beyond the impacts on historic resources. The DEIS must consider from the project to aesthetic and recreational experiences at non-historic sites, including sites that have scenic protections. Such sites include the Waquoit Bay Area of Critical Environmental Concern, the Monomoy National Wilderness Area, and the Cape and Islands Ocean Sanctuary.

In the area of "aesthetic factors," a simple characterization as "temporary or permanent, and determined both individually and cumulatively to have no effect, no adverse effect or an adverse effect" is inadequate because it gives no indication of the cause or magnitude of the several components that contribute to such a decision. An aesthetics assessment procedure must be used that documents the results at each stage. In addition, in the field of visual aesthetics analysis, "potential views" includes viewpoints that would have a view if only topography were concerned, without the screening effect of vegetation and other elements that could be removed by human or natural causes. Finally, the Cape Cod and the Islands are dominated by a maritime culture that supports tourism and other actives; MMS must consider this culture and its characteristics.

Recommendations

APNS would like to add to the outline of the aesthetics issues detailed in the previous section by asking that the following recommendations and suggestions be incorporated into the DEIS:

MMS should conduct assessments of the following:

- A visibility assessment should be performed for the entire viewshed of the project, including the islands of Nantucket and Martha's Vineyard and the lower section of Cape Cod from Bourne and Falmouth to the west and to Orleans and Chatham to the east. This viewshed should include potentially affected coastal areas as well as the high points of land located inland in Sandwich and Bourne and along the Mid-Cape Highway. The assessment should take into account first terrain only, and then both terrain and intervening vegetation which might block views of the project. The result of this assessment will be the identification of areas in the viewshed from which some or all of the project might be visible.

- Using the results of the visibility assessment, key locations in the viewshed should be identified that are either unique (historic sites, existing scenic overlooks, recreation areas, etc.) or representative of the various land uses in the area. This might include locations from typical beachfront developments, commercial areas, highway vistas, or inland residential areas. The visual impacts on the various unique properties should be assessed. The results of the visibility assessment will be helpful in scooping the geographic area that will need to be evaluated as part of the real estate property value impact assessment that must also be conducted.

- A visual impact assessment component must be part of the alternatives evaluation. Through the use of GIS-based software, the visual impact of alternative upland wind facility locations can be readily compared to that of a Nantucket Sound-based alternative. An evaluation of alternative locations within Nantucket Sound may show that the visual impact on portions of the viewshed is noticeably lessened by one alternative versus another. The MEPA DEIR Certificate encouraged the project proponent to select the two sites with the most open, unobstructed views of the wind facility for preparation of new photo renderings. An analysis of alternative configurations, such as one that uses lower towers, may demonstrate a noticeably reduced visual impact. For example, a wind turbine generator with a total height of 60 meters, instead of the proposed 80 meters, may

have a significantly-reduced visual signature on the horizon. An additional benefit of a smaller tower height may be the elimination of the need for the FAA-required lights, which will also serve to reduce the visual impact.

- MMS must conduct an assessment of other aesthetic impacts of the proposed project, including the appearance, vibrations, noise and lightening impacts from the perspective of those using the Sound itself.

- MMS should also require the project proponent to comply with the following additional requirements of the MEPA DEIR Certificate:

    - Work with the Massachusetts Housing Commission to develop suitable mitigation measures to offset findings that the proponent's preferred alternative for the proposed project will have an adverse effect on enumerated historic properties and present this information.

    - Provide new simulations prepared according to the same specifications for at least two additional viewpoints, to represent sections of the Cape Cod shoreline lying between 14 and 18 miles from the outer perimeter of the project site.

    - Compute values for two basic parameters: 1. the amount of ocean-facing shoreline (in miles, and as a percent of the total within Nantucket Sound) located within three categories of distance from the wind facility perimeter: 0-6 miles (a near-field distance), 6-12 miles (a mid-field distance), and 12-18 miles (a far-field distance, to the farthest reaches of the Sound but still well within the maximum theoretical limit of visibility of the turbine towers); and 2. the arc (in degrees, and as a percent of the full seascape view) that describes the horizontal extent to which wind turbines will be noticeable against the water horizon, for all of the separate viewpoints and grouped again according to the three distance categories stated above.

