inclusion and at least 20 properties that are eligible for inclusion on the National Register.

These negative impacts will be very significant. As discussed in detail elsewhere in these comments, the affected historic properties derive important attributes of their cultural value from the viewshed of Nantucket Sound. To mar that view with a massive industrial facility is to undermine the essential character of these properties. To argue that such an effect is rendered insignificant by the paint color used on the turbines or reducing the total number of 130, still making the proposed project the largest in the world, is absurd.

8. Public Interest Factor "Fish and Wildlife Values."

Even a cursory review of the impacts of the proposed project on fish and wildlife resources leads to the conclusion that the project will adversely impact wildlife. The proposed development will substantially alter important habitat for many species and result in ongoing disturbance to the ecosystem. Although the DEIS has not adequately evaluated a number of these impacts, and therefore cannot reach any rational conclusion regarding the scope of the potential impacts, it is nonetheless apparent that the project will have devasting impacts on Fish and Wildlife values. Consequently, the public interest in fish and wildlife values is not served by approval of this project.

a. Avian species.

It is well accepted that wind plants can and do pose a level of risk to birds due to potential collisions with structures and disruption of behaviors. While the level of risk is not easily determined, however, even at existing facilities, it is negative and strong. As a result, many of the "conclusions" represented in the DEIS are based on speculation and offered in some cases as fact without sufficient empirical evidence to support assertions. More studies specifically addressing migrant and resident birds are needed to fully evaluate the risk to birds posed by the proposed action.

Data have been presented within the DEIS to show what numbers of what species of birds occur in various sections of the Nantucket Sound area that might potentially serve as sites for a windfarm. The data can be conveniently divided into those on waterbirds and those on landbirds. Waterbirds were surveyed by boat and aircraft, using standard survey techniques. Landbirds, primarily migrants, were surveyed using radar. It is not known how either seaducks or terns would react to wind turbines, due to a paucity of data on bird behavior in the vicinity of such turbines.

The data presented on the South of Tuckernuck site are weak, and at odds with voluminous observations made by others in that same area. Bird abundance and species diversity at the South of Tuckernuck site is considerably higher than that at any of the Nantucket Sound sites, as is substantiated, for example, by the Tuckernuck Christmas Bird Count, run since 1978. Furthermore, virtually the entire Nantucket Sound population of Long-tailed Ducks (300,000-500,000 or more birds) flies directly over that proposed site at rotor height twice a day for much of the winter.

The discussion of potential impacts to night migrating songbirds in the DEIS is without solid foundation and gives no credible idea of what the actual mortality is likely to be. Radar studies show that substantial numbers of migrating songbirds pass over Horseshoe Shoal in both spring and fall. It is not known how likely it is that these migrants will strike the turbines. During fog and rain, large numbers, perhaps as many as 10,000 per night, could be killed depending on what extent the turbine structures will induce songbird congregation. The tendency for birds to congregate at these turbine structures is an unknown that is likely dependent on a gestalt of the aviation and marine obstruction lighting at a potential landing site in the marine environment. Data from inland mortality studies are not applicable for a variety of reasons but primarily because the sea environment may induce different congregation behavior due to the fact that songbirds cannot land at sea.

The combination of the uncertainties in the extent of songbird mortality, the difficulties in documenting such mortality if the project is built, and the precedent of this project as potentially the beginning of many similar projects along the Atlantic Coast clearly indicate a need for more research on the potential impact of this project to night migrating songbirds.

b. Fisheries.

The fishery data is based only on fisher catch reports and trawl data and do not in any way contrast the specific marine life community at the wind farm site and other specific areas. In fact, the DEIS only considers the key species to be those 19 fishes and 3 invertebrates that are directly exploited in the commercial and recreational fisheries. This completely ignores the concept of ecosystem and habitat management. It is a fact that an adverse impact on other species that are food for the predatory fish caught in the fisheries will impact the fishery populations.

The DEIS does not address other real and certainly likely sources of contamination in the water and resulting bioaccumulation impacts – e.g. aluminum and zinc anti-corrosion materials, turbine oil, hydraulic fluid, transformer cooling oil, fuel spillage from service boats, and the impacts of major spills. While the precise effect on fish species is not known, it is clearly negative. An added negative factor,

discussed in Volume 2, is the effect of electromagnetic fields on sharks and rays. This is another adverse effect on fish species.

c. Marine protected species.

The DEIS concludes that construction of the proposed plant would have only temporary and localized effects on marine protected species - i.e., marine mammals afforded special protection by the MMPA; marine mammals and sea turtles listed as endangered and threatened under the ESA; and gray and harbor seals afforded special protection in Massachusetts waters by State legislation and regulations in addition to Federal protection. Additionally, it proposed to mitigate adverse impacts on these species from construction activities by initiating pile-driving activities gradually, by establishing a 500 m "safety zone" around pile driving sites, by having an NMFS-certified observer present during "initial" pile driving to look for and alert the operators when marine mammals or sea turtles are seen inside the 500 m safety zone; and by suspending pile driving when marine mammals or sea turtles are seen inside the 500 m safety zone. The DEIS concludes that operation and decommissioning of the plant would have no effects on these species.

These conclusions and assertions are based largely on optimistic and unstated assumptions. The DEIS contains no actual data on the species, numbers, or activities of cetaceans and sea turtles that occur seasonally, occasionally, or throughout the year in and near the proposed site. Rather, it asserts that (a) the distributions of these species are determined by food availability; (b) there have been few documented observations of endangered cetaceans and sea turtles in and near the proposed plant; (c) large segments of the western North Atlantic populations of right whales, humpback whales, and other marine mammals and sea turtles are known to feed seasonally in other areas -- e.g., in the Great South Channel, in Cape Cod Bay, and on Stellwagen Bank; and (d) the scarcity of documented sightings of these species in and near the proposed plant, combined with the frequency of sightings in other known feeding areas, constitute evidence that (i) fish and invertebrates commonly eaten by marine mammals and sea turtles either are not present, or are present in only small numbers, in the vicinity of the proposed plant, and (ii) consequently there is no reason to believe that the project could adversely impact any marine mammal or sea turtle. While the DEIS provides information on the locations and abundance of gray and harbor seals at haul-out and pupping sites around Nantucket Sound, it provides no information on the in-water movements or locations of feeding areas that could be affected by construction, operation, and decommissioning of the proposed plant.

Additionally, while the DEIS indicates that it would take approximately 13 months over two undefined "construction" seasons to complete installation of the wind turbines, it provides no rationale for the conclusion that any impacts from this

apparently multiple-year activity would be temporary. Also, no consideration is given to the possibility that the differences in the frequencies of documented marine mammal and sea turtle sightings in the vicinity of the proposed plant and in known feeding areas elsewhere are due to differences in the survey effort or methodology in the different areas. Likewise, no consideration is given to the fact that the distributions and movements of both sea turtles and marine mammals are determined by multiple factors, only one of which is food availability. In this regard, while there is mention of recent radio-tagging studies of humpback and right whales, there is no acknowledgement that the results of these studies indicate that both species may move hundreds of kilometers during the summer feeding season for purposes that are uncertain, and that one of the small number of radio-tagged right whales is known to have entered Nantucket Sound. Further, there is no acknowledgement of the fact that the status of the western North Atlantic right whale population is such that the National Marine Fisheries Service has determined, in accordance with the 1994 MMPA amendments, that the loss of a single individual from this population would further jeopardize its continued existence.

Without additional information, there is simply no way to conclude that the proposed activity will not have an adverse impact on marine mammal species. Consequently, the disturbance in the habitat of the Sound demands an adverse finding for the wildlife impacts. Considering what is currently known, moreover, the impact would be negative.

d. Terrestrial ecology.

Discussion in the DEIS on wildlife impacts, aside from rare species and bats, is virtually non-existent. The fact that the transmission line passes 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. There is virtually no discussion of 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. There needs to be a discussion of 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. Once again, while the degree of the adverse impacts is not known, it will be negative.

9. Public Interest Factor "Flood Hazards."

The CWA wind energy plant would have no effect on flood hazards.

10. Public Interest Factor "Flood Plain Values."

The CWA wind energy plant would have no effect on flood plain values.

11. Public Interest Factor "Land Use."

The CWA wind energy plant will have negative public interest impacts on land use. This factor can be evaluated from two land use perspectives: 1) federal, and 2) state/local.

From the federal perspective, there is a profound negative land use impact. This impact is derived from the fact that the project would be located on the federally-controlled, public trust lands and waters of Nantucket Sound. CWA does not have, and cannot obtain, any property right or authorization for this purpose. It will "use" this federal "land," in violation of the public trust, with no compensation to the U.S. Treasury or right to do so. CWA would exclude other parties from making use of this public land and water resource, again with no right or authority to do so. It would be in trespass on federal property, and create land/water use conflicts with many other parties who seek to use the Sound for recreation, fishing, navigation, transportation, aesthetic enjoyment, sand dredging for beach replenishment, and other activities. All of these conflicts will have been created without any federal land granting process or evaluation. Thus, a more profound negative federal land use impact cannot be imagined.

CWA has also filed for joint review of the proposed project in accordance with the Memorandum of Understanding entered into by and between the Executive Office of Environmental Affairs of the Commonwealth of Massachusetts (EOEA) and the CCC. The Cape Cod Commission Act, Chapter 716 of the Acts of 1989 as amended, and the regulations, standards and criteria adopted and amended pursuant to sections 6 and 12A thereof set forth a broad standard for review of such projects and, in particular, the application of a balancing of benefits for land use criteria. Pursuant to sections 12 and 13 of the Act, the project is deemed to be a Development of Regional Impact (DRI) and requires the granting of a DRI permit in accordance with those provisions.

In particular, section 1 of the Cape Cod Commission Act provides that the conservation and preservation of natural, undeveloped areas, wildlife, floor and habitats for endangered species and the preservation of coastal resources including aquaculture as well as the protection of ocean water quality and other natural

resources are of primary importance. Section 1c also provides for the insurance of balanced economic growth, the provision of adequate capital resources, the protection from hazardous waste and the preservation of historical, cultural, archeological, architectural and recreational values.

The protection of these regional resources is more particularly accomplished via the application of the Minimum Performance Standards (MPS) set forth in the Regional Policy Plan adopted effective April 29, 2002 in accordance with the Act.

In accordance with Section 13D of the Act, a Development of Regional Impact permit may be granted only if the Commission finds:

- The probable benefit of the proposed development is greater than the probable detriment.
- The proposed development is consistent with the Regional Policy Plan.
- The proposed development is consistent with any applicable Local Comprehensive Plan.
- The proposed development is consistent with municipal development bylaws.

The proposed project will require a thorough and comprehensive review of the applicable Minimum Performance Standards under the Regional Policy Plan, as well as 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. Such review will be required to be in accordance with the Enabling Regulations of the Cape Cod Commission governing review of Developments of Regional Impact adopted as Barnstable County Ordinance 90-12 and as amended and revised as of the current date.

12. Public Interest Factor "Navigation."

An expert report, ignored in the DEIS, concludes that the proposed plant is incompatible with the marine transportation needs of the area, creates unacceptable risks to the environment and shipping and that the DEIS analysis is fatally flawed. The proposed Horseshoe Shoal, Tuckernuck Shoal and Handkerchief Shoal sites are at odds with common international practice and threaten disruption of Nantucket Sound's Main Channel. The negative impacts of this project to marine transportation and public safety are significant and broad and pose unnecessary and unacceptable

risks to cruise liner, ferry, oil transport, fishing and recreational vessels and their users.

Recent information sheds further doubt on the transportation and marine safety and pollution conclusions reached in this DEIS. A review of existing offshore wind facilities reveals that, in contrast to the Nantucket Sound proposals, offshore wind facilities worldwide have been purposely located miles away from any active shipping channels. The Horseshoe Shoal proposal is placed directly adjacent (800 feet) to the Nantucket Sound Main Channel. In this location, no protection is afforded, as is repeatedly claimed in the DEIS, to prevent large ship and tanker collisions with the many turbines to be built along the Main Channel.

The DEIS conveys a fall sense of safety and security about the risks that the turbines pose to ships, boats, passengers and to the environment. It dismisses the real risks presented by vessels blown off-course, whose machinery or steering fails or whose operators make mistakes. The DEIS also claims that "physical water depth restrictions" limit the potential for a vessel to collide with a turbine. In fact, nearly 80% of the turbines are in deep enough water to be struck by the deepest vessels that routinely use the Main Channel.

The DEIS fails even to consider the single most effective mitigation action that could be taken to reduce the risk of marine casualties and pollution incidents – i.e., choose a site for the proposed project that is far removed from shipping lanes and routes. The DEIS dismisses the next most effective measure – i.e., provide sufficient separation between the turbines and shipping channels or routes to permit sufficient time for a ship, tanker or boat to take evasive action to avoid collision with a turbine. The current distance of 800 feet with a minimum reaction time of 40 seconds (at 12 knots) is so grossly deficient as to appear cavalier when cast against the potential loss of life, injury, damage and pollution that would result from such a mishap.

The DEIS provides no discussion or analysis to establish a baseline of pollution incidents and consequences within the vicinity of the proposed wind facility. The DEIS provides no significant information or data concerning the impact that construction, operation and decommissioning of the facility will have on the frequency, size or consequence of marine pollution incidents for the proposed sites or to Nantucket Sound. In contrast a recently conducted independent study which examined the result of a probable tankship/turbine collision revealed extensive contamination adversely impacting and killing especially sensitive biological resources in the Nantucket Sound ecosystem resulting from such an occurrence. This study clearly indicates the need for additional spill impact analysis by the project proponent to facilitate a more realistic environmental impact review by the public and local, state and federal governments.

A new, complete and rigorous navigation risk assessment should be performed based on the elements of recognized international standards and industry best practices is needed. Separate casualty and marine pollution analyses should be performed for each of the offshore alternatives since vessel traffic, routes and frequency of usage as well as vessel casualty and marine pollution history vary widely. A separate marine pollution threat assessment and analysis should be performed that identifies the risk, frequency and likely result for each of the offshore proposed sites. The Coast Guard should perform a complete review of the new risk assessments. Even without these tests, however, the serious navigational threats to vessels operating in the Sound are clear.

The DEIS also relies on assertions of an FAA "No Hazards" determination for air navigation and lists seven areas where there was deemed to be no adverse impact. However, none of the seven areas specifically mention the adverse impact of the radar returns from the turbine plants on the effectiveness and efficiency of FAA Airport Surveillance Radars ("ASRs") or on Air Force Air Route Surveillance Radar ("ARSR"). Several airport managers in the Nantucket Sound area have appealed the "No Hazards" determination. The FAA, after learning of the concerns of airports and air traffic facilities near the proposed wind farm, agreed to look deeper into possible turbine interference with air traffic radar controlling the heavy volume of traffic to four major regional airports. The FAA has not acted upon the study at the time of this review. The DEIS does not adequately quantify the aviation activity using the airspace surrounding the Nantucket Sound alternative sites. During most of the year, all of the alternative sites are among the busiest aviation in the United States. A re-evaluation of the current risk to the broad range of potential radar coverage interference and of the "No Hazards" determination is necessary before an EIS is issued.

The DEIS heavily depends on a private contractor-produced report on the Horns Rev wind facility. The Horns Rev report is clearly anecdotal. The report addresses only one type of marine radar interference and failed to even mention the strong returns produced on shipboard radar by the wind turbine bases. The DEIS and the Horns Rev report also failed to mention the turbine interference with shipboard automatic radar tracking systems ("ARPA") that provide collision avoidance warnings to ships. The DEIS conclusions based on the Horns Rev report are simply not credible.

The DEIS overlooks a significant body of detailed information on the adverse effects of wind facilities produced by the UK government and the UK wind turbine industry. The UK's Maritime and Coastguard Agency ("MCA") recently completed an analysis of the effect of offshore wind facilities on navigation and communication systems. This MCA report concludes that the presence of a wind facility produced

strong marine radar distortion on vessels operating within the wind facility as well as distant from the periphery of its boundary. The study noted that the wind facility interfered with ARPA. The study also reported interference in the use of shore-based radar for both vessel and mark detection. The MCA recommended a follow-on study to further examine the interference with marine radar and to establish minimum separation distances between wind facilities and navigation channels and shipping routes. At their closest point, the Nantucket Sound alternatives lie 800 feet from the Main Channel well within the 1 ½ nm interference distance noted in the MCA report. An EIS should not be issued until the full range of interference has been evaluated for marine and collision avoidance radar as well as shore based marine detection and identification systems.

Turbines are detectable on numerous shipboard navigation/collision avoidance radars, two FAA ASRs that provide terminal radar approach control for seven airports in the area, and the FAA/USAF ARSR used for air defense and enroute air traffic control for the New England region, including trans-Atlantic flights. These issues must be carefully assessed. In light of the concerns expressed by those within the air navigation industry, it is clear that the proposed project will have negative impacts on air traffic.

13. Public Interest Factor "Shore Erosion and Accretion."

The CWA wind energy plant would have no effect on shore erosion and accretion.[15]

14. Public Interest Factor "Water Supply and Conservation."

The CWA wind energy plant would have no effect on water supply and conservation.

15. Public Interest Factor "Water Quality."

The impacts of the project to water quality have not been adequately addressed in the DEIS, but it is clear that they are negative. The discharge of a pollutant to waters of the United States, including the territorial seas and the contiguous zone,

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[15] In a February 12, 2005 Cape Cod Times article about the Town of Barnstable plan to dredge sand on Horsehoe Shoals for beach replenishment, James Gordon of CWA argues his project will help solve that problem by reducing the pace of global warming. Mr. Gordon's statement is non-sensical, as this project will have no more effect on beach erosion in Barnstable than it will on his other oft-asserted claim that the project will help save the lives of soldiers in Iraq by making America less dependent on foreign oil.

requires a National Pollutant Discharge Elimination System ("NPDES") permit. The location of the project also means that the discharge must comply with EPA's Ocean Discharge Guidelines. 40 C.F.R. §§ 125.120 - .124. The Guidelines require that EPA determine whether a proposed discharge will result in "unreasonable degradation of the marine environment," which is defined as:

> (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, (3) Unreasonable loss of aesthetic, recreational, scientific, or economic value in relation to the benefit derived from the discharge.

Id. at § 125.121(e). The project potentially could result in a section 402-regulated discharge. Essentially Nantucket Sound is an ocean lake, a federal doughnut hole surrounded by the Massachusetts Ocean Sanctuary. The surrounding shores of Nantucket Sound consist of beaches, shellfish farms, breeding habitats, sanctuaries and endless miles of estuaries.

Another negative water-quality related effect is the oil-spill risk associated with the proposed project. The proposed project will include a 10-story, 41,000 gallon oil-filled transformer platform. This 20,000 square foot platform will contain 4 step-up generators, each containing 10,000 gallons of dielectric oil. In addition, there will be a 1,000-gallon diesel fuel tank for the back up generator. The transformer platform will be connected by 130 miles of high voltage cable to the turbines. The location of the transformer platform is in the middle of the turbine array.

Because the transformer oil containment, which is greater than 1320 gallons, a Spill Prevention Control and Countermeasure Plan ("SPCC") will need to be developed. The SPCC plan should satisfy the requirements for such plans found at 40 C.F.R. Part 112. After discovering the true amount of oil to be used in the transformer platform, every coastal town on the Cape and Islands demanded that MMS order the developer to produce an "Oil Spill Trajectory Map" based on a worse case scenario and include it in the DEIS so that the true dangers of the project be fully considered.[16] This has not been done.

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[16] Even though in November of 2004, CWA was ordered by Walter Kruikshank, Deputy Director, MMS to produce the requested oil spill fatality map, CWA has never produced such a

The purpose of the oil spill fatality mapping is to identify adverse impacts to Nantucket Sound (and environs) resulting from the worse case scenario of an oil spill.

The Oil Spill Impact Assessment maps and corresponding analysis shall identify the following:

- Spill trajectories for spills occurring during each of the four seasons of winds, currents and tides;
- Number of miles of shoreline, estuaries and marshes which would be effected in each season;
- Breeding grounds, aquaculture farms, shellfish beds, and critical habitats effected;
- Maps and quantification of biomass killed from the worst case spill scenarios (i.e., from: 1) a tanker collision with a wind turbine generator; and 2) a complete release from the ESP) modeled during each of the four seasons of the year; and
- Quantification of future losses of biomass due to spill mortalities (i.e., production foregone).

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 (e.g., aquaculture beds), natural resource management areas (e.g., marine sanctuaries) and other areas of priority protection due to their sensitivity and vulnerability to oil spill impacts. Use of NOAA's Environmental Sensitivity Index (ESI) mapping as a data layer for the spill impact analysis can accomplish much of this task.

CWA must also identify which transformer oil would be used at the ESP. Transformer cooling oils are quite varied in nature, but can exert 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" causing it to remain in a marine environment for long periods of time.

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request. As of this writing they have still not identified the name, make, and manufacturer of the di-electric transformer oil.

In addition to the 41,000 gallons of oil in the transformer platform, there is also the issue of the oil tanker "Great Gull." The Great Gull delivers 1,290,000 gallons of fuel to Nantucket once a month. It travels the Main Shipping Channel that is within several hundred feet of the proposed wind plant. OPA'90 and U.S. 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 drifting into or striking a wind turbine foundation, the entire contents of the Great Gull should be used in the calculating of a worse case scenario under U.S. Coast Guard guidelines. Additionally, to account for the most probable, and realistic pollution risk, a scenario was developed modeling the loss of contents from two adjacent cargo tanks on the Great Gull. This scenario addresses 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 high quality Nantucket Sound ecosystem, killing especially 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 easily set off a chain of events that reasonably results in spills from the proposed offshore facility.

Oil spill impact assessment mapping and quantification of impacts is the most effective and illustrative way to accurately characterize the potential risk that this industrial wind plant presents to the state sanctuary waters that surround it. CWA should be ordered to complete and publish the results of oil trajectory mapping based on worst case discharges from: 1) a tanker/turbine collision; and 2) a completed release of oils from the transformer platform to the proper state and federal agencies prior to the release of the EIS.

16. Public Interest Factor "Safety."

The DEIS for the proposed project inadequately addresses 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:

- Extreme weather impacts on the proposed facility;
- Worker safety and facility access;

- Exposure to oil and hazardous substances; and
- Miscellaneous safety considerations.

Safety hazards associated with working on offshore structures during intense or extreme weather events such as storms and hurricanes or rough seas are not addressed in the DEIS, with the exception of discussing the provision of temporary housing for stranded personnel. The proposed project may present safety hazards to employees/contractors of the proposed offshore facility. Transit to and from the facility may become difficult, and docking in heavy seas and winds may present significant safety hazards. Discussion of effects of hurricane/extreme storm events on public safety for on and offshore alternatives should have been addressed in DEIS.

Further, given substantial ice occurrence in Nantucket Sound, the DEIS should address issues such as: 1) the likely rafting of ice around the offshore structures (and between them during especially harsh winters); 2) partial or full ATON 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 DEIS should assess the risks posed by ice thrown from rotor blades. Further, ice loads discussed in the DEIS were substantially smaller than expected. The facility must be designed to withstand realistic ice loads in order to be safe for facility workers and the public.

Worker/contractor safety during operations and maintenance of the proposed plant does not address a host of important safety issues. No substantive discussion is provided in DEIS regarding safety and access limitations regarding operation and management work on the monopile and nacelle portions of the turbines. Monopiles include ladders for access to the nacelle. These structure are very tall, however, with the nacelle hub height at approximately 246 feet. It is unclear how heavy equipment will be transported to the turbines in general, and nacelle in particular, during servicing of units. In fact, according to the Garrad Hassan Report (Appendix 3-F of the DEIS), access to offshore wind facilities is the primary issue to address with regards to implementing operation and maintenance operations. Safe access procedures during inclement weather and transport of heavy equipment to the nacelle should be described in the DEIS.

An independent analysis conducted on potential spill impacts from either: 1) a tanker collision with a turbine, or 2) from the bulk transformer and diesel oils stored

on the transformer platform indicates that a significant oil spill event in Nantucket Sound would directly impact the Sound, Cape Cod, Martha's Vineyard, Nantucket, Vineyard Sound, proximal portions of the Atlantic Ocean and the Elizabethan Islands. Significant direct and indirect adverse impacts to the rich biological, cultural and recreational resources of the area would occur in the event of such a spill, potentially resulting in additional substantial impacts to public safety (through contaminated seafood ingestion and dermal exposure to spilled oil) and the regional economy (i.e., through adverse impacts to the fishing industry, aquaculture and tourism). The DEIS failed to address and identify effective methods and strategies for responding to, minimizing, and mitigating impacts from oil spills involving the proposed project prior to the publishing of the EIS.

Further, preliminary modeling results provide reasonable cause for requiring the Corps to include in the DEIS in-depth oil spill modeling studies that quantify biomass killed (and sustained lost future growth) as a result of these (and other) reasonable spill scenarios. The modeling studies should evaluate potential impacts by species and life stage during each season (or month) of the year, as necessary, to obtain an accurate projection of losses resulting from potential spill incidents involving the proposed plant. This modeling effort should have been included in the DEIS to provide the public with an opportunity to comment. In addition to exposure from spilled substances, occupational exposure to oil and hazardous substances on site is not adequately described in the DEIS. A discussion of occupational exposure risks, and corresponding mitigation strategies, to stored oil and hazardous substances at the transformer platform and the turbines should have been included in the DEIS.

Further, no indication is given for the minimum depth that the inner-array cables will be buried. A safety analysis needs to be conducted that would assess the potential impacts associated with : 1) large vessels anchoring; 2) fishing vessels dragging on these cables; 3) shifting sand waves on inner-array cable burial. The analysis should be completed and included in a supplemental DEIS. The DEIS failed to address the potential hazards associated with rotor break or monopole failure. For example, if a rotor blade should break off the hub at a given point in its rotation, where would it land? At various 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. In addition, the DEIS should have included information regarding 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. In other parts of the DEIS,

it is stated that vessels can pass within 22 feet of the tower. This statement implicitly ignores the hazards associated with potential rotor-break. This issue needs to be addressed so that boat access the turbine area is not prohibited for safety reasons. Furthermore, if there is a safety "keepout" radius about the base of the tower, how will it be marked so vessels can avoid it? Most prudent mariners would probably choose to avoid the area entirely, so the area would in effect be cut off to many recreational and commercial vessels that would otherwise enjoy the area.

Undoubtedly, the overall effect of the project on public safety is negative. This factor weighs against the public interest.

17. Public Interest Factor "Food and Fiber Production."

It is likely that the proposed project will have at least some degree of negative impacts on food and fiber production. The construction and operation of the proposed plant will cause a localized disturbance to marine life. It is difficult to predict and monitor impacts from construction and operation without the biological and geological data that are necessary to provide a baseline picture of the local ecology.

Nonetheless, the proposed project will likely have some predictable impacts on the marine ecosystem. There will almost certainly be a reduction in productivity over the 24-mile area and beyond. Turbidity plumes and sedimentation resulting from construction activities, scour, and anchor sweep have been greatly underestimated. The likely impact of this disturbance is that juvenile and adult fish will move away from the plumes and leave the area. Others would suffer lethal or sub-lethal effects. For example, deposition of sediments would smother benthic organisms, shellfish, eggs, and larvae over square miles of sea bottom. Demersal finfish that prey on these organisms would be dispersed from the area. Construction and operation noise and vibrations would drive some pelagic species away. This dispersal of fish would disrupt spawning and feeding patterns and reduce the productivity of the area. Seemingly localized impacts would cause population changes accumulating up the food chain with less and less predictable results higher up the trophic scale.

The fisheries community that has evolved at Horseshoe Shoal is dependent on an open, sandy shoal environment. Conversion to a habitat dominated by high relief structures with their associated sounds, vibrations, and locally changed water flow patterns would disrupt the current finfish communities. Lacking anti-fouling protection, the turbines would quickly become encrusted with barnacles, seaweed, mollusks, etc. These 130 mini-ecosystems would likely attract some species and be avoided by others. Changes to the Horseshoe Shoal/Nantucket Sound ecosystem can have wide-ranging effects as these waters serve as essential fish habitat under the

Magnuson-Stevens Fishery Conservation and Management Act for important fish stocks of the Middle Atlantic Bight.

Trawling for squid and finfish would not be possible in this target-rich environment. The trawlers also catch scup, butterfish, bluefish, and black sea bass. Most recreational fishermen are not used to handling boats in strong eddies and would be at risk of collision with the turbines and other boats. Collision risks would increase in times of bad weather and poor visibility. The loss or reduction of safe fishing grounds would have economic impacts on both the commercial and recreational fishing industries. Less fish would be caught, thereby negatively impacting the local food supply. The decreased catch would result in higher fish prices, however slight.

18. Public Interest Factor "Mineral Needs."

The CWA wind energy plant will conflict with mineral needs. By letter of January 28, 2005, to the MMS, the Town of Barnstable has filed for the rights to dredge for sand on Horsehoe Shoal. This sand is needed for replenishment of eroding beaches. This proposed activity would be conducted under existing MMS regulations, which clearly create a right to do so. The CWA project, which would interfere with this lawful dredging activity, can obtain no rights to use Horsehoe Shoal. In addition, the massive wind energy project would impede dredging rights by removing areas from access, creating navigation problems, and interposing on any rights awarded to the Town. This issue is not addressed at all in the DEIS. It represents a negative public interest impact under section 10.[17]

19. Public Interest Factor "Considerations of Property Ownership."

The public interest factor of "property ownership" cuts heavily against this project in two areas. First, as has been discussed from the outset of this proceeding, the CWA wind energy plant is a federally-controlled public trust property interest. There is no basis upon which CWA can obtain these rights, or the federal government can abdicate them. The resources of Nantucket Sound belong to the general public, and they cannot be taken over by this private development company. Moreover, CWA seeks to avoid paying anything for the use of this property, through competitive bidding, rents or royalties. There could be no more dramatic examples of a *negative*

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[17] As noted above, CWA's principal speculator and investor, Mr. Gordon, has stated that his proposed project will help solve that problem by reducing the pace of global warming. Cape Cod Times, Feb. 12, 2005. Gordon's belief that building his project will solve the erosion of beaches in the Barnstable area is pure fantasy.

property ownership interest than to abdicate public trust property to a private party for free.

In addition to the highly significant negative impacts associated with public property ownership, the project will negatively affect private property rights. There is no question that this project will result in a large decline in property values for all landowners included within the viewshed of the CWA energy project. This fact is documented in the economic analysis prepared by the Beacon Hill Institute ("BHI"), where BHI concludes that the total loss in property values is estimated to be $1.35 billion.

Considered together, these negative effects on public and private property rights and values is an extremely negative factor weighing against the public interest. This factor alone would outweigh the insignificant, if not illusory, air quality and energy effects of the proposed energy plant.

20. Public Interest Factor "The Needs and Welfare of the People."

The Corps has provided no guidance as to the meaning of this factor. Obviously, it cannot be duplicative of the factors already discussed. The mere fact that these previous factors are *overwhelmingly negative* means that "the needs and welfare of the people" will be harmed by the proposed plant. This conclusion is bolstered by the strong negative impact this project will have on other factors not included in the 33 C.F.R. § 330.4. The most significant of these is national security. Indeed, it is surprising that the Corps has not amended its public interest test to include this critically important test. Not only might national security be compromised by the project, recreational interests of the public, as well as the public's interest in adopting a comprehensive system to manage ocean resources will be undermined.

a. National Security.

The effects of this project on national security are significantly adverse, and this factor alone should compel permit application denial. The key issue here is the interference that this project will have on domestic security detection systems.[18] The

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[18] CWA has made the absurd argument that this project protects national security by reducing dependence on foreign oil. As discussed elsewhere in these comments, that argument fails because of the insignificant contributions this project will make to domestic energy supply/demand. This would be a valid point if the federal government had followed the APNS recommended approach of developing a national offshore wind energy program, through the vehicle of a

DEIS fails to adequately address the impact of wind turbine generator plants on electromagnetic systems that provide key services to defense and homeland security, aviation safety, commercial, and recreational maritime interests. As such the proposed placement of 130 offshore wind turbine generators in Nantucket Sound will have a detrimental effect on the maintenance of national security, airline, and maritime safety unless these impacts are fully explored and understood in depth.

The DEIS wrongly concludes that the proposed project will have no adverse effect on civil and military radar and communications based on: 1) the written determination by the FAA; 2) a report by a Danish engineering firm of the Horns Rev project in Denmark; and, 3) the incorrect assumption that the PAVE PAWS missile defense radar will not detect the turbines. In the United Kingdom (U.K.), several offshore wind energy projects have been canceled, denied or delayed because of interference with defense surveillance radar and air traffic control systems. The UK Ministry of Defence ("MOD") has blocked five offshore wind plants because they could interfere with military aviation radar and the flight paths of nearby bases.

New information regarding the potential adverse effects of wind plants on civil and military radar and communications has become available. The UK MOD assessed the impact of wind facilities proposed to be located within the line of sight of air defense, air traffic control, and weather radar. Based on the results, the UK has established a list of safeguarded sites, consisting of 40 airports and military sites, where the authorities must formally review any proposed wind turbine installation.

The ARSR on Cape Cod used by the U.S. Air Force and Homeland Defense is not even mentioned in the Corps' review in the DEIS. The Cape Cod PAVE PAWS early warning radar is a critical component of the Air Force Space Command. Authoritative studies have concluded that large offshore wind facilities pose risks to the PAVE PAWS technology, and this is a serious and strong negative public interest impact. PAVE PAWS is the backbone of the East Coast terrestrial air defense system protecting the United States from Canada to Florida. The EIS should not be released until the DoD and appropriate federal agencies determine the effect of turbines on this critical air defense radar.

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programmatic EIS. If this program were undertaken on a national basis though proper siting techniques some measurable benefits might be possible.

In any event, the relationship between this project, foreign oil, and national security arises separately under the "energy" factor of the public interest test. Whatever those benefits may be, they cannot be "double counted" by addressing this again under this factor.

Finally, the U.S. Coast Guard's ability to protect the surrounding coastal areas from illegal activity and security threats and its search and rescue missions for small boats, fishing vessels and survivors will be impeded by the wind facility's presence due to obvious restrictions on helicopter altitudes. The DEIS discussion circumvents a singular central issue. There will be clear identifiable conditions and circumstances, such as fog or high winds, when the mere presence of the turbines will preclude a quick SAR response and rescue by a Coast Guard helicopter. This will likely delay both the search as well as the rescue response within the 24-square mile area of the wind facility until a Coast Guard boat can arrive on scene only to be faced with radar, VHF tracking and possible communication interference attributable to the turbines.

b. Recreation.