4. Submerged Forest Impacts

Mapping of the seabed conducted for the Corps DEIS for the proposed project discovered the remains of a prehistoric forest, kettle pond, and marsh. The extent of the submerged forest, which is buried under 6 feet of mud, is apparently still unclear. *See* Beth Daley, *Sunken Treasure: Scientists find evidence of ancient forest buried under the seabed of Nantucket Sound*, Boston Globe December 4, 2005. Scientists are very interested in the discovery in that it resolves a long-standing dispute regarding whether there are prehistoric landscapes. The DEIS must address the scope of the submerged forest by delineating the forest boundaries. In addition, MMS should

evaluate how the proposed development would impact the forest through changes in sea floor sediments and currents. The submerged forest is a critically important resource that must be protected from the adverse impacts of the project.

5. Noise Impacts

Construction and operation of the proposed project can be expected to generate noise and vibration that will emanate into Nantucket Sound either through the air, or down the monopiles and into the water column. This issue was not properly evaluated in the Corps' DEIS. Noise sources will include mechanical noise produced by the gearbox, turbine generator, and electric service platform equipment, aerodynamic noise from the movement of the blades through the air, and the fog warning devices. Vibration sources include the mechanical equipment described above, and resonance of the towers themselves generated by reaction to wind and wave forces. Available literature suggests that the noise emitted from the wind turbine generators is likely to be in the lower frequency ranges, which is more likely to propagate greater distances than high-frequency noise.

Given the large number of turbines proposed, the combined intensity of low-frequency noise generated has the potential to be measurably above ambient noise levels in Nantucket Sound. It is expected that the project will result in an increase of low-frequency noise (10 to 100 Hz) in the submarine environment. Any significant increases in noise levels in and around the project could adversely affect existing recreational use of the water sheet. Loud noise, whether it is generated above or below the water also can adversely affect the organisms that are present in the vicinity of the project. While many species appear generally tolerant of human-induced noise, little is known about the effects of low-frequency noise on certain species of marine mammals. Behavioral impacts may occur with certain species, particularly the whales, as they are more reliant on their ability to sense their surroundings and communicate by low-frequency sound. The effects of acoustic "masking" in which the presence of a loud source generating sound within a particular range of frequency, may impair an organism's ability to use that same range of sound for its own applications, should be evaluated.

Recreational boaters and fishermen intensively use Nantucket Sound. Increased noise levels or a change in the nature and character of the noise environment has the potential to discourage recreational activities in the project vicinity. An additional concern is the cumulative impact of the fog warning devices on residential and other noise sensitive receptors along the shores of the Sound.

Recommendations

In light of issues raised in the preceding section, the following recommendations are provided for inclusion in the DEIS:

- The DEIS should assess and characterize the existing airborne noise environment of Nantucket Sound including the level and character of current noise sources, prevailing wind speeds and directions, and current noise-sensitive uses and receptors potentially-impacted by the wind facility. The DEIS should provide information on impact of water sheet and wave attenuation on noise propagation across the Sound.

- The DEIS should evaluate ambient underwater noise levels in Nantucket Sound and describe how underwater noise propagation in Nantucket Sound is affected by water depth, ocean currents, water temperature, salinity, etc.

- The DEIS should determine the spectrum of the underwater noise (sound intensity as a function of frequency) that will be generated for the entire wind facility (the combined effect of all turbines operating simultaneously) at representative times during the year. The analysis must consider the impact of varied meteorological conditions (wind direction and speed, temperature, and humidity) that occur throughout the year.

- MMS should determine the maximum underwater sound intensity generated at each monopile, the cumulative level within the project area, as well as the intensity at the outer perimeter of the project area, and at sufficient additional intervals to demonstrate a return to the ambient noise levels. This should be conducted for both above- and underwater cases. The Corps' DEIS does not adequately address the issue of underwater sound stemming from the proposed project's construction and operation.

- The DEIS should assess the impact of the change in noise character on recreational boating, fishing, and other public uses of the Nantucket Sound water sheet.

- The DEIS should identify species of marine organisms whose distribution overlaps the area, evaluate which of these species can sense the noise generated by the proposed project, and determine if the noise could damage the hearing or affect the behavior of these organisms.

- The DEIS should conduct an analysis of the potential impact of the fog warning devices on sensitive receptors must also be conducted. This

analysis should consider the frequency of fog events that would result in the use of the warning devices, possible recreational uses of the Sound that may be occurring during fog events, the impact of atmospheric conditions on noise propagation, and the resulting noise levels at shore-based sensitive receptors. The regulatory requirements and guidance concerning the number and placement of the warning devices, including sound power level and frequency standards should be evaluated to ensure the minimum noise impacts result from the use of these safety devices.