Another important factor not identified separately under the section 330.4 factors is recreation. Again, this factor experiences strongly negative impacts as a result of the project. The DEIS inadequately assesses the potential impacts of the proposed project on recreation. For example, the DEIS fails to provide any information about the number of people using the recreational resources of Nantucket Sound and Cape Cod and the Islands within the viewshed of the Project. Nor does it describe the nature of the recreation experience and its sensitivity of impacts from the project.

The impacts of the proposed project on recreation are not likely to be minor. Leeworthy (2001) prepared a special report in 1999 of coastal (saltwater) recreation participation by residents of the 24 coastal states. Although Massachusetts had the ninth largest population and ranked ninth among these states for the number of residents visiting beaches (2,779,169), according to the study, 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). Even a conservative estimate would place the annual number of people (including European visitors) seeking a "natural nearshore southern New England seascape" experience who would be adversely affected by the proposed project in the millions.

In addition, Cape Cod is world-renowned for recreational boating. Although the DEIS includes estimates for recreational boating, there is no indication of the number of recreational boats using the channels, or other areas in Nantucket Sound. 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. The DEIS fails to address this critical point. Further, the DEIS states that the "Project would add a built element to existing daytime views of the seascape, and would cause

a change in daytime views of the Horseshoe Shoals area as presently experienced by recreational boaters. To say that the construction of 130,417-foot turbines, plus a 100-foot transformer platform will add a "built element" to Nantucket Sound is indicative of the level of understatement that pervades the analysis of aesthetics and recreational impacts. Thus, there is a major negative effect on recreation under this general public interest factor.

c. Need for Uniform and Comprehensive Ocean Governance.

A final, but very important, general public welfare issue arises simply from the strong need in this country to establish uniform and comprehensive principles of ocean governance. The compelling need for such a program is recognized by the recent Pew and U.S. Oceans Commission reports. Both of these reports call for a halt to *ad hoc* agency decision-making and resource utilization in the marine environment. That, of course, is precisely the problem with the Corps' review of the CWA wind energy plant – it constitutes the epitome of the kind of segmented, piecemeal, uncoordinated and poorly planned agency action and private exploitation of public trust resources that has been the primary cause of the current stats crises confronting U.S. coastal and ocean regions.

The problem with the Corps' general approach to RHA review of offshore wind, as well as with the consideration of this project itself, is brought home sharply by the U.S. Oceans Commission report. As noted above, that report rejects the use of section 10 for this purpose and calls for the establishment of a comprehensive program under the administration of another agency. Certainly, the fact that a bipartisan Presidential commission of experts has repudiated the very decision-making process being used for this project and called for a new mechanism before any projects are authorized constitutes a resoundingly negative impact on the "needs and welfare of the people."

C. Summary.

As this discussion establishes, the public interest factors weigh heavily against this project. When they are considered together, it is clear that the permit application fails the public interest test by an overwhelming margin. The burden to meet this test should be heightened in a situation such as this, where an incredibly valuable public resource is at stake. This is not a project involving private lands or a federally-conferred property right. It is a blatant attempt to exploit public resources for private gain. This element of the CWA application should be, in effect, a kind of multiplier that increases the overall negative public interest impacts of the proposed project, making them even more heavily skewed in the direction of permit denial. The

negative effects are so obvious and so far-reaching, the Corps should have rejected the application out-of-hand. The grounds for this conclusion are set forth in greater detail in subsequent sections of these comments.

IV. THE AIR QUALITY BENEFITS OF THE PROPOSED PROJECT ARE GROSSLY OVERSTATED

This section begins by discussing the two purported benefits of the proposal: 1) reductions in air pollutant emissions and 2) impacts on global warming. As will be shown, the DEIS has grossly overestimated these benefits through a series of analytical and factual errors. The resulting analysis is totally insufficient to support any decision allowing the proposed project to go forward. Any effort to correct these inadequacies would require the Corps to address several major issues on which the DEIS is completely silent. That in turn could not be done without issuing a supplemental DEIS and allowing another round of public comment. Otherwise, the right of the public to comment on the basic issues that will influence the Corps decision would be negated. If the Corps intends to move forward with its section 10 permit review, a reproposal is the only legally sustainable course.

Such a course is not necessary, however. As clearly indicated in these comments, the asserted air pollution, global warming, and other benefits of the project are so fundamentally overstated that they cannot justify the project, given its significant adverse environmental, social, and economic impacts.

A. The Basic Claim and Its Defects.

The DEIS' most basic air quality claim is that construction of the proposed project would lead to reductions in emissions of health-damaging pollutants from other New England power plants. The DEIS estimates the value of the resulting health benefits at $53 million per year. DEIS, at 1-21. This is the largest single benefit claimed for the project, exceeding even the claims made for the value of cheaper electricity.

The DEIS makes this claim by first assuming that the proposed project will generate 1,489,200 mw/hrs of electricity a year (a yearly average generation rate of 170 Mw times 8760 – the number of hours in a year). DEIS, at Table 5-16-3. It then assumes that an equal amount of fossil-fired electricity will simply not be generated, resulting in a corresponding reduction of pollution emissions. The DEIS claims, in effect, that electricity from the proposed project will "back out" an equal amount of electricity from fossil generation, together with its accompanying emissions.

In fact, the proposed project, if constructed, would not cause any reduction in these emissions, for reasons that the DEIS does not mention related to the

fundamental design of our air pollution regulatory system. Moreover, even if such a back out were to take place – and it will not – the amount of the back-out and any associated benefits would be dramatically smaller than the DEIS indicates.

Each point will be addressed in turn.

B. No "Back-Out" of Emissions Will Take Place.

1. Why Cap and Trade Programs Prevent Backout of Emissions.

The DEIS claim of emission reductions rests on a basic misunderstanding of how the nation's air pollution control system works to control power plant emissions in New England and around the country.

In the past 15 years Congress and EPA have greatly tightened power plant emissions standards in order to achieve the national ambient air quality standards, combat acid rain, and protect visibility in national parks. Since it has become ever more apparent that such damaging pollution effects can occur hundreds of miles away from the place of emission, these new controls apply on a regional or even national scale.

These controls take the form of "cap and trade" programs. Such programs forbid covered power plants, in the aggregate, to emit more than a defined "cap" amount of pollution. The government issues "allowances" to emit that amount and allocates them 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. Since a power plant can avoid costly controls by purchasing allowances, allowances will have a market value that should be equal to the overall marginal cost of pollution control for power plants.

Cap and trade programs permit allowances not used in the year they were issued to be "banked" and used in later years. Accordingly, a power plant that reduces air emissions now by more than is required can generate extra allowances that it can use to emit at a somewhat higher rate in the future. For this reason, cap and trade programs have generated greater emissions reductions than the law requires during their first years of operation.

A cap and trade approach automatically reduces emissions in the least costly way. Power plants whose pollution control costs are less than the allowance price will control their emissions and sell any excess allowances they may have. Power plants with higher costs will buy allowances instead. Yet whatever pattern of

allowance holding this pattern yields, emissions over time will not exceed the overall cap.

Under a cap and trade program, if emission control becomes less costly, the need to hold costly allowances will be reduced. Accordingly, a cap and trade approach provides power plants a continuing incentive to reduce the cost of emissions control by technical innovation and other means.

These basic features of a cap and trade program make clear that constructing the proposed wind energy plant would not back out any significant emissions. The proposed project represents one possible way to meet increased electricity demand, should that exist. But under a cap approach, whether that increased demand is met by the proposed project or by a fossil plant, emissions will remain the same. This is because:

- If a company built a new fossil fuel plant to supply increased electricity demand, the owners would have to purchase allowances from some other facility to cover the new emissions. The units that sold allowances would then install additional emissions controls or take other steps to reduce their emissions by the amount that the allowances previously covered. Total emissions would be unchanged.

- If increased electricity demand were supplied by the proposed project instead, emissions would not increase because the proposed project would be non-emitting. But since the proposed project would not need any allowances, constructing the proposed project would not generate the extra emissions reductions from existing power plants that constructing a new fossil plant would motivate. In consequence, total aggregate emissions would be exactly the same under either approach.

2. The Growing Importance of Cap and Trade.

Cap and trade programs have already become central to the regulation of power plant emissions under the Clean Air Act ("CAA"), particularly in New England and the states whose emissions influence air quality in New England. Such cap and trade programs will very predictably become even more central during the proposed lifetime of the proposed project. That future importance matters because the DEIS must evaluate the impact of the proposed project not just in 2005, when it might start

operation, but over the next 20 years. *See* 40 C.F.R. §§ 1508.7, 1508.8. Key aspects of this program are as follows:

SO_2 (Acid Rain) Trading Program. When Congress amended the CAA in 1990, it "capped" SO_2 emissions from power plants throughout the nation at 8.95 million tons - half of 1990 levels of about 18 million tons. In 2003, emissions had already been reduced to 10.6 million tons, with the balance of the reductions to be achieved by 2010. Twelve states, including Massachusetts and its upwind neighbors New York, Ohio, and Pennsylvania, have reduced their annual SO_2 emissions by over 100,000 tons since 1990. Concentrations of atmospheric sulfur and sulfur products in the Northeast have decreased by at least 30% since the program began operation.[19]

NO_x Budget and SIP Call Trading Programs. It became apparent during the 1980s that failure to attain the ozone air quality standard throughout the country, including New England, was caused in large part by NO_x emissions from power plants and other major sources far removed from the areas where the exceedances occurred. That led to adoption by the New England States of a regional "cap and trade" system for their ozone season NO_x emissions.

In 1998, EPA greatly expanded and superseded this regional approach by adopting the NO_x SIP Call. 63 Fed. Reg. 57356 (Oct. 27, 1998). In that rule, EPA found that NO_x emissions from 22 Northeastern and midwestern states, plus the District of Columbia, contributed significantly to non-attainment in other "downwind" states. These "downwind" states included Massachusetts, Rhode Island, and Connecticut. EPA found, for example, that 45% of the ozone problem in the New York metropolitan area was caused by emissions from outside New York, New Jersey, and Connecticut, and that emissions from 11 "upwind" jurisdictions[20] contributed significantly to ozone non-attainment in Massachusetts. *See* 63 Fed. Reg. 57394.

To help correct these problems, EPA required these jurisdictions to adopt rules to reduce their emissions from electric generating units by an average of 64%. *Id.* Although EPA did not absolutely require states to adopt a "cap and trade" approach, it structured the rule to encourage adoption and all states subject to the rule have in fact

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[19] For further discussion, see EPA, "Clean Air Markets Program,"Acid Rain Program 2003 Progress Report (Sept 2004).

[20] These States were Connecticut, Delaware, the District of Columbia, Maryland, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Virginia, and West Virginia.

adopted "cap and trade."[21] The courts upheld the NO_x SIP call in all major respects, despite a vigorous challenge from the electric power industry. *See Michigan v. EPA*, 21 F.3d 663 (D.C. Cir. 2000).

Visibility Protection. In 1977, Congress required EPA to adopt rules to require states to adopt regulations with the eventual goal of returning visibility in national parks and wilderness areas where visibility is an important value to pre-industrial levels. Congress reaffirmed that command in 1990. In 1999, EPA issued rules to implement that program. *See* 64 Fed. Reg. 36714 (July 1, 1999). These rules will require every one of the lower 48 states to adopt rules by 2008 to reduce such visibility impairment. The rules contemplate a gradual, long-term program to reduce emissions over many decades ending in 2065 by enough to restore natural background levels. Progress will be checked at various milestones, the first of which occurs in 2016. The courts have upheld this strategy. *American Corn Growers Assoc. v. EPA*, 29 1 F.3d 1 (D.C. Cir. 2002).

EPA has consistently encouraged states to comply with these requirements by adopting or tightening "cap and trade" controls on NO_x and SO_2 emissions from power plants. Accordingly, this program will encourage even more widespread adoption of "cap and trade" programs in the years ahead.

Clean Air Interstate Rule ("CAIR"). Roughly a year ago, EPA proposed to require 29 eastern and Midwestern states plus the District of Columbia to impose significantly tighter controls on power plant NO_x emissions to reduce their contribution to ozone standard non-attainment in other states. 69 Fed. Reg. 4566 (Jan. 30, 2004). These states included Connecticut, Massachusetts and their major upwind neighbors, including New York, Ohio, and Pennsylvania among others. EPA also proposed to require 28 eastern and midwestern states plus the District of Columbia to impose significantly tighter controls on power plant SO_2 and NO_x emissions to reduce their contribution to particulate standard non-attainment in other states. These states included Massachusetts and, once again, its major upwind neighbors.

As with the NO_x SIP call, EPA has structured its proposal so as not to require states to adopt a "cap and trade" approach formally, but to give them every incentive to do so. Since, as discussed above, all states subject to the NO_x SIP call have adopted the cap approach, CAIR states would most probably do so as well. EPA proposes that by 2015, states subject to these programs reduce their emissions of SO_2

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[21] EPA, Clean Air Markets Division, "NOx Budget Program: 2003 Progress and Compliance," at 5 (2004).

by 71% from 2002 levels and of NO_x by 65% from 2002 levels, and maintain emissions at these "capped" levels permanently. At that control level, total SO_2 emissions in the covered states would be reduced from 9.4 million tons in 2002 to 2.7 million tons in 2015. NO_x emissions would be reduced from 3.7 million tons in 2002 to 1.3 million tons in 2015. *See* 69 Fed. 4586.

Although this rule has not yet been promulgated, the Bush Administration has repeatedly stated its commitment to promulgate it. Moreover, the rule satisfies CAA legal requirements to adopt strategies to achieve the ozone and particulate air quality standards, and it is hard to see what alternative approach EPA could put in its place if it were not promulgated.

EPA's CAIR proposal carefully follows the approach upheld by the courts in affirming the SIP call. Accordingly, it seems likely that the CAIR rule, when promulgated, will also be upheld.

Mercury. EPA has proposed a cap and trade approach to regulating this pollutant also. *See* 69 Fed. Reg. 4684 (Jan. 30, 2004). According to EPA, this proposal, if implemented, would reduce national power plant mercury emissions from 50 tons a year to 15 tons a year. *Id.* at 4658, 4698. However, since mercury is a "regional" and even global pollutant that can travel long distances from its place of emission, and has a number of natural sources, according to EPA only limited reductions in mercury exposure would result.

Clear Skies. Finally, the Bush Administration has sponsored legislation, called "Clear Skies", that would codify and tighten the existing and proposed cap and trade requirements for power plants described above. It would cap power plant emissions of SO_2, NO_x and mercury nationwide, reducing them by about 70% from current levels by 2018. The 2018 SO_2 "cap" levels for the entire country would be 3 million tons, while mercury would be capped at 15 tons. NO_x would be subject to separate caps in the eastern and western parts of the county. The 2018 eastern cap levels would be 1.16 million tons and the western cap would be .54 million tons.

These levels compare to total national SO_2 emissions of 31.2 million tons in 1970 and 11.2 million tons in 2000, and to total national NO_x emissions of 26.9 million tons in 1970 and 5.1 million tons in 2000.

Clear Skies is controversial and has not yet been enacted. But the Bush Administration has repeatedly described it as its highest environmental priority, while Democrats have largely supported the principle of the Administration's proposal while claiming that its control levels are too lenient. Accordingly, support for some form of eventual legislation appears widespread.

C. None of the Objections to the "No Backout" Argument Is Valid.

The failure to address the impact of these comprehensive and steadily tightening emission caps on the back out argument constitutes a fundamental analytic flaw in the DEIS that must be fixed, and submitted to a new round of public comment, before the proposed project review can move forward. NEPA assigns this task to the Corps, not to APNS.

Nevertheless, to further demonstrate how the fundamental nature of the "cap" issue requires such a new analysis, this discussion will briefly touch on the various issues that have been raised in connection with the cap argument since APNS began raising it.[22] The discussion will show how little such issues appear, on their face, to alter the basic conclusion that constructing the proposed project would not significantly reduce air pollution.

1. Actual Emissions Will Be Lower than the Caps.

It has been suggested – without supporting analysis – that total emissions from the electric generating system are lower than the allowable cap, and that constructing the proposed project would prevent increased emissions from fossil plants that would otherwise increase emissions to fill this "gap."

This assertion lacks logical or empirical support. Allowances to emit have a market value of several hundred to a thousand dollars a ton, and will virtually certainly rise in value in the future. It is hard to see why any sensible firm would hold such allowances permanently without either intending to use them in the future, or selling them for others to use. Any argument to the contrary would have to overcome this basic economic logic.

The fact that some allowances have been "banked" and not used thus far by itself provides no support for this argument. As noted earlier, it is common for firms to save allowances, particularly in the early years of a trading program, to provide a cushion for future compliance, and to make reductions early, when they are cheap, in the expectation that requirements will get tighter in the future. Indeed, the empirical

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[22] No other party has focused on this important issue. Even organizations such as CLF and Clear Air Now, who have assumed advocacy roles for CWA's proposal on air quality grounds, have failed to date to address these critically importantregulatory issues.

evidence of the history of the SO_2 program shows this pattern of banking emissions in early years with the banked emissions used in later years.[23]

2. Not All Emissions Are Capped.

Current rules do not cap emissions of mercury and directly emitted particulates, while emissions of NO_x are capped for five months of the year by the NO_x SIP Call.

- However, NO_x emissions would be capped year round under both the CAIR rule and Clear Skies. EPA's visibility protection rules also encourage states to meet their visibility protection obligations by requiring year-round operation of any installed NO_x controls. Accordingly, it seems reasonable to assume that during the period of the proposed project operation, NO_x emissions will in fact be capped year round.

- Fine particulates created in the atmosphere from NO_x and SO_2 emissions account for virtually *all* the health benefits claimed by the studies on which the "back-out" argument in the DEIS rests. According to one of them, directly emitted particulates were associated "with only 3-4%" of premature deaths[24].

- As noted above, EPA has proposed a "cap and trade" approach to mercury control and is under court order to promulgate mercury control regulations shortly.

3. Emissions from Small Power Plants Are Not Capped.

Emissions from power plants of less than 25 MW generating capacity are not capped. Such small units, however, contribute only very small amounts of power to the New England grid.[25] Moreover, there is no logical or empirical support for the

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[23] *See* Ellerman *et al.* (2003).

[24] Levy, Spengler, Hinks & Sullivan " Estimated Public Health Impacts of Criteria Pollutant Air Emissions from the Salem Harbor and Brayton Point Power Plants" (May 2000) at 22.

[25] CELT Report 2004, available at <www.iso-ne.com>.

proposition that construction of the proposed project would in fact back out even the small amount of emissions from these plants. It is CWA's and the Corps' burden to show this is the case.

4. There Might Be a Shift to More Beneficially Located Reductions.

It has been suggested that construction of the proposed project, while not reducing overall emissions, might shift their location in a way that produced better air quality or reduced overall exposure. There is no apparent reason why this should be true, given the lack of any empirical support for this position and CWA's small market share. Nor is there any logical reason why any potential shift would necessarily be beneficial to air quality, rather than the reverse. It is CWA's and the Corps' burden to show this is the case. It is CWA's and the Corps' burden to show this is the case.

5. There Might be a Shift to Earlier Reductions.

It has likewise been suggested that construction of the proposed project, while not reducing overall emissions over time, might motivate a shift to earlier reductions. That would imply a slight air quality benefit stemming from having reductions earlier rather than later. Once again, there is no apparent reason why this should be true, given the lack of any conceptual or empirical support, and CWA's small market share. Other comments to the record support that CWA has over-estimated its capacity factor.

D. The DEIS Backout Analysis Is Quantitatively Indefensible Even Taken on Its Own Terms.

Even taken on its own terms – that is, ignoring the way the cap and trade system would actually work - the back out analysis in the DEIS is indefensible. It overestimates the amount of power the proposed project will generate, and indefensibly and inexcusably overestimates the amount of pollution that would be backed out.

1. The Proposed Project Will Not Generate as Much Power as the DEIS Claims.

The claims in the DEIS for the amount of power that the proposed project will generate implicitly assume that the wind farm will have an annual capacity factor exceeding 36%. As pointed out elsewhere in these comments, both experience with other wind farms and actual wind data from the project site support a capacity factor

of 25-30% and do not support the 36% capacity factor. Other comments to the record support the conclusion that CWA has over-estimated its capacity factor.

2. The Emissions Associated with Backed Out Power will be Far Lower than the DEIS Claims.

The DEIS takes two different and inconsistent approaches to calculating the emission reduction benefits associated with the fossil generated power it claims the proposed project will back out. At some points, it calculates this amount by referring to the emissions rates of the marginal contributor to the New England power pool, as calculated by ISO-NE for the year 2000. *See, e.g.* DEIS, at Table 5.16-4.

However, in making the key computation of $53 million in annual health benefits stemming from backed out pollution, the DEIS abandons this approach, and assumes instead that the proposed project would back out power from the Brayton Point and Salem Harbor plants, two of the dirtiest suppliers in the entire system. DEIS, at Table 5-16.

There is no justification for this second approach. Both basic economic theory and the history of electricity market operations tell us that if any emissions were backed out, they would be emissions from the marginal producer, that is, the facility or facilities whose generation would be reduced if the proposed project were in place. Correcting for this error by using the DEIS's own marginal emission rates for the year 2000 would reduce the health benefits claimed by the DEIS by about two-thirds.

The DEIS itself shows only marginal emission rates for the year 2000. However, this figure is materially too high. Marginal emissions rates will decline steadily over time as air pollution requirements get tighter. Using 2003 marginal emissions data instead of the 2000 numbers in the DEIS, while keeping all other assumptions unchanged, reduces the calculated health benefits to $8 million. Even that figure fails to reflect the still lower benefits that would be realized in years after 2002 as emission rates continued to decline.

This analysis does not reflect the separate overestimate of the proposed project's annual capacity factor. If it did, the claimed emissions benefits would be reduced by a further factor of one-sixth to one-third. This topic is discussed further in the separate comments of the BHI, on which this discussion is based.

E. The Other Air Quality Benefits Claimed for the Proposed Project Are Equally Insubstantial.

1. The Proposed Project Would Not Contribute to Ozone Attainment Even if it Had an Air Quality Benefit.

The DEIS claims, at several different places, that constructing the proposed project would help Massachusetts, and other "downwind states" to achieve EPA's air quality standard for ozone. *See, e.g.* DEIS, at 1-21, 5-254, 5-255, 5-257. It would not, both because of the effect of the cap and trade programs outlined above, and because of the specific circumstances affecting ozone concentrations in Massachusetts.

The CAIR proposal contains the most detailed analyses of future ozone and particulate air quality that EPA has released to date. It projects that even without the CAIR reductions, all of New England except for three counties in Connecticut and one in Rhode Island will attain the ozone standard by 2010. *See* 69 Fed. Reg. 4593.

CAIR is projected to bring Rhode Island into attainment.

Ozone nonattainment in New England is overwhelmingly caused by upwind emissions, not by emissions in the region. EPA has said repeatedly over the past decade that ozone, mercury, and fine particulates – the pollutants conventionally attributed to power plants – are regional phenomena, so that emissions cause violations far away from their point of emission. EPA tied this general perception to the air quality situation on Cape Cod when it proposed to approve the Massachusetts plan to attain the ozone standard in Eastern Massachusetts. *See* 67 Fed. Reg. 63586 (Oct 15, 2002) (proposal); 67 Fed. Reg. 72576 (Dec. 6, 2002) (final).

In its proposed approval, EPA commented on "ozone exceedance day trajectory analyses" carried out by Mass. DEP. EPA said, 67 Fed. Reg. 63596:

> Trajectory analysis is a tool for assessing atmospheric transport and identifying likely source regions of locally measured air pollutants.... To assess airflow patterns on days when either the Truro or Fairhaven monitor recorded exceedances of the one-hour ozone NAAQS [air qualify standard] during the period 1999-2001, 24-hour backward trajectories were computed by the Massachusetts DEP ... These trajectories cross no high emissions areas in Massachusetts .... [T]he DEP concluded that there is a consistent meteorological pattern and source region ... when monitors in southeastern Massachusetts exceed the one-hour ozone NAAQS.

> Furthermore, the DEP concluded that one-hour exceedance level ozone concentrations will occur at the Truro or Fairhaven monitors only if the air reaching these monitors has previously crossed nearby high emission areas such as the greater New York metropolitan area. .... [O]n all days when there are exceedances at Truro and/or Fairhaven, there are also exceedances in Connecticut. Without the influence of the emissions from the greater New York metropolitan area, the DEP concluded, no exceedances would have occurred at these monitors.

Accordingly, the proposed project is not needed for ozone attainment in Massachusetts, or anywhere else in New England. Although Connecticut is projected to have some residual nonattainment problems, the proposed project will not make any material contribution to attainment in Connecticut unless a mechanism can be demonstrated whereby it would lead to emissions reductions in such states downwind of Connecticut as New York, Pennsylvania, or Ohio.

2. Mercury.

The DEIS also suggests that constructing the proposed project "could" reduce mercury emissions by "several hundred pounds a year." DEIS, at 1-20. As noted earlier, EPA may shortly cap mercury emissions, in which case this point will lose whatever validity it ever possessed.

But even on its face, the claim is unsustainable. To begin, the figure of "several hundred pounds" seems overstated. According to EPA, emissions from the entire United States utility industry amount to approximately 50 tons a year. 69 Fed. Reg. 4658 (Jan. 30, 2004). Under EPA's proposed control scheme, Massachusetts utilities would get "allowances"" to emit 140 pounds of mercury per year –far less than the reduction that the DEIS suggests would be caused by one small addition to the power market. *Id.* at 4700.

APNS believes that in fact there will be no reduction. In Figure 3 are the data points for the supply curve by unit type based on the summer capacity information provided in the 2004 CELT Report, using 2004 summer data. What this shows is how units are dispatched to provide power to the grid. Energy from units with low marginal cost, such as hydro and wind, are taken first. Units are added and released as demand varies in order to bring demand for electrical energy into balance with the supply of electrical energy at any given time.

FIGURE 3: NEPOOL SUMMER CAPACITY BY UNIT TYPE - 2004 CELT REPORT (APRIL 2004)

	Marginal Cost	Capacity	Cumulative
	Lowest	(MW)	Capacity (MW)
Hydro/Wind		3,418	3,418
Renewables		956	4,374
Nuclear		4,347	8,721
Coal		2,779	11,500
Gas Combined Cycle		5,873	17,373
Gas/Oil Combined Cycle		5,647	23,020
Gas/Oil Conventional Steam		3,570	26,590
Oil Conventional Steam		3,077	29,667
Other	Highest	2,291	31,958

The highlighted area is where supply equals demand most of the time in New England. Consequently emission reduction caused by the addition of a large wind plant is a result of displacing either gas combined cycles or gas/oil combined cycle plants most of the time.

Combined cycle plants have typically been built within the last decade when emission requirements on new plants were the most stringent. Consequently, one would not expect considerable reduction in NOx and SOx emissions. Certainly the notion that Salem Harbor or Brayton Point would be significantly displaced is simply incorrect. Neither CWA nor the Corps can rely upon this bald assertion.

3. Visibility.

The DEIS also suggests that constructing the proposed project would help achieve visibility goals. DEIS, at 1-21.

As these comments have repeatedly emphasized, this will not happen because the proposed project will not in fact lower emissions, since visibility impairment is overwhelmingly caused by SO_2 and NO_x emissions subject to caps. If tighter limits are needed to achieve visibility protection goals, then they can readily be imposed by tightening the caps, as EPA has repeatedly pointed out. Tightening the caps in no way depends on constructing the proposed project, and constructing the proposed project would not make tightening them materially easier.

F. Greenhouse Gas Emission and Climate Change.

APNS supports regulatory action to reduce emissions of greenhouse gases. APNS believes that achieving these reductions will require a comprehensive approach that addresses all the sources of greenhouse emissions and emissions reductions and treats them all alike. The proposed project, however, would not be a "first choice" method of greenhouse gas reduction under such a program, or even a second or third choice. Nor are its "greenhouse benefits" sufficient to justify its construction in the absence of such a program.

The proposed project would not develop new energy technologies that did not emit greenhouse gasses. Its direct contribution to greenhouse gas reduction would be miniscule and temporary. Moreover, Massachusetts has adopted an RPS to encourage the development of such renewable power sources as wind and biomass. The RPS in effect establishes a subsidy for these power sources paid by power users. Because of the way the RPS program operates, construction of the proposed project is not likely to result in a net reduction of greenhouse gases. Instead, it would simply replace another renewable facility that otherwise would have been constructed.

Finally, constructing the proposed project almost certainly represents one of the least cost-effective ways of reducing greenhouse gas emissions during the period that it would operate.

1. The Proposed Project Would Not Meaningfully Advance the Development of Energy Technology.

Almost everyone who has analyzed the greenhouse problem agrees that solving it will require the wholesale replacement of our current energy system with new technologies that generate power without releasing greenhouse gases.

The proposed project would not contribute to the development of these new technologies. As the DEIS itself states, wind power is "technically proven" (p. 3-23). The DEIS adds that wind power is already expected to be the leading renewable energy technology in terms of new additions between 2003-2013, is currently nearly economically competitive with conventional options (gas)[26], and is expected to have the largest cost reduction of the renewable energy options at approximately 5% per year. More than 20,000 commercial-sized [wind turbine generators] have been erected world-wide over the past decade

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[26] This refers to land-based wind systems, which are significantly less costly at present than off-shore systems.

Constructing the proposed project now would neither accelerate technical innovation nor encourage reductions in the cost of wind power. On the contrary, by waiting a few years for technology to advance it may well become possible to build an economically competitive wind farm further off-shore without the adverse impacts of the current location.

2. The Proposed Project Itself Would Not Mitigate Global Warming.

a. The insignificant impact taking Cape Wind's claims at face value.

The 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." Once again, the Corps has relied on outdated information provided by the applicant in its original submittal, without acknowledging or incorporating more recent information that was readily available. The numbers reported above and throughout this section of the DEIS are based on data reported in the 2000 Marginal Emissions Rate Report issued by NEPOOL in April 2002. There have been three reports issued since that time, in January 2003 (2001 Report), in December 2003 (2002 Report) and in December 2004 (2003 Report). The Corps could have used either the 2001 or 2002 reports with updated data.

A number of significant changes have taken place since the issuance of the 2002 Report that have a material impact on the emission calculations relied upon by the Corps in the DEIS. Presented below in Figure 4 are data showing the generating capacity additions that have occurred in NewEngland since the year 2000:

FIGURE 4: CAPACITY ADDITIONS FOR NEW ENGLAND (2001-2003)

UNIT NAME	UNIT CATEGORY	STATE	CAPACITY	CAPACITY	IN SERVICE
			SUMMER(MW)	WINTER (MW)	
2001					
Bucksport Energy	Combine Cycle	ME	165	193	January
Millenium	Combine Cycle	MA	339	388	April
Westbrook	Combine Cycle	ME	512	551	April
ANP Blackstone - Unit 1	Combine Cycle	MA	209	213	June
ANP Blackstone - Unit 2	Combine Cycle	MA	214	244	June
2002					
Wallingford Units 1-5	Gas Turbine	CT	215	251	January
Lake Road Units 1-2	Combine Cycle	CT	454	525	March
Lake Road Unit 3	Combine Cycle	CT	237	272	May
West Springfield 1-2	Gas Turbine	MA	86	100	June
Newington Energy	Combine Cycle	NH	528	543	September
RISE	Combine Cycle	RI	515	575	October
ANP Bellingham Unit 1	Combine Cycle	MA	221	252	October
2003					
AES Granite Ridge	Combine Cycle	NH	678	767	April
Mystic Block 8	Combine Cycle	MA	707	850	April
Mystic Block 9	Combine Cycle	MA	707	850	June
Edgar Fore River	Combine Cycle	MA	700	843	August
Totals			**6,417**	**7,417**	
Source: NEPOOL Marginal Emission Rate Analysis Reports: 2001,2002,2003					

As can be seen in the figure, over 7,400 MW of generating capacity have been added to the NEPOOL power supply in the past three years. This represents over 20% of the total generating capability within New England. Most of this capacity is highly efficient, natural gas-fired, combined cycle, generating facilities with state-of-the-art emission control equipment. As one would expect, the addition of this generation has had a significant impact on the marginal emissions rates in New England. Presented in Figure 5 is the history of the decline in the marginal emission rates since the year 2000.

FIGURE 5: NEPOOL MARGINAL EMISSION RATES (POUNDS/MWH) FOR 2000-2003

YEAR	CO_2	SO_2	NO_X
2000	1,488.1	6.2	1.9
2001	1,393.1	4.9	1.7
2002	1,337.8	3.3	1.1
2003	1,179.0	2.0	0.7

Based on the most recently available data (2004 Report), the numbers presented in the DEIS to support the CWP are grossly overstated. Assuming that the CWP displaces fossil plant generation and emissions, and that it achieves the ~1,400,000 MWh production that is used as a basis for calculating tons of pollutants displaced, the tons of pollutants that the CWP claims to displace is reduced dramatically as can be seen in Figure 6 below:

FIGURE 6: COMPARISON OF EMISSIONS REDUCTIONS CALCULATIONS (DEIS NUMBERS VS REVISED VALUES BASED ON LATEST AVAILABLE DATA (TONS/YEAR)

EMISSIONS REDUCTIONS	CO_2	SO_2	NO_X
Presented in DEIS	1,108,039	4,606	1,415
Based on Most Recent Data (2003)	877,883	1,489	521
Most Recent Data as a % of DEIS	**79.2 %**	**32.3 %**	**36.8 %**

Event taken at face value, this is a vanishingly small contribution. One million tons is one eight-thousandth (00.0125 percent) of total annual world greenhouse gas emissions. Since global warming is equally caused by all emissions of greenhouse gasses world-wide, this figure describes the proposed project's potential contribution to global warming control. [27]

Moreover, analysts agree that greenhouse warming is not caused by one year's emissions, but by the gradual contribution of many years' emissions to increased atmospheric concentrations. Reducing these concentrations will require reducing

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[27] The United States accounts for about a quarter of global greenhouse gas emissions. A million tons, accordingly, would be one two-thousandth (00.05 percent) of total United States greenhouse emissions. This is hardly a public policy rationale for sacrificing Nantucket Sound, especially considering the availability of less damaging alternatives.

emissions over many years. Yet the proposed project's lifetime is only projected at 20 years, after which its contribution to greenhouse reductions will stop.

b. Why Cape Wind's claims should not be taken at face value.