- The DEIS should analyze acoustic refraction where sound is channeled into a moderately thick layer of air above the water, and levels can be 10-20 decibels (dB) higher downwind than otherwise would be expected.

- The DEIS should provide additional information of the effects of noise in the marine environment, including: 1) reference to studies regarding underwater noise at overseas installations such as recent European studies that seem to indicate a greater intensity of underwater sound from pile driving and cable setting than that described in the Draft EIR; 2) a discussion of behavioral responses of different species to different types and intensities of underwater noise should be provided; and 3) a nighttime baseline for ambient noise levels, which should be collected and used as a benchmark for measuring incremental increases and total ambient noise levels during construction and operation.

I. Transmission Issues

There are a number of interconnection and transmission issues that the DEIS must address. These issues have been glossed over in the past, and they need to be considered in detail in the DEIS. The interconnection of intermittent energy sources to the grid poses more difficult questions for grid management and energy reliability on the Cape than traditional energy sources. MMS should evaluate the following issues:

1. Generator Interconnection Facilities

There are a host of questions related to generator interconnection that have not been addressed. These are as follows: What interconnection facilities are going to be built on the generator's side of the point of interconnection? Where are they going to be built? Where is the point of interconnection? Interconnection facilities built on the generators side of the point of interconnection have possible environmental and visual impacts on the surrounding area. The DEIS should quantify those impacts, especially

given that the proposed project is being built in an environmentally sensitive coastal zone and/or offshore environment.

What are the electric characteristics of the turbines being proposed by the project developer? What turbine manufacture is providing the turbines? Different turbines have different characteristics and will have differing electrical impacts on the grid, as well as visual and environmental impacts. The DEIS should describe the specific equipment being used for this project and its likely electric impact on the grid.

2. Local Utility Impact

There is a similar problem with the failure of Cape Wind to address local utility imports. Relevant questions are as follows: What is the proposed project's electrical impact on the local utility's distribution system? What new construction activities and upgrades will need to be made in order to accommodate the proposed project's output? Where will any upgrades or modifications be located? Are there any facilities that will need to be constructed? Local distribution upgrades will require construction activities in environmentally sensitive coastal zone and offshore environments. The DEIS should quantify the upgrade activities that will be necessary and examine how the project will impact electrical flows.

3. ISO NE Impact

The record is devoid of ISO New England-related issues. A series of central questions must be answered. In addition, the serious problems with ISO NE "system impact study" (SIS) must be considered. Further, lobbying by ISO NE for the proposed project and against the Coast Guard and Maritime Transportation Act of 2006 should be taken into account.

With regard to the unanswered questions, MMS must address the following points: What is the proposed project's impact on the ISO NE's transmission system? What changes to the grid will be required to accommodate the proposed project's output? Where will any network upgrades be built? Network upgrades built on the transmission provider's side of the point of interconnection may have environmental and visual impacts on the surrounding area that extend far beyond the area where the proposed project is built. The DEIS should quantify those impacts on various parts of New England. This is especially true given that the proposed project would be built in an environmentally sensitive coastal zone and/or offshore environment and network upgrades may have to be constructed in those areas.

What impact will building these facilities have on ISO NE financial markets? How will the new facilities be paid for? Are New England ratepayers going to subsidize the new facilities? How will the proposed project impact congestion in ISO NE as a

whole, as well as congestion around the point of interconnection, thereby affecting the ability of other developers to interconnect? Upgrades necessary to accommodate the proposed project's output may be subsidized by New England rate payers if the proposed project does not pay its fair share. By socializing the cost of inefficient upgrades, the cost of energy for every rate payer may rise and the overall public benefit will decline. The DEIS should examine the financial realities of the proposed project and its impact on New England rate payers. Wind projects, with their intermittent output, can create additional congestion on ISO NE's transmission system. The DEIS should also examine the proposed project's impact on congestion charges, including which customers may incur increased congestion charges as a result of the proposed project.

How will the proposed project affect lower queued interconnection customers? Will the proposed project improve or degrade grid reliability? Will the proposed project provide its own reactive power? Will the proposed project lean on the grid for reactive power? What are the possible impacts of multiple wind projects leaning on the grid for reactive power? How many projects (and what size projects) are currently in the interconnection queue that may lean on the grid for reactive power support? In order to assess the reliability impacts of the proposed project on the transmission grid, the DEIS should examine the reactive power situation in New England. Not all wind turbines are capable of providing reactive power support, and many lean on the grid for their reactive power needs. This may degrade system reliability and increase the social costs associated with the project across the entire system. These effects can be particularly serious if there are many wind generators seeking to interconnect at the same time.

Will the proposed project have any impact on electric systems other than those controlled by ISO NE and local utility? What are the impacts and how will they be mitigated? A project of this size may impact transmission systems other than ISO NE and local utility. The DEIS should look at what other systems may be affected, what upgrades are needed to accommodate those effects, and study any associated environmental and cost effects of those upgrades.

With regard to ISO NE SIS, two points are critically important. First, the ISO NE SIS is inadequate and unclear. Below is a list of questions which the SIS has not addressed sufficiently:

- 50 % a peak load forecast was used for analysis purposes. How was that selected? Why were other loads (e.g., 90/10 load) not used?
- The load flow base cases used are based on the 2000 NEPOOL library cases. Were these cases the latest library cases?

- In 3.3, it is stated that "as much as possible, the various interfaces are stressed at their stability limits." How was this done?

- The effect of new projects on neighboring states was not modeled. Would it affect the results?

- In study results, 4.1, and other results, various replacements of breakers were proposed, however, the basis of choosing the new breakers was not mentioned.

- In 4.3, when discussing the protection system on Canal, it is stated that "we do not have data on how long it takes for these valves to close." Why was the data not made available for the study?

- In 4.5, on page 31, the report states, "The inadvertent operation of the SPS…was not modeled as it is not expected to have any significant adverse impact." How was this concluded?

- In 4.5, on page 31, the report states, "the present Cape Wind model cannot simulate the SPS action of ramping Cape Wind down to 300MW. The results are expected to be similar." Why are the results expected to be similar? Why could the model not be changed to represent the ramping down of Cape Wind?

- In 4.7, on page 33, it is assumed that the wind pattern seen by all of the wind turbines will not vary significantly. What will happen if this is not true? For example, what if the wind changes drastically (starting at one side of the wind complex and propagating across the complex)?

- In section 4.8, where was the data obtained for the 2nd New Brunswick Tie?

- No analysis was done with peak load and 2nd New Brunswick Tie project in service. No reason was mentioned for excluding the project from the analysis.

- In section 4.12, it is mentioned that increasing the impedance of the four 115/ 33 kV transformers, from 9% to 12% prevents a trip of proposed project at 25% power output. Is this result based on a simulation? If so, can more information on the simulations be provided?

- It is recommended that wind facility be operated so as to maintain the availability of the 85% of the wind turbines. Is it always possible to meet this condition?

- There are cost estimates of transmission upgrades in the summary report. What was the basis of these numbers? Are they based on quotes from a vendor? What costs are/are not included? In the report, uncertainties around some of the upgrades are mentioned (e.g., Note 4). Why is a range of numbers not provided for the transmission costs?

Finally, APNS notes that ISO NE has not been an objective, disinterested reviewer of the proposed project. At a minimum, it is clear that no independent "hard look" at the project was undertaken as part of the SIS. ISO NE did not do any of its own analysis, it adopted wholly the studies prepared by NSTAR, a proponent for the CW project.

Further, when ISO NE approved a system impact study for the project it took the unusual step of issuing a press statement praising the project. The lack of any public participation and ISO NE's closed and secretive approach to these deliberations raise significant questions.

As further evidence of ISO NE's lack of objectivity, the organization took the extraordinary and impermissible step of sending letters to Congress in support of the proposed project and in direct opposition to pending legislation. These letters were sent only a few months after ISO NE had submitted pleadings before the Federal Energy Regulatory Commission (FERC) denying that it engaged in lobbying activity and stating that it took no positions regarding pending legislation. The Alliance brought its concerns, as well as ISO NE's actual lobbying letters, to the FERC and subsequently the Commission reopened an investigation into the activities of ISO NE to determine whether it has in fact been engaging in impermissible lobbying activities. The Commission is currently investigating this matter and the state regulatory commissions from virtually all of the New England states have intervened to make sure that their ratepayers have not and will not be charged for ISO NE's lobbying activities. (*See*; NE ISO, FERC Docket No. 06-77-001, *et. al*).