(i) Cape Wind's carbon reduction claims are exaggerated, even taken on their own terms.

CWA's million ton carbon reduction estimate rests on the same exaggerated projections of the proposed project's contribution to power supply discussed earlier. As noted earlier, using the correct figure would reduce these reductions by one-sixth to one third.

(ii) The operation of the Massachusetts RPS would reduce and perhaps eliminate any net carbon reduction from the proposed project.

The Massachusetts RPS legislation mentioned earlier requires all retail providers of electricity in Massachusetts to supply a certain minimum percentage of that power from "new renewable sources." That percentage increases from 1% in 2003 to 4% in 2009, and then at 1% a year thereafter unless the Massachusetts Division of Energy Resources (MDOER) suspends the increases. A supplier that cannot meet this requirement must make an Alternative Compliance Payment (ACP) of $50 per MWhr of the shortfall. This sum is adjusted annually to reflect inflation since 2003.

Power that qualifies for RPS compliance is quantified in "renewable energy credits" (RECs).

The financially sensible choice for companies operating within this framework will be to purchase renewable energy or RECs unless the added cost per MW/hr exceeds the ACP amount. Accordingly, the RPS program in effect creates a separate market for power from qualifying renewable energy projects and grants it a regulatory subsidy equal to the price of RECs, and capped at the ACP amount. That subsidy does not go to all renewable energy projects, but only to those that qualify to supply renewable generation under the RPS.

According to a 2000 study by La Capra Associates, the likely price of RECs is between $21 and $24 per MW/hr over the period from 2003 to 2012. This subsidy is substantial, making it critical to the financial viability of any renewable energy project.

The DEIS assumes that the proposed project will qualify for these credits. But the DEIS ignores the effect of the RPS on the greenhouse gas emission benefits that it claims. The annual need for RECs is set by annual electricity sales and thus is more or less fixed. If the proposed project supplies a given amount of RPS credits, those credits, and their accompanying price premiums, will become unavailable to sponsors of other potential projects. Since the value of REC credits is needed to make renewable projects economically viable, we can expect that the sponsors of such other potential projects will cancel them. They will never be built, and their greenhouse gas reduction benefits will never be realized.

Against this background, the proposed project could provide *additional greenhouse* gas reductions only if, during the years of its operation, the supply of RECs was less than the required percentage of total generation, so that some companies were paying the ACP instead. In that case the proposed project might reduce greenhouse gas emissions by increasing the amount of renewable energy and reducing the ACP payments.

Since the DEIS does not even mention the possible effect of the RPS on greenhouse gas reductions from the proposed project, it does not analyze the possibility that the proposed project would increase REC supply. However, this appears to be unlikely.

MDOER recently issued its Annual RPS Compliance Report for 2003, the first calendar year in which the RPS applied in Massachusetts. That report showed that renewable credits from 2003 generation met about 60% of the RPS requirement. Virtually all the rest was met by "early reduction" credits from renewable generation in earlier years, though there was one very small ACP payment.

MDOER notes that sufficient RECs may not be available in 2004 and states that "[s]ome level of shortfall in [renewable energy credit] supply is to be expected in the early years of this new program". But the La Capra study referred to earlier strongly supports the view that the short-fall is temporary. It conducted a detailed analysis of the supply curve for renewable energy projects, looking at a universe of projects – *not* including the proposed project – out to the year 2012. Its estimate of the extra cost of supplying enough renewable power to meet the RPS requirement during that period never exceeded about $25 per MW/hour – half the ACP payment subsidy that qualifying projects will enjoy. If this assessment is even approximately right, then it becomes clear that the proposed project will have no greenhouse gas reduction benefits. Of course, it this is the case, there can be no justification for sacrificing Nantucket Sound to achieve illusory gains.

3. The Proposed Project Would Not Be a Cost-Effective Source of Greenhouse Gas Reductions.

Transforming the energy economy, like turning a big ship, will require a sustained, gradual, and expensive effort that will take many decades. To succeed, it will be important to use the most cost-effective methods of emissions reduction first, so as to build a track record of successes and maximize the return on investment.

By focusing only on "utility scale energy facilities," *see* DEIS, at 1-2, the DEIS improperly and illegally excludes from consideration precisely the innovative, small-scale approaches that could make a far greater and more cost-effective contribution to greenhouse gas reduction than the proposed project.

That is particularly true in the early years of a control effort, which is the period during which the project would operate. The suggestions for mandatory greenhouse gas control programs that are currently most discussed would begin by setting a limit of five to ten dollars a ton on the cost of required carbon reductions.[28]

Under such a control system, the annual value of the projected carbon reductions would be five to ten million dollars, using the DEIS figure and one-sixth to one-third less using a more defensible projection. To the extent the operation of the RPS backed out other renewable energy projects, those carbon reductions would be further reduced – potentially to zero.

However, the public will pay far more than that to construct the project in Federal and state tax and regulatory subsidies. The Beacon Hill Institute estimates the present value of these subsidies as $382 million. Without these subsidies, the project would not be built. In contrast, an increased investment in conservation measures could yield greater reductions in greenhouse gas emissions than anything projected for the project, at a net saving in costs to society.

4. The Proposed Project Should Be Analyzed in the Context of the Upcoming Regional Greenhouse Gas Initiative Cap and Trade Program.

In 2001 the New England States, together with the Canadian Maritime Provinces, agreed on a goal of reducing their greenhouse gas emissions by 10% by 2020. In 2003, responding to an invitation from Governor Pataki of New York, the

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[28] National Commission on Energy Policy, "Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges" at 26-27 (2004).

New England States joined with Delaware, New Jersey and New York in the Regional Greenhouse Gas Initiative, *see* <www.rggi.org>. That organization now intends to develop a plan for the first stage of a regional greenhouse gas control program by April 2005.

That first stage would "cap" regional emissions from electric power generation. In other words, any regional greenhouse gas emissions from power generation would need to be covered by an allowance to emit, issued by the government. Those allowances could be transferred from power plant to power plant as their needs required.

EPA's acid rain control program works on the same principles. It has led to emissions reductions at far less cost, and with far less reliance on expensive technological approaches, if a traditional command-and-control approach were used.[29] There is every reason to expect that a greenhouse gas cap-and-trade program would also be effective in reducing the cost of meeting emission reduction targets.[30] If greenhouse gas reduction is to be an important factor in the project decision, it would make sense to defer that decision until a regional control approach has been developed against which the project could be evaluated. Yet, the DEIS does not even mention this approach. Such an analysis is required and must be presented for public comment in a supplemental EIS.

G. Overall Perspective on the Air Pollution and Global Warming Benefits Claimed for the Proposed Project.

The evaluations of air pollution benefits and climate change benefits for the proposed project in the DEIS are fundamentally flawed. As noted above, correcting these deficiencies would require that the Corps revise the DEIS and allow for additional public comment. Even without such a corrected analysis, however, it is clear that the proposed project will not provide substantial air quality or climate change benefits, and as such, the application should be denied outright because the

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[29] The costs with emissions trading have been estimated to be about 50 percent of the cost if a command-and-control program had been used. *See* A. Denny Ellerman et al., Markets for Clean Air: The U.S. Acid Rain Program, (2000).

[30] *See* A. Denny Ellerman, Paul L. Joskow & David Harrison, Jr., Emissions Trading in the U.S.: Experience, Lessons and Considerations for Greenhouse Gases, (May 2003).

public interest can never be served by this project. This conclusion is based upon the following conclusions:

- Because power plant emissions of NO_x and SO_2 are regulated through cap-and-trade programs, constructing the proposed project would not produce any reductions in emissions of these pollutants.

- The potential objections raised to this "no air emissions benefits" conclusion—such as the point that some very small generators' emissions are not capped or that the location of emissions could change—do not provide any reason to modify this conclusion.

- NO_x and SO_2 emissions, through their linkages to ozone and PM2.5 concentrations, account for virtually all of the air emissions benefits claimed for the proposed project.

- Even ignoring the significance of the cap-and-trade programs, the emissions reduction benefits in the DEIS are substantially overstated for two basic reasons: (1) the DEIS estimates assume greater electricity generation from the proposed project than is likely; and (2) the emission rates from generation that would otherwise be employed are substantially smaller than in the DEIS benefits estimates.

- With regard to climate change benefits, the Massachusetts RPS means that the total level of renewable energy is capped—assuming that sufficient renewable generation is forthcoming with REC prices below the penalty amount—and thus construction of the proposed project would not lead to an overall reduction in greenhouse gas emissions.

- Even ignoring the likely significance of the RPS in capping overall gains, the DEIS estimates of greenhouse gas emission reductions are overstated for the same two reasons as noted above for NO_x and SO_2 emissions.

- Even ignoring the flaws in calculating greenhouse gas emission reductions, the claimed reductions due to the

proposed project would have an infinitesimal effect on climate change, which depends upon global emissions over decades.

These conclusions do not mean that the proposed project would necessarily have no social benefits. If the proposed project were a low-cost means of meeting the RPS target, the project could provide benefits in the form of reduced costs. Similarly, although overall NO_x and SO_2 levels are not affected by the proposed project's presence or absence, constructing the project could reduce the cost of meeting the NO_x and SO_2 caps. Such benefits, to the extent they exist, do not however justify the extraordinary negative impacts of this project and its overall negative effect on the public interest. At the very least, a supplemental EIS should develop information on these potential social benefits.

By comparison, as noted earlier, the proposed project will benefit from federal and State regulatory tax and regulatory subsidies with a present value of $382 million. From any reasonable perspective, these subsidies exceed, by many multiples, the value of the public goods they purchase. Since air pollution and global warming benefits have therefore *already* been bought and paid for, the Corps should not give them any additional weight in its "public interest" determination. Instead, the focus should fall on the *other* public effects of the project – for example, impact on navigation, the local economy, fish and wildlife, historic resources, and the unique scenic value of Nantucket Sound – to see whether, considering those impacts only, and not considering air pollution and global warming impacts – the project makes sense from a public interest perspective.

Put in another way, the loss of revenue to the United States Treasury from the tax credit for wind power, and the forced payments by Massachusetts electricity customers to subsidize renewable power, are unquestionably public costs that should be considered in making the overall public interest determination. The legislature has made the judgment that these are a reasonable price to pay for air pollution and global warming benefits. Analysis shows that in granting these subsidies, the legislatures clearly have not *underpaid* for the resulting air pollution and global warming.

If air pollution and global warming benefits were to be invoked to *also* justify harm to the numerous public interest factors discussed in these comments (harms that will not be compensated) those benefits would in effect be counted twice in the public interest analysis – once to justify the subsidies, and then again to justify the damage to third parties. That should not be allowed. The net effect of any complete and reasonable public interest evaluation is that the proposed plant in this location is a profoundly bad idea, one that can never meet a legitimately applied public interest test. On this basis alone, the application should be denied.

V. THE APPLICATION FAILS UNDER FEDERAL AND STATE ENVIRONMENTAL LAWS

A. The Permit Application Violates Federal Law.

1. The Permit Application Must Be Denied Because the Proposed Plant Cannot Comply with the Endangered Species Act.

a. Overview of the conservation obligations of federal agencies under the ESA.

Section 7 of the ESA requires federal agencies to ensure 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 substantively violated by failing to properly follow 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, such as the Corps, complies with these procedures can any permitted project go forward that may affect a listed species. *See, e.g., Greenpeace*, 106 F. Supp. 2d at 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, at xvi (March 1998) (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 the FWS explained when issuing the section 7 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 listed species or critical habitat is determined to be likely 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, the federal project 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.

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). (hereinafter *TVA*).

b. The Corps' inadequate biological documentation and analyses precludes ESA compliance.

Despite the plain mandates of section 7, the Corps has failed its most basic ESA obligations. As the action agency, the Corps is responsible for preparing a biological assessment on the potential effects to all listed species that may be impacted by the proposed project. *See* 50 C.F.R. § 402.12(b) (BAs required for projects that significantly affect the environment). To be compliant with section 7, any such effects analysis must be founded upon a biological assessment utilizing the best scientific information and commercial data available. 50 C.F.R. § 402.14(d).

It is clear from the DEIS and attached appendices that several listed species will be adversely affected by the proposed project, including the endangered roseate tern, the threatened piping plover, the endangered leatherback and Ridley sea turtles, the threatened loggerhead and the endangered right and humpback whales. As provided below and in the many technical discussions accompanying these comments, however, the Corps' biological documentation and analyses of the project's effects to these species is woefully inadequate, fail to utilize the best scientific information available, and contain significant biological data gaps and uncertainties. Other

species that may be affected by the project, such as green sea turtles and the bald eagle, are not addressed at all.

In conjunction with the DEIS, CWA has prepared a "Marine Biological Assessment" that claims to analyze the effects of the proposed project on the following species: the endangered leatherback and Ridley sea turtles, the threatened loggerhead turtle, and the endangered northern right, fin, and humpback whales. DEIS, App. 5.5-A, Sec. 1.2 ("BA"). It is not apparent how these species were identified. The BA purports to attach letters chronicling the consultation process, but no such letters are appended to the document. APNS therefore is unaware of any species list requested of NMFS or FWS by the Corps or CWA. *See* 50 C.F.R. § 402.12(c). The BA does not appear to have been adopted by the Corps; nor is there any indication that CWA has been formally identified as a designated non-federal representative, as required. For the reasons noted in connection with the improper and baised role CWA and its consultants have played in the NEPA evaluation, APNS would object to any such role under the ESA.

Aside from procedural irregularities, the BA is woefully inadequate under the "plain language" of section 7 and its implementing regulations. For example, the BA's approach to "action area" arbitrarily limits the section 7 impacts analysis. Under section 7, an "action area" is defined as "all areas to be affected directly or *indirectly* by the Federal action *and not merely the immediate area involved*." 50 C.F.R. § 402.02 (emphasis added). "Indirect effects" are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur. *Id.* The ESA therefore makes clear that an action area may not be narrowly defined to the immediate area directly impacted by a federal project. *See, e.g., National Wildlife Federation v. NMFS*, 254 F. Supp.2d 1196, 1212 (D. Or. 2003) (holding action area that did not include areas indirectly affected by federal project is arbitrary and capricious); *Defenders of Wildlife v. Babbitt*, 130 F. Supp.2d 121, 128-30 (D.D.C. 2001) (same).

The BA states that it is developed to consider the effects on listed species within the "Project Area" and the "barge routes used in project construction, maintenance, and decommissioning."[31] BA, at Sec. 1.2. The BA, however, fails to meaningfully consider any direct or indirect impacts to any listed species outside the immediate geographical area covered by the 130 turbines. For example, consumption of plastic debris by sea turtles and other marine vertebrates is a well-documented

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[31] The BA does not define "Project Area," but the DEIS defines the term to simply mean the 24 sq. miles in Nantucket Sound covered by the proposed project. DEIS, at Table 1-1.

cause of mortality. BA, at Sec. 4.4.4. However, nowhere in the BA or the DEIS is consideration given to the possibility that the polypropylene mats will attract and entangle or be eaten by turtles or other marine vertebrates that are located *outside* the project area.

The BA also mistakenly concludes that the magnetic fields associated with operation of the project's cabling system are not anticipated to result in an adverse impact to marine mammals, sea turtles, or their prey. BA, at Sec. 5.2.6. Neither here nor in Section 5.13 of the DEIS is consideration given to the likelihood that sea turtles, marine mammals, and some of their prey species will be attracted to and remain in the vicinity of the monopoles and the transformer platform for extended periods of time and, if so, be exposed to EMF levels up to 473 mG (Tables 5.13-4 and 5.13-5) for extended periods of time. Further, neither here nor in Section 5.13 are particular studies discussed that address the potential effects of power cable magnetic fields on marine mammals or sea turtles.

The BA also fails to adequately address indirect effects outside the project area. The BA correctly asserts that the project will lead to increased vessel traffic from Quonset, Rhode Island to the project site. According to the DEIS, materials will be loaded onto vessels that will travel through Narragansett Bay to Rhode Island Sound to Vineyard Sound, North of Martha's Vineyard to the Main Channel, a distance of some 55 NMs. DEIS, at 4-9. As acknowledged in the BA, ship strikes are a "significant source of mortality" to sea turtles and whales. *See, e.g.*, BA, at Sec. 5.2.4. The BA, however, drastically discounts the potential of these severe impacts by claiming, without *any* supporting data, that the "vessel traffic will not occur in areas where there have been high concentrations" of listed whales and turtles. *See, e.g., id.* Known data on both the abundance and the spatial distribution and movement patterns of these species, and the seasonal and annual variability in these parameters, clearly establish their presence in and around the waters of Nantucket Sound. The BA's conclusion also ignores the fact that even if species, such as right whales, may be present only occasionally in Nantucket Sound, the loss of, or injury to, a single animal, particularly a breeding-age female, would constitute a significant adverse impact.

The BA has therefore improperly confined its section 7 analysis only to the immediate area directly impacted by the proposed project. The BA does not meaningfully consider any direct or indirect effects to species that are outside the immediate area, including any indirect effects from the turbines or routing of vessels necessary to accommodate the energy plant. The effects determinations in the BA must therefore be amended to consider the significance of these effects to the species, as required under section 7 and its implementing regulations. 50 C.F.R. § 402.02.