Based upon this track record of bias, MMS should be wary of according deference to ISO NE analyses and positions in the process of reviewing the impact that the proposed project will have on the system and rate payers.

4. Economic Specifics of the Project

Cape Wind has repeatedly refused to reveal information related to project economics. It has never provided disclosure on its profit margin or the legitimate "break even" point. This failure to disclose is astonishing, considering the fact that this project is

viable only as a result of public subsidies. What is the estimated cost of energy production? What are the impacts on consumer rate payer costs? What is the cost of production without any federal and state tax benefits? How much is the proposed project receiving in federal and state tax benefits? What is the estimated cost of energy production without any tax benefits? How does the cost of energy from this facility compare with the cost of energy from other facilities within New England? What is the cost of transmission and ancillary services associate with delivery of the proposed project's output? Where is the proposed project's output going to be delivered? The DEIS should list all power purchase agreements or negotiations to enter into a power purchase agreement involving the proposed project.

In order to perform a cost-benefit analysis, the DEIS should examine the proposed project's fiscal benefits. The Federal Production Tax Credit as well as Massachusetts green credits and tax benefits from accelerated depreciation provide significant financial incentives and should be considered in such a cost-benefit analysis. Without studying these questions, the DEIS will not provide decision-makers with the information they need to make an informed decision as to whether the proposed project's benefits are worth its costs.

J. Power Generation Factors

In its analysis the Corps used a projected power generation output capacity of 1,489,200 MWh). This level of performance is not justified using existing wind performance data. The output used to compute benefits (1,489,200 MWh) is equivalent to an annual capacity factor of 36.3% (if 468 MW) to 40.5% (if 420 MW). This performance claim far exceeds current operating experience at existing wind facilities. Recent operating experience of existing New England land-based wind projects is Searsburg, Vermont, at 20.4% in 2003; Hull, Massachusetts, at 26.9% for project lifetime; Princeton Massachusetts at 21.6% for 2002; and the more recent Madison, New York, wind project at 19.2% in 2003. No evidence is presented to support the claim for a 35-50% better performance than the Hull, Massachusetts, project located along the Massachusetts coastline that may have somewhat similar prevailing offshore wind and icing conditions. Offshore wind facilities around the world also reflect a lower performance percentage than what is being projected. The Danish offshore wind turbine performance in 2003 averaged only 29.4% in 2003 and 31.9% for the first 11 months in 2004. The Danish project most similar to the proposed project, the 160 MW Horns Rev wind plant in the North Sea, averaged only a 24.1% capacity factor in the first 11 months of 2004.

The existing operating data from both United States onshore and European offshore projects are unable to support the use of an average project capacity factor above 30 percent. The Corp's DEIS contained no onsite wind tower data to confirm the

developer's much higher power output estimate, despite the fact that the data tower was constructed for that purpose. Overall, the combination of the historical wind turbine operating data and the projections using existing local wind datasets suggests that a lower project capacity factor of 25-30% (1,025,000-1,230,000 MWh) should be used to calculate wind project impacts, not 36% (1,489,200 MWh).

K. Decommissioning Impacts

The DEIS must provide a thorough plan regarding the removal of the turbines, towers, cables, and other infrastructure in the event that the project ceases operation. These actions would have major environmental consequences and they must be considered in detail. Detail on how the decision to decommission would be made and who would make the decisions concerning it should be provided. The requirements for removal, including the amount of the structure, if any, to remain in the sea-bed, should be made public. The DEIS should address the length of time and potential construction period impacts if implementation of the decommissioning plan were required. Further, MMS must provide a description of the financial instrument for bonding decommissioning by including a review of the current market for bonding of wind power projects and the bond market's willingness to underwrite this emerging industry.

VI. References and New Information

APNS has consulted with experts to consolidate the most recent information and technical literature pertinent to offshore wind development. A bibliographical list of these resources is submitted as part of these comments on the DEIS as Exhibit 10.

VII. Conclusion

APNS appreciates the opportunity to provide scoping comments for the DEIS. Because MMS is proceeding now with the review of the proposed project, it must conduct a rigorously thorough review of the potential project impacts. This unprecedented project requires a thorough and careful review by the regulatory agencies and the public. It also involves careful study of available reports and scientific literature. A properly developed DEIS will confirm that more appropriate sites and approaches to renewable energy development are available. We hope that our comments presented above are helpful in this regard, and look forward to an opportunity to participate in the review process for this project.