The BA also fails the fundamental requirement of section 7 to utilize the best scientific information available. To illustrate a systematic problem throughout CWA's biological documentation, the BA does not meaningfully address the endangered right whales. The distribution, movements, natural history, and status of western North Atlantic right whales are of particular importance regarding this proposed action because (a) these are by far the most endangered marine mammal that could be affected by construction and operation of the wind plant, (b) right whales are known to enter shallow inshore waters often and (c) the NMFS has determined that the PBR (potential biological removal) level of this population is effectively zero so that loss of a single animal would constitute a biologically significant impact and further jeopardize the population's continued existence (cf. Waring et al. 2001 listed in the bibliography for this appendix). Therefore, it is essential that all relevant and the most up-to-date information be considered. In this regard, the following publications, which either were not considered or were published after this synthesis was written, contain additional or more up-to-date information: Winn, Price, and Sorensen (1986), Reeves, Breiwick, and Mitchell (1999), Reeves, Rolland, and Clapham (2001), Knowlton and Kraus (2001), IWC (2001a and b), and Kenney, Mayo, and Winn (2001).

It is unacceptable, as is done in Sec. 4.3.2 of the BA, to simply state that very few right whales occur in areas where they could be affected by construction or operation of the proposed project. Minimally, the BA should identify (1) the current size and growth rate of the population; (2) factors that led to the endangered status of the population and that are preventing or impeding its recovery; (3) the feeding habits and principal prey of right whales; (4) the distribution and abundance of the principal prey species in Nantucket Sound and adjacent areas, (5) the numbers, age or size and sex, locations, and activities of right whales that have been observed or found dead in Nantucket Sound and adjacent areas historically and in recent years; and (6) the reliability of the numerical and other data. If reliable data are not available on the numbers, age/sex composition, and movement patterns of right whales in Nantucket Sound and adjacent areas, or on the possible effects of extended multiple exposures to construction-related sounds on right whale survival and reproduction, the only responsible conclusion is that the possible effects of the proposed action on right whales cannot be meaningfully predicted from the available data.

This BA also does not address the green sea turtle (*Chelonia mydas*) at all. Figure 5 of the BA shows a green turtle stranding on the North Coast of Nantucket Island. Further, it is well known that a significant population of sub adult green turtles summer in Nantucket Sound. Lazell (1980). The fact that green turtle strandings have been reported in areas both north and south of Nantucket Sound – e.g., in Cape Cod Bay (Still et al. 2002), and in Long Island Sound (Morreale et al.

1992) – also suggests that green turtles may occur in areas where they could be affected by construction and operation of the proposed project.

The BA's other analyses and data used are equally specious. For example, the BA reports that "[s]trandings, entanglements, mariner reports, and the U.S. Coast Guard suggest that loggerheads can be expected to *occur rarely in Nantucket Sound* as well [as in Long Island Sound, the Gulf of Maine, and Cape Cod Bay], in the summer and fall months, though no systematic surveys have been conducted in the Nantucket Sound area [emphasis added]." BA, at Sec. 4.4.2. There is no indication here or elsewhere in the DEIS of what is considered a "rare" occurrence – e.g., a single documented occurrence every two or three years, two or three documented occurrences every year, or something else? If there are not reliable data indicating when, where, why, or how many individuals are likely to be present in areas where they possibly could be affected by construction and operation of the proposed project, as appears to be the case for this species and many others, the uncertainty should be acknowledged.[32]

The "mitigation" measures provided by CWA in the Sec. 5.4 of the BA also fail to minimize potential impacts as required under section 7. Assuming *arguendo*, for example, that suspending pile driving when marine mammals are within or approaching the proposed 500m safety zone would prevent permanent hearing damage and possibly other types of physical harm, this does not mean that the impulse sounds from pile driving would not cause biologically significant changes in the behavior of some marine mammals at much greater distances. Similarly, there is no reason to believe that implementation of the proposed 500m safety zone would prevent either physical injury or adverse behavioral responses of sea turtles. Further, while this and other sections of the DEIS indicate that an NMFS-certified observer would be on site during the initial construction activities, there is no indication of what is meant by "initial activities," or why it apparently is believed that, after some initial period, marine mammals and sea turtles no longer would be present in or approach areas where they could be affected adversely by the ongoing activities. Also, there is no indication of where the observer would be stationed and if it would be possible from that location to see 500m and beyond in all directions. Likewise, there is no indication whether multiple observers would be employed if a single one could not effectively monitor the entire safety zone, or if whether the pile driving

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[32] Also, as in this case, it should be explained why systematic surveys were not conducted as part of the effort to compile information needed to do the impact assessment. In this regard the Corps and other responsible entities should be aware that, without better baseline information, it would be impossible to design monitoring programs capable of detecting possible unanticipated adverse effects on this or other listed species.

would be done for more than two or three hours at a time so that observer fatigue is a concern.

It is equally questionable that compliance with the NOAA whale watching guidelines would eliminate or significantly reduce the risk of sea turtles being hit and killed or injured by project vessels. Similarly, while it commonly is assumed that use of "soft starts" will discourage animals from approaching sound sources close enough to be harmed, there is no evidence that the assumption is valid. In some cases, animals may well be attracted to low-level start-up sounds, increasing the risk that they will be exposed to harmful sound levels. In addition, there is no indication of the nature of the underwater sound monitoring that would be done during the initial monopole construction, the purpose of that monitoring, or what is meant by the 'initial" monopole construction.

It is therefore doubtful that these proposed mitigation measures would materially minimize the project's adverse effects to listed marine mammals and sea turtles. As noted elsewhere in the accompanying technical reports, the available information concerning the marine mammals and sea turtles potentially at risk is insufficient to design monitoring programs capable of verifying that the proposed action will have negligible effects on these species. Because of the numerous deficiencies, the Corps and NMFS cannot rely on the BA to satisfy their section 7 obligations.

As regards the listed avian species (i.e., the piping plover and roseate tern), the Corps has failed to produce a biological assessment at all. Instead, the Corps has chosen to submit a "biological evaluation" ("BE") that it claims will serve as the "basis" for a future BA.[33] The entire ESA section 7 process for avian species is yet to occur. Similar to the BA's infirmities for marine species highlighted above, the BE fails to comply with the plain requirements of section 7 and cannot legitimately serve as the basis for a biological assessment.

Like the BA for marine species, the BE is founded on data and information that is unreliable, not credible, and of questionable utility. As noted in the technical reports accompanying these comments, numerous comments were previously submitted to the Corps regarding the necessity for additional data. Before potential impacts to ESA-listed and migratory birds from the proposed project can be

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[33] This is contrary to the Corps' own pledge to the FWS that "[a]n Environmental Impact Statement is being prepared [for the Cape Wind project] and *will include a Biological Assessment.*" Letter from C. Godfrey, U.S. C.O.E. to M. J. Bartlett, USFWS, at 2 (Sept. 27, 2002).

meaningfully evaluated, these comments made clear that:

- To assess potential risks to migrating landbirds, fuller and more precise information is needed on numbers, timing, and heights of flight of birds passing through the project area, especially at night during September, October, and early November....

- To assess potential risks to migrating waterbirds, fuller and more precise information is needed on 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....

- To assess potential risks to terns (including the federally Endangered Roseate Tern and the state-listed Common Tern), fuller and more precise information is needed on numbers, timing, and heights of flight of birds passing through the project area, especially by day in May-September and in late evenings and early mornings in August and September.

- To assess potential risks to resident and wintering waterbirds, fuller and more precise information is needed on numbers, timing, and heights of flight of birds passing through the project area, especially in evenings and at night, throughout the year....

- To assess potential risks to wintering sea-ducks, fuller and more precise information is needed 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....

- To assess potential risks to birds flying over Nantucket Sound at night, whether migrating or in transit to roosts or nesting areas, information is needed on 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....

- To assess potential risks to birds flying over Nantucket Sound at night, whether migrating or in transit to roosts or nesting areas, studies of the numbers, distribution and movements of birds through the project area during daylight hours will not be sufficient to address these questions.

Similar or identical recommendations were made by agencies with trustee responsibility for migratory birds and with expertise in avian risk assessment, including the FWS and the Massachusetts Division of Fisheries and Wildlife. Virtually none of these recommendations, however, were adopted in the studies conducted by CWA and reported in the BE and elsewhere. As explained in the accompanying technical reports, there are now serious questions as to the reliability, utility and credibility of the data being used to assess effects to the listed avian species. These questions focus in part on the inadequate number of migration and breeding seasons surveyed, the limited scope of the surveys, and the protocols utilized in the surveys.

Even more troublesome than only two years worth of limited data is the significant discrepancy between the radar and aerial surrey data. The radar data were not interpreted and were not compared with the visual observations in any way, despite the Corps' direction that "*Data gathered through radar should be validated with direct observations.*" The importance of this protocol is critical to the credibility of the biological analyses for the avian species. For example, terns are probably the seabird species at greatest risk in September. During 24 days of daytime operation in September, a total of 174,113 "Slow" and 128,861 "Fast" targets were tracked by the TracScan radar. These were calculated to correspond to average traffic rates of 46.7 and 34.6 targets per km of front per hour, respectively. Using the VerCat radar, 76% of daytime targets in September were above rotor height, 24% were in the rotor-swept zone (23-126 m above sea level), and only 0.3% were below rotor height.

There is a complete disconnect between the visual record of 356 individual birds within the study area on 25 September 2002, mostly endangered terns and other avian species flying at altitudes less than 12 m above the water (Appendix 5.7-F, Table A), and the 11,156 targets detected by the radar on that day, mostly small and medium-sized targets flying higher than 23 m (Appendix 5.7-J, Table 12). CWA's reports made no attempt to relate the two or to explain the discrepancy. Obviously, the radar data showing "targets" flying within the rotor-swept zone are directly relevant to the risk assessment for the avian species, but the BE simply dismisses the importance of the radar data by claiming that is irrelevant for any particular species. BE, at Sec. 4.2.4. CWA is augmenting these

problems by failing to conduct the reasonable radar studies that have been recommended, instead chosing again the visual observations that lead to lower estimates.

CWA's reports also acknowledge that the radars were not configured to detect birds flying close to the water surface, but the failure of the aerial and boat surveys to detect the targets higher than 23 m requires clarification. The aerial surveys were conducted by looking downward between calibrated markers from an aircraft flying at 75 m altitude. In these circumstances, no birds flying higher than 75 m would have been observed, and birds flying between 23 and 75 m would have been difficult to detect (a) because the observers' attention was directed to the sea surface, (b) because the width of the transect declined linearly with distance below the aircraft, and (c) because they would be seen more fleetingly than birds further below. For these reasons, the data on heights of flight reported in the aerial and boat surveys should not be used to infer lack of risk.

The absence of sound, credible, and reliable data in the biological documentation and analyses for the proposed project is particularly troubling when the data could be developed to guide and inform the ESA (and NEPA) analyses. The Corps is required to 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). In this case, any further consultation should be suspended until the necessary studies are completed and resulting data compiled. This additional data is critical to better inform the consultation process. Accordingly, the Services should request the Corps to obtain the additional data to determine how and to what extent the project may affect listed species and critical habitat. 50 C.F.R. § 402.14(f).

The obligation to utilize the best scientific information available also precludes the Corps from relying on the data presented by CWA. Consulting with the Services alone does not satisfy an agency's duty under the ESA. *Pyramid Lake Paiute Tribe v. U.S. Dept. of Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990). An agency cannot abrogate its responsibility to ensure that its actions will not jeopardize a listed species; its decision to rely on certain data and information must not be arbitrary or capricious. *Resources Ltd., Inc. v. Robertson*, 35 F.3d 1300, 1304 (9th Cir. 1994) (citing *Pyramid Lake*, 898 F2.d at 1415) (holding that Forest Services violated the ESA and APA by relying on a FWS biological opinion that was developed with the Forest Service's inadequate data).

For these many reasons, the data prepared and presented to date by CWA for this project cannot serve as the basis for effective section 7 analyses. For

example, any effects determinations that do not require formal consultation will be arbitrary and capricious in the absence of "best available science." To illustrate, the BE concludes that "while some collision mortalities may occur . . . they will be very low (too low to measure precisely) and are unlikely to affect significantly the populations (local or regional) of the Piping Plover and Roseate Tern." BE, at 22. Typical of the biological work presented, however, the BE lacks sound, credible, and reliable data to support this conclusion. For purposes of section 7 and the triggering requirements for formal consultation, the extent to which a federal action may adversely the species population is irrelevant. The BE cannot, therefore, legitimately serve as a "basis" for a future biological assessment, nor can the BA for the marine species be subsequently utilized for a biological opinion without significant consideration of extant data. *Resources Ltd., Inc. v. Robertson*, 35 F.3d 1300, 1304 (9th Cir. 1994).

c. Formal consultation is required for the proposed project.

For the consultation process to continue, CWA must first prepare sound biological assessments that comport with the requirements of section 7. Neither the BE nor the BA works for this purpose. On the basis of these biological assessments, the Corps and Services must then engage in formal consultation to address the adverse impacts to listed species that are likely to result from the proposed project. CWA has not demonstrated the absence of adverse effects with sound, credible, and reliable data to avoid formal consultation. *See* 51 Fed. Reg. 19,926, 19,949 (June 3, 1986). The Corps and Services are also 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*, 437 U.S. at 174. As further stated by the U.S. Supreme Court:

> [T]he legislative history undergirding [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.*

TVA, 437 U.S. at 186 (emphasis added). This conservation mandate requires the presumption of adverse effects by the federal agencies in the absence of clear scientific and biological proof to the contrary. Pursuant to their ESA Section 7(a)(2) conservation obligations, the FWS and Corps have two options where significant data gaps exist:

> (1) if the action agency concurs, extend the due date of the biological opinion until sufficient information is developed for a more complete analysis; or (2) develop the biological opinion with the available information *giving the benefit of the doubt to the species.*

Consultation Handbook, at 1-6 (emphasis added).

The biological documentation for the project presents numerous examples of data gaps and biological uncertainties. For example, the BA provides no information on the numbers, ages, sex, or activities of humpbacks that occur in areas where they could be affected by construction and operation of the proposed plant. Likewise, while it indicates that few humpback whales occur in Nantucket Sound because their principal prey are much less common there than in other areas, it provides no data or references to published data to support this contention. Without such information, there is insufficient basis for assessing the possible effects of the proposed action on this species, and no basis for designing a monitoring program to detect possible unforeseen impacts or to validate the assumptions upon which much of this draft impact assessment is based.

Formal consultation is also required because the proposed project will cause the take of listed species. Section 9 of the ESA prohibits the "taking" of listed 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." 16 U.S.C. § 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, or sheltering. 50 C.F.R. § 222.102.

Before any federal action that could take a listed species may proceed, the action agency must obtain an incidental take statement for 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). As provided above, in the many technical reports accompanying these comments, and in the DEIS and its appendices, the proposed project will directly and indirectly adversely impact numerous listed species, including the endangered leatherback and Ridley sea turtles, the threatened loggerhead and green sea turtles, the endangered northern right, fin, and humpback whales, the threatened piping plover and bald eagle, and the endangered roseate tern. As a result, formal consultation and the preparation of a comprehensive biological opinion are required. *Id.*; 50 C.F.R. § 402.14. Until this painstaking biological review is conducted, and necessary actions to protect the listed species (including denial of the request) are considered, the Corps has failed to discharge its responsibilities under the ESA and cannot take any final action other than permit denial.

2. The Permit Application Must Be Denied Because the Energy Plant Will Result in Unlawful Incidental Take Under the Migratory Bird Treaty Act.

a. The Migratory Bird Treaty Act prohibits the unintentional but direct take of migratory birds.

Congress enacted the Migratory Bird Treaty Act (MBTA), 16 U.S.C. §§ 701 *et seq.*, in 1918 to implement a 1916 treaty between the United States and Great Britain (on behalf of Canada) protecting migratory birds in North America. It also implements bird conservation treaties between the United States and other countries. One purpose of the MBTA is to "aid in the restoration of such birds in those parts of the United States adapted thereto where the same have become scarce or extinct." *Id.* § 701. The scope and reach of this statute is extremely broad as the list of migratory birds covers nearly all native birds in the country, including fifty or more species that will be directly and adversely affected by the Cape Wind project. *See* 50 C.F.R. § 10.13; DEIS, at Tables 3-6 – 3-10.

The MBTA prohibits any killing by any means of migratory birds. 16 U.S.C. § 703. The Act provides that "[u]nless 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 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) (enjoining Dept. of Agriculture under the APA and the court's "equitable injunction powers" from proceeding with plan to capture and kill Canadian geese in violation of the

MBTA without FWS authorization). Federal agencies also have an additional duty to conserve migratory birds pursuant to Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. Exec. Order No. 13186, 66 Fed. Reg. 3,853 (Jan. 17, 2001). This Executive Order directs federal agencies to take affirmative steps to minimize and avoid the take, both direct and incidental, of migratory birds that result from federal activities.

The MBTA is also a strict liability statute, and even where a party unintentionally takes a migratory bird, a violation of the MBTA results. As one court has stated, "it is not necessary to prove that defendant violated the [MBTA] with specific intent or guilty knowledge." *United States v. Corrow*, 119 F.3d 796 (10th Cir. 1997). For example, convictions have been obtained under the MBTA when defendants were not consciously engaged in activities known to affect migratory birds. *See, e.g., 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) (involving the death of migratory birds from the application of a pesticide to a field of alfalfa); *United States v. FMC*, 572 F.2d 902 (2d Cir. 1978) (involving unintended death of migratory birds caused pool of wash water from a pesticide manufacturing facility). *Id.* at 905.

In 1999, a federal district court in Colorado held that the MBTA strictly prohibits the unintentional harm by any means to migratory birds. In *United States v. Moon Lake Ass'n, Inc.*, 45 F. Supp. 2d 1070 (D. Colo. 1999), an electric utility was criminally charged under the MBTA and the Bald and Golden Eagle Protection Act with the unauthorized taking of 17 raptors (including eagles, hawks, and an owl) by electrocution caused by its electric transmission lines and towers. The court held that the company could be criminally liable under these statutes for the taking of migratory birds and raptors.

The district court specifically held that because the MBTA is a strict liability statute, whether the conduct was unintentional was irrelevant. *Id.* at 1074. It did not matter that the type of conduct causing the prohibited taking was not intentionally aimed at killing the birds. According to the *Moon Lake* court:

> While the proximate cause analysis necessarily requires the trier of fact to determine whether a particular type of physical conduct has a propensity to injure or kill a protected bird, that analysis is subsumed within the causation element and has no bearing on the particular types of physical conduct prohibited by the MBTA.

Id. at 1077.

b. The MBTA applies beyond the three nautical mile territorial sea of the United States.

The DEIS makes no reference on how the project will comply with the MBTA. *See* Table 1-2. Presumably, the Corps does not question the applicability of this important law to this proposed project. The MBTA's prohibitions clearly apply within the territorial waters of the United States, from the coast line out to at least twelve (if not twenty-four)[34] nautical miles. Presidential Proclamation 5928 (Territorial Sea of the United States of America), 54 Fed. Reg. 777 (December 27, 1988); *Legal Issues Raised by Proposed Presidential Proclamation to Extend the Territorial Sea*, 12 Op. O.L.C. 238, 240 (1988) ("The President has the authority to issue a proclamation extending the jurisdiction of the United States over the territorial sea from three to twelve miles out." *and* "The President also has the authority to assert the United States' sovereignty over the extended territorial sea, although most such claims in the nation's history have been executed by treaty."). Congress has determined the individual states' jurisdiction to be three nautical miles from the applicable coast. 43 U.S.C. § 1301(a)(2), (b).

The MBTA's take prohibitions also apply *outside* the territorial seas to the U.S. exclusive economic zone (EEZ), out to 200 nautical miles. *See, e.g.*, Presidential Proclamation 5030 (Exclusive Economic Zone of the United States of America), 48 Fed. Reg. 10605 (March 10, 1983):

> 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, such as the production of energy from the water, currents and winds; and b) jurisdiction with regard to the establishment and use of artificial islands, and installations and structures have economic purposes, and the protection and preservation of the marine environment.

See also Opinion of Office of Legal Counsel (O.L.C.), Department of Justice (September 15, 2000) (Administration of Coral Reef Resources in the Northwest

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[34] *See* Presidential Proclamation 7219 (Contiguous Zone of the United States) (September 2, 1999) (establishment of a contiguous zone out to twenty-four nautical miles from the baselines of the United States).

Hawaiian Islands) (The Antiquities Act applies to both the territorial sea and the EEZ).

Case law also makes clear that the MBTA's take prohibition applies to actions within the U.S. EEZ. *See e.g.*, *NRDC v. U.S. Navy*, 2002 WL 32095131, *12 (C.D. Cal. Sept. 17, 2002) (NEPA applies to federal actions that may affect the environment in the EEZ); *see also* Draft EIS--Seabird Interaction Mitigation Methods (NMFS August 2004) at §1.2.2 ("The assertion of jurisdiction over the EEZ of the United States provided a basis for economic exploration and exploitation, scientific research, and protection of the environment under the exclusive control of the U.S. government.").

Both U.S. case law and international law also strongly support the conclusion that the MBTA's take prohibition applies even to actions on the high seas, or international waters (i.e., outside the U.S. EEZ but before entering another nation-state's territorial boundary). The MBTA was designed in order to implement international treaties protecting migratory birds. *See, e.g.*, Convention Between the United States and Great Britain [for Canada] for the Protection of Migratory Birds, 39 Stat. 1702 (August 16, 1916). These treaties were necessary because individual countries proved unable to protect migratory birds without international cooperation, and the treaties specifically seek to protect migratory routes between the countries including the high seas. This is completely consistent with international law. *See, e.g.*, Restatement (Third) of the Foreign Relations Law of the U.S. §§ 402, 502. It thus makes little legal or policy sense to restrict these protections to political boundaries.

Further, the presumption against extraterritorial application of U.S. statutes does not govern the interpretation of statutes that implicate the interests of the United States outside its strict territory, as is the situation here with internationally protected migratory birds. *United States v. Bowman*, 260 U.S. 94, 98 (1922). The *Bowman* Court concluded that the statutory criminal provisions should be applied to acts committed outside U.S. waters, despite lacking an express extraterritorial reference, reasoning that the presumption's application depends on the nature of the offense or action:

> The necessary locus, when not specially defined, depends upon the purpose of Congress as evinced by the description and nature of the crime and upon the territorial limitations upon the power and jurisdiction of a government to punish crime under the law of nations. Crimes against private individuals or their property, like assaults . . . which affect the peace and good order of the community must, of course, be committed within the territorial

> jurisdiction of the government where it may properly exercise it. If punishment of them is to be extended to include those committed out side of the strict territorial jurisdiction, it is natural for Congress to say so in the statute, and failure to do so will negate the purpose of Congress in this regard. . . . But the same rule of interpretation *should not be applied to criminal statutes which are, as a class, not logically dependent on their locality for the government's jurisdiction* . . . . Some such offenses can only be committed within the territorial jurisdiction of the government because of the local acts required to constitute them. Others are such that *to limit their locus to the strictly territorial jurisdiction would be greatly to curtail the scope and usefulness of the statute and leave open a large immunity for frauds as easily committed by citizens on the high seas and in foreign countries as at home.* In such cases, Congress has not thought it necessary to make specific provision in the law that the locus shall include the high seas and foreign countries, but *allows it to be inferred from the nature of the offense.*

Bowman, 260 U.S. at 97-99 (emphasis added). *See also EEOC v. Arabian American Oil. Co*, 499 U.S. 244 (1991).

It is the long-standing practice of the U.S. Government to apply the MBTA beyond three nautical miles from the U.S. coastlines. The attached Solicitor's Opinion by the Department of the Interior from January 2001 found the MBTA applies to the territorial sea, U.S. EEZ, and the high seas. Ex. 10. Congressional understanding of the MBTA is also clear from the Antarctic Conservation Act, 16 U.S.C. §§ 2403-12, prohibiting certain acts by U.S. citizens in the Antarctic. Section 2408 states that a criminal conviction under the act "shall not be deemed to preclude a conviction for such an act under any other law, including, but not limited to, the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973, *and the Migratory Bird Treaty Act.* 16 U.S.C. § 2408(c)" (emphasis added). Had Congress not believed the MBTA applied in Antarctica, it would not have so provided. Backed by the presidential decrees, case law, the Government's own lawyers and clear Congressional intent, the MBTA must apply to the Cape Wind project.

c. The energy plant will violate the MBTA.

The DEIS explicitly concedes that the energy plant will directly kill avian species protected under the MBTA. *See, e.g.*, DEIS at 3-137 (acknowledging bird fatalities from collisions with the WTGs); 1:6-24; 3:38-49; 131-144; 5:100-139;

Apps. 5.6-5.7. That wind power projects can have a devastating effect on migratory birds and bats is well documented by other ornithological and scientific experts. *See generally* Proceedings of the Wind Energy and Birds/Bats Workshop: Understanding and Resolving Bird and Bat Impacts, Washington, D.C., (May 18-19, 2004), prepared by RESOLVE, Inc., Susan Savitt Schwartz, ed., Sept. 2004 (reflecting the input of 82 representatives from academia, and government, private, and non-profit organizations). As noted by one of the organizers of the Workshop, Gerald Winegrad, American Bird Conservancy:

> Wind energy production may affect birds in three ways: First and the most widely noted, are fatalities resulting from collisions with rotors, towers, power lines, or with other related structures. Electrocution on power lines is also possible. Second, birds may avoid wind turbines and the habitats surrounding them. Third, are the direct impacts on bird habitat from the footprint of turbines, roads, power lines, and auxiliary buildings.

It is also well established that even a single stationary communications tower can kill hundreds or even thousands of protected migratory birds. *See* <http://www.towerkill.com/issues/mech.html>. This danger applies to all vertical structures and is particularly acute where the structures are in excess of 200 feet in height, lit with aviation-safety strobe lighting and located in areas prone to fog or low ceilings. It is clear that 130 strobe lit turbines over 400 feet high in a marine setting will dramatically impact migratory birds, especially in foggy Nantucket Sound where migratory bird activity is particularly heavy. *See* Attached Reports of Ian. C.T. Nisbet, P.h.D.; Russell DeFusco, BASH Inc.; Hofman; and Kunz.

In the DEIS and attached appendices, CWA has acknowledged that the proposed project will cause fatalities of migratory birds.[35] Whether CWA intends to take migratory birds via its proposed project, however, is irrelevant for the purposes of the MBTA. *See Moon Lake*, 45 F. Supp. 2d 1070. Indeed, the MBTA is "not overly concerned with how . . . injury, or death occurs." *Id.* at 1074. Similarly, CWA's repeated assertions that the bird fatalities will not pose a significant threat to

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[35] As previously explained, however, the combination of the numerous uncertainties in the extent of avian identifies, density, and likelihood of mortality, the difficulties in documenting such mortality if the project is built, and the precedent of this project as potentially the beginning of many similar projects along the Atlantic Coast require a need for more research on the potential impact of this project to avian species. *See Fund for Animals v. Norton*, 281 F. Supp. 2d 209 (D.D.C. 2003) (lack of compressive analysis of potential impacts from federal action to migratory birds, including the species' populations and migratory pathways, violates NEPA).

the overall population of the species is also irrelevant. *See, e.g.*, DEIS, at 5-222; Apps. 5.7-A; 5.7-H. The birds killed by flying into the WTGs, and each foreseeable death of a large number of the birds that will try to navigate the 24 square mile gauntlet of rotating turbines, will be a violation of the MBTA. *See Moon Lake*, 45 F. Supp. 2d 1070 (finding that the MBTA applied to company's failure to protect migratory birds from electrical power poles resulting in the death of 38 birds); *United States v. FMC Corp.,* 572 F.2d 902 (2d Cir. 1978) (finding that unintended bird poisoning is a violation of the MBTA); *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) (finding that the MBTA could be applied to the misapplication of pesticides causing the death of several migratory species).

The proposed energy plant is prohibited, therefore, unless authorized under the MBTA by the FWS, and subject to injunction under the Administrative Procedure Act. *See, e.g., Humane Society v. Glickman*, 217 F.3d at 886-88. For these reasons, the energy plant cannot be permitted. Unless this project can be moved to another location that does not pose such a severe threat to migratory birds, there is no means for its lawful construction.

3. There Is Also an Unacceptable Risk that the Energy Plant Will Violate the Bald and Golden Eagle Protection Act.

Related to these certain MBTA violations are the potential adverse effects of the energy plant on protected bald eagles. This species is known to frequent the Nantucket Sound region, and bald eagles are commonly seen on Martha's Vineyard. There is a probability that bald eagles will use the area involved in the project, DEIS App. 5.7-A, and could be killed or injured from the 130 WTGs. Any such eagle deaths would be a violation of Bald and Golden Eagle Protection Act ("BGEPA"), as well as the MBTA and the ESA. 16 U.S.C. § § 668-668d. Without sound, credible data showing the proposed project will not adversely impact bald eagles, the risk of fatalities is unacceptable.

Like the MBTA, the BGEPA applies to both indirect and unintentional harm. *See Moon Lake*, 45 F.Supp. 2d at 1086. The BGEPA proscribes taking or killing "by any manner or means," including by "poisoning," "molesting," and "disturbing." 16 U.S.C. §§ 668(a), 668c; *see also Moon Lake*, 45 F. Supp. 2d at 1086. Thus, the BGEPA has nearly as broad an application as the MBTA. *See Mountain States Legal Foundation v. Hodel*, 799 F.2d 1423, 1427 (10th Cir. 1986) (explaining that the provisions of the BGEPA are "sweeping"). Additionally, 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 readily apparent that the energy plant could easily result in the taking or killing of bald eagles. If CWA is allowed to proceed with its plans, it will do so "knowingly" and will thus be liable under the BGEPA for any resulting eagle deaths. *See Moon Lake*, 45 F. Supp. at 1086 (finding that the plain language of the BGEPA, as well as the MBTA, applied to the defendant's failure to protect migratory birds from electrical lines). Thus, in addition to being subject to penalty and injunction under the MBTA, the proposed plant could also violate the BGEPA, subjecting it to penalties of far greater severity than those imposed under the MBTA. *See* 16 U.S.C. § 668(a),(b). Consequently, the unacceptable risk for eagle deaths and the consequent violation of the BGEPA argue strongly against the Corps issuing permits for the energy plant.

4. The Permit Application Must Be Denied Because the Energy Plant Will Adversely Affect Properties Protected Under the National Historic Preservation Act.

The National Historic Preservation Act ("NHPA"), 16 U.S.C. § 470 *et seq.*, 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. As a Federal agency, the Corps is bound by these obligations and has adopted implementing regulations. 33 C.F.R. Part 325 and Appendix C.

Although the Corps claims to have complied with all federal historic protection laws in its evaluation of the proposed project, the DEIS demonstrates that the project will violate the NHPA and weigh heavily against the public interest by causing adverse impacts to certain historic properties and failing to consider potential impacts to others. For these reasons, the permit application must be denied.

a. Background.

In furtherance of the Corps' review of the proposed project, CWA retained a cultural resource management firm, Public Archaeology Laboratory, Inc. ("PAL"), to conduct an assessment of the visual effects to nearby historic properties that would be caused by the proposed project if located at Horseshoe Shoals. (the "Visual Impacts

Assessment" or "VIA").[36] The VIA identified a number of historic properties on Cape Cod, Nantucket and Martha's Vineyard that fall within the area of potential effect for visual effects and assesses the effect on these historic properties.

Based on the PAL report, the Corps concluded that the project will have an adverse effect on 16 properties, including two National Historic Landmark ("NHL") properties – the Kennedy Compound and the Nantucket Historic District – four historic districts, and 10 individual historic properties. *See* DEIS at § 1.0. The Corps also concluded that the project will have no effect on one historic district and three individual properties. *See* DEIS, at § 1.0; PAL Visual Impact Assessment at 42.

On August 11, 2004, the Massachusetts State Historic Preservation Officer ("SHPO") concurred with the Corps' determination that the proposed project will have an adverse effect on the historic properties identified by PAL, including the Kennedy Compound NHL and the Nantucket Island NHL.[37] For both NHLs, the Massachusetts SHPO concluded as follows: "The adverse effect includes the introduction of visual elements that are out of character with the historic properties and alteration of the setting of the historic properties (36 C.F.R. 800.5(a)(2) (iv. and v.)."

b. The Corps is required by law to minimize to the full extent possible direct adverse effects from the proposed project to NHLs.

The preferred alternative for the construction of the proposed project will directly and adversely affect two historic properties of exceptional national significance to the United States that have been designated by the Secretary of the Interior as NHLs. These two properties are: (1) the Nantucket Historic District ("Nantucket Island NHL"); and (2) the Kennedy Compound ("Kennedy Compound NHL").

Under relevant federal law, including the provisions of Section 110f of the NHPA, 16 U.S.C. § 470h-2(f), Section 800.10 of the regulations of the ACHP, 36

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[36] The PAL report is entitled "Techinical 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 DEIS at Appendix 5.10-F.

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

C.F.R. Part 800, and Section 2.a. of the regulations of the Corps, 33 C.F.R. Pt. 325, App. C § 2.a, the Corps is required, to the maximum extent possible, to condition any permit issued to CWA as may be necessary to minimize harm to both the Nantucket Island NHL and the Kennedy Compound NHL.

Therefore, the Corps may not allow the proposed project to be constructed on Horseshoe Shoal in Nantucket Sound because of the resulting unavoidable adverse effects to the Nantucket Island NHL and Kennedy Compound NHL, and because the Corps has made it clear that it does not intend to condition the proposed permit, or undertake such planning and action, as necessary to minimize harm to these unique and irreplaceable national landmarks, even though the Corps is required by law to do so.

The only way to protect these two exceptionally significant landmarks as required by law is to mandate that the proposed project be constructed somewhere outside of Nantucket Sound.

(i) Section 110f of the NHPA.

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).

The Corps has promulgated its own regulations to implement Section 110(f), under which the Corps must take into account the effects of proposed Corps-permitted undertakings on historic properties "both within and beyond the waters of the U.S." 33 C.F.R. Pt. 325, App. C. § 2.a. The Corps is also required by its own regulations to place conditions on permits to minimize harm from such indertakings to NHLs. *Id.*. The Corps' regulations provide:

> Pursuant to Section 110(f) of the NHPA, the district engineer, where the undertaking that is the subject of a permit action may

> directly and adversely affect any National Historic Landmark, shall, to the maximum extent possible, condition any issued permit as may be necessary to minimize harm to such landmark.

Id. Thus, in addition to the procedural requirements of the Corps' historic preservation regulations, this requirement imposes substantive limitations on the Corps' permitting decisions where NHLs may be directly and adversely affected. In contrast to the procedures in its regulations regarding other kinds of effects, which require only that the Corps "take into account" such effects, *id.*, where direct adverse effects to NHLs are possible, the Corps is required to minimize harm to any such landmark "to the maximum extent possible." *Id.*

(ii) The Corps has made a clear finding that the proposed project will directly and adversely affect both the Kennedy Compound and Nantucket Island NHLs.

In the DEIS the Corps acknowledges that the proposed project will cause adverse *visual* effects to the Kennedy Compound NHL and to Nantucket Island NHL. The Corps does not, however, acknowledge in the DEIS its duty to minimize harm to these NHLs "to the maximum extent possible." Since the DEIS treats visual effects separately from other kinds of effects, *see* DEIS, at §5.10.4, it may be that the Corps assumes that where adverse effects to an NHL are only *visual*, such effects will therefore not *directly* adversely affect the NHL. This assumption would be incorrect, unsupportable in fact and directly contrary to applicable law.

The evidence that the Corps may be relying on this assumption, that visual effects are not direct effects, and the proof of this assumption's invalidity, are both contained in the conclusions in the Corps' own DEIS. The first evidence is found in the clever and disingenuous way that the DEIS treats the conclusions in PAL's VIA.

In its VIA, the Corps's historic preservation expert, 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.

DEIS, Appendix 5.10-F at p.38. (Emphasis in the original).

An obvious manipulation of these findings is found when we compare PAL's precise findings with the way they are reported in the DEIS, as follows:

> The VIA [Visual Impact Assessment] found that the significant *visual* alteration to the historic Nantucket Sound setting caused by the WTGs and related structures will constitute an alteration of the historic character, setting and viewshed of the Kennedy Compound, and features that make it nationally significant and designated as an NHL, as well as eligible for inclusion on the National Register.

DEIS, § 5.10.4.3.2., at p. 5-206. (Emphasis supplied).

The characterization in the DEIS of the conclusions in the VIA is different from the actual conclusions in the VIA itself in a subtle but important way. The VIA states that the turbines will "significantly alter the historic Nantucket Sound setting." The DEIS says that the turbines will cause a "significant *visual* alteration." The statement in the DEIS is, however, incorrect. The alteration of setting described by the VIA is not merely visual, but is clearly a *physical* alteration of the setting that will have profound physical *and* visual effects on that element of the Kennedy Compound NHL. This is clear from the language in the PAL's report and the conclusions of a report from the expert consulting firm Gray and Pape, attached hereto. Ex. 11, at 2.

The physical effect described in the VIA from the addition of the Cape Wind 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 (the "viewshed") as implied in the misleading characterization in the DEIS. 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.

DEIS, Appendix 5.10F, at p. 42. (Emphasis in the original).

This finding from PAL is consistent with the similar finding for the Kennedy Compound, cited above. And again, the DEIS changes the PAL finding ever so slightly in its characterization, as follows:

> The VIA [Visual Impact Assessment] found that the *visual* alteration to the historic Nantucket Sound setting caused by the WTGs and related structures will constitute an alteration of the historic character, setting and viewshed of this historic early settlement, maritime and whaling village and summer resort that make Nantucket nationally significant and eligible for inclusion on the National Register and the NHL.

DEIS, Section 5.10.4.3.2., at p. 5-208. (Emphasis supplied.)

Once again, the clear PAL finding that the proposed project will "alter the historic Nantucket Sound setting of the Nantucket Historic District NHL" is changed in the DEIS to a finding of "visual alteration," which is inconsistent with the clear language of the VIA. Once again, the visual effect from this physical change is not limited to views *from* Nantucket Island but will adversely affect views of the island from many directions and approaches, thus diminishing the ability of visitors to appreciate the historic significance of the water approaches to Nantucket.

The alteration of setting described in the VIA is a physical alteration of the Nantucket Sound setting for both these NHLs, and therefore it constitutes a direct adverse effect. The incorrect and unsupported characterization in the DEIS that these effects are merely "visual" is a completely ineffective effort to obscure their true character.

(iii) The relevant facts and the applicable law both support the Corps' finding of direct adverse effect to the Kennedy Compound and Nantucket Island NHLs.

In addition to the findings in the PAL VIA, it is evident from a review of the relevant facts and federal law applicable to this issue, that the proposed project will directly and adversely affect both the Kennedy Compound NHL and the Nantucket Island NHL, as described in the following sections.

(a) The Corps' regulations expressly define as direct adverse effects the kind of effects that the proposed project will cause to the Kennedy Compound and Nantucket Island NHLs.

Under the definitions in the Corps' regulations, an effect to a historic property is defined as follows:

> An "effect" on a "designated historic property" occurs when the undertaking may alter the characteristics of the property that qualified the property for inclusion in the National Register. Consideration of effects on "designated historic properties" includes indirect effects of the undertaking. For the purpose of determining effect, alteration to features of a property's location, setting, or use may be relevant, and depending on a property's important characteristics, should be considered.

33 C.F.R. Pt. 325, App. C. § 1.e.

Note that Corps regulations expressly provide that for the purpose of determining effect, consideration may be given to relevant alteration to features of a property's setting. It is clear that the alteration of a historic property's features would necessarily amount to a direct physical effect to that property. In using these terms, Corps regulations make clear that the cognizable effects to a historic property's setting are direct effects that result in a physical alteration of an important part, in fact a defining part, of both that property and that property's eligibility for the National Register.

The criteria for adverse effects in Corps regulations expressly define the alteration of a historic property's setting as an adverse effect to that property when that setting contributes to the property's qualification for the national Register.

The Corps' regulations provide as follows:

> Adverse effects on designated historic properties include, but are not limited to: (1) Physical destruction, damage, or alteration of all or part of the property; (2) Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register; (3) Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting; (4) Neglect of a property resulting in its deterioration or destruction; and (5) Transfer, lease, or sale of the property.

33 C.F.R. Pt. 325, App. C. § 15.

Under this provision, of the proposed project will cause direct adverse effects to the Kennedy Compound NHL and the Nantucket Island NHL in two ways, under sections (3) and (4) above, by: (i) altering the character the setting for each of these NHL's, where the character of that setting contributes to each NHL's eligibility for the National Register; and (ii) introducing visual elements that are out of character with both NHLs and that will alter each of their settings.

(b) The proposed project will alter and diminish the setting of both the Kennedy Compound NHL and Nantucket Island NHL.

Historic Preservation experts at the consulting firm of Gray and Pape engaged by APNS to evaluate this matter agree with PAL that, "[t]he waters of Nantucket Sound represent a vital part of the setting of the Nantucket Historic District and the Kennedy Compound." Ex. 11, at 7. Similar to the conclusions of PAL and the Corps, Gray and Pape concludes that:

> . . . [T]he Cape Wind energy project will directly and physically alter the shape and outline of the horizon and the water views of the sound from the Kennedy Compound NHL and Nantucket Island NHL. These effects will physically and directly alter, and diminish the integrity of, the character-defining element of the Nantucket Sound setting that is a physical part of these resources

> and renders them eligible for the National Register and as National Historic Landmarks.

Id.

In addition to the grounds for this conclusion as described briefly in the VIA, Gray and Pape note that the waters in Nantucket Sound surrounding Nantucket Island would naturally and logically be considered part of the important historic setting of this NHL.[38] They point out:

> The near shore waters surrounding Nantucket clearly constitute a natural resource exploited by the island's residents and were used for purposes related to the historical significance of the property. The waters immediately surrounding the island supplied sustenance to the island's residents in the form of fish, whales, seals, birds and shellfish. The waters served as the fields and pastures of many of the island's residents, in a nearly identical fashion to the fields and pastures of land-bound farmers. Island residents knew and exploited the near shore fishing and shell fish grounds in a sophisticated manner.

Id. at 5.

In addition, Gray and Pape describe the encompassing nature of the visual effects to Nantucket Island that will be caused by construction of the Cape Wind project because of the physical intrusion into, and alteration of, Nantucket Sound:

> The sea passage to [Nantucket] island, by private vessel or ferry, remains a special event, permitting the traveler to prepare oneself for arrival at a special destination and, in the case of Nantucket, a historic property. In essence, Nantucket Sound serves as the foreground to the historic property. The island's setting in the ocean, and the leisurely, ritualized approach over the water, constitute important elements of the historic property's setting. Placing the proposed wind farm astride this approach will

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[38] As noted above, the Corps' regulations state that it must take into account effects "both within and beyond the waters of the US." 33 C.F.R. Pt. 325, App. C. § 2(a).

> significantly alter the setting of the historic property by altering the approach to the property.

Id.

From the admissions in the DEIS and the observations of both PAL and Gray and Pape, there is no doubt that the construction of the proposed project at the preferred alternative site in Horseshoe Shoal will alter and diminish the integrity of the setting for both the Kennedy Compound NHL and the Nantucket Island NHL

(c) The setting of Nantucket Sound is a qualifying characteristic of eligibility for both the Kennedy Compound NHL and Nantucket Island NHL.

The DEIS acknowledges and restates PAL's conclusion that the Nantucket Sound setting for both the Kennedy Compound NHL and the Nantucket Island NHL is one of the elements that make both landmarks nationally significant, as well as one of the elements of their eligibility for the National Register. This is true even though the Corps' regulations state that an "effect" occurs on a designated historic property only when the undertaking may alter a characteristic that qualified (past tense) the property for inclusion in the National Register. 33 C.F.R. Part 325, App. C, § 1(e) ("An 'effect' on a 'designated historic property' occurs when the undertaking may alter the characteristics of the property that *qualified* the property for inclusion in the National Register.") (Emphasis supplied). This provision thus implies that the Corps will consider only qualifying elements of the property that were considered in the written nomination of a property to the National Register or the list of National Historic Landmarks.

The ACHP rules expressly require that in determining the eligibility of properties, federal agencies must consider all relevant characteristics of a historic property that may qualify them for inclusion on the National Register, including those not listed on the original nomination form.[39] Thus the identification process must be a

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[39] 36 C.F.R. §800.4(c)(1). Of course, in the case of the Kennedy Compound NHL as noted in the Gray and Pape report, the qualifying characteristic of setting is noted in the original nomination ("In the case of the Kennedy Compound NHL the property's significance is tied to its association with the Kennedy family. The NHL notes that the property commands sweeping views of Nantucket Sound and was the location where the Kennedy children learned to sail and engage in other important

"fluid and ongoing one." *Friends of Atglen-Susquehanna Trail v. Surface Transportation Bd.*, 252 F.3d 246, 263 (3rd Cir. 2001). Specifically, the ACHP rules state:

> The passage of time, changing perceptions of significance, or incomplete prior evaluations *may require* the agency official to reevaluate properties previously determined eligible or ineligible.

36 C.F.R. § 800.4(c)(1) (Emphasis supplied).

Similarly, for purposes of assessing adverse effects, the ACHP regulations expressly require consideration of all qualifying characteristics whether or not identified in the original nomination. The ACHP regulations state:

> Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register.

36 C.F.R. § 800.5(a)(1).

Where, as in this case, a conflict exists between the ACHP regulations and the regulations of the Corps, the regulations of the ACHP, to which Congress has given express authority to promulgate comprehensive regulations under the NHPA, control. *See Committee to Save Cleveland's Huletts v. U.S. Army Corps of Engineers*, 163 F. Supp. 2d 776 (N.D. Ohio 2001) (*"Huletts") citing Nat'l Ctr. For Preservation Law v. Landrieu, 496 F. Supp. 716, 742 (D.S.C.) aff'd per curiam*, 635 F.2d 324 (4th Cir. 1980) (holding that the ACHP has exclusive authority to determine the methods for compliance with NHPA); *Nat'l Trust for Historic Preservation v. U.S. Army Corps of Engineers*, 552 F. Supp. 784, 790-91 (S.D. Ohio 1982) (holding that the ACHP's regulations govern the implementation of § 106 for all federal agencies).

In particular, courts have held that the Corps may not rely on its own regulations to define or restrict the scope of its obligations under the NHPA where those regulations conflict or are inconsistent with the ACHP's regulations. *Huletts*, 163 F. Supp. at 792. In addition, the Corps' interpretation of the correct requirements under the NHPA or the ACHP's rules is not authoritative and is entitled to no particular deference. *See National Trust for Historic Preservation v. Blanck*, 938 F.Supp 908, note 15 (D.D.C. 1996) ("While an agency is entitled to substantial

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competitive activities. This clearly indicates that the waters of Nantucket Sound are part of the historically significant setting for the NHL.").

deference when it interprets statutes and regulations whose enforcement is committed to that particular agency, *Orengo Caraballo v. Reich,* 11 F.3d at 192-93, the NHPA delegates to the Army no particular interpretive or enforcement authority. Thus, the Army's interpretation of the NHPA is not entitled to the deference accorded to the Secretary of the Interior.").

In their report, Gray and Pape address the issue of the appropriate boundary of historic significance for Nantucket Island NHL and the Kennedy Compound NHL. They point out that although the area of the waters of Horseshoe Shoal are not included within the boundaries of these two NHLs as described in the nomination forms on file, this is not surprising, nor should it influence a more modern and up-to-date assessment of the extent of the area of historic significance for these properties that takes into account the changing perceptions of significance in the professional historic preservation community of historically important areas surrounding historic properties. The Gray and Pape report states:

> The fact that the NHL boundaries contained in the descriptions in the nomination forms for the Kennedy Compound NHL and the Nantucket Island NHL do not encompass into the waters of Nantucket Sound is not surprising, since NRHP guidance regarding the establishment of boundaries is clearly focused on establishing boundaries for terrestrial resources and specifically calls for the use of natural features "such as a shoreline" in the selection of appropriate boundaries.

Ex. 11, at 6.

Nevertheless, given the close associations that these properties have with the sea and maritime industries, the non-inclusion of some portion of the surrounding waters is analogous to the former practice of listing farm buildings in the NRHP without including any of the farmland associated with the buildings. *Id.* at 4.

Gray and Pape conclude that the conclusions in the PAL report and the DEIS almost compel the conclusion that the boundaries of historic significance for both the Kennedy Compound NHL and Nantucket Island NHL extend into Nantucket Sound to include the Horseshoe Shoals area, and that under the ACHP'r regulations, this should be acknowledged in the official records of these landmarks in the National Register. Gray and Pape state

> The Corps and PAL have concluded, in the DEIS, that the proposed Cape Wind project on Horseshoe Shoals will have an adverse effect upon the setting of the two NHLs. This strongly

> suggests that a reevaluation of the boundaries of these NHLs should include Horseshoe Shoals as an important component of the properties' historically significant setting. This conclusion is most consistent with the findings of the Corps and PAL that the proposed Cape Wind Project will have an adverse effect on both properties by altering the character of the properties' setting and by introducing a visual element that is out of character with the properties and their settings

Id. at 7.

Again, the DEIS, the PAL VIA and the expert opinion of Gray and Pape all agree on this key point - that the setting of Nantucket Sound is one qualifying element of eligibility, both for the National Register and as a NHL, for both the Kennedy Compound NHL and Nantucket Island NHL. Gray and Pape take this element into account in voicing their ultimate conclusion that the proposed Project will directly and adversely affect both of these landmarks. The Gray and Pape report concludes:

> For the reasons discussed above, we conclude that the Cape Wind project will directly and physically alter the shape and outline of the horizon and the water views of the sound from the Kennedy Compound NHL and Nantucket Island NHL. These effects will physically and directly alter, and diminish the integrity of, the character-defining element of the Nantucket Sound setting that is a physical part of these resources and renders them eligible for the National Register and as National Historic Landmarks.

Id. at 7.

The DEIS admits that the preferred alternative for the proposed energy project will directly and adversely affect the Nantucket Island NHL and the Kennedy Compound NHL. This conclusion is amply supported by both the PAL Visual Impact Assessment and the professional opinion of historic preservation experts at Gray and Pape.

In an earlier draft of the EIS prepared in May 2003, the Corps committed to avoid adverse effects to historic properties where feasible, including by mitigation or alternatives. 5/29/03 Draft DEIS § 5.10.4. In the current DEIS, this language has been omitted and the Corps' regulations require only that it "take into account" effects to historic properties, without any obligation to avoid or mitigate those effects. 33 C.F.R. Pt. 325, App. C., § 2(a). As both PAL and the DEIS acknowledge, however,

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).

Under these circumstances, the Corps is required by their own regulations and the NHPA to condition any permit to CWA so that harm to these two exceptionally significant, invaluable and irreplaceable national resources is minimized to the maximum extent possible. There are no mitigation measures that will achieve the level of protection of the Kennedy Compound and Nantucket Island NHLs mandated by Federal law. The ACHP rules thus obligate the Corps to evaluate alternative locations for the proposed project somewhere outside of Nantucket Sound.

c. The Corps failed to consider numerous historic properties in its section 106 review.

In preparing the DEIS, the Corps failed to consider visual effects from the proposed project to numerous historic properties in violation of Section 106 of the NHPA. Pursuant to its regulations, the Corps assesses direct and indirect effects on "designated historic properties," which include historic properties listed in or determined eligible for listing in the National Register and historic properties that, in the opinion of the SHPO and the Corps, appear to meet the eligibility criteria. 33 C.F.R. Part 325, Appendix C, §§ 1(a), 15.

The NHPA makes no distinction between eligible properties and "determined eligible" properties, nor does it require the concurrence of the SHPO and the federal agency regarding the eligibility of a property. The NHPA requires federal agencies to assess effects to any property "included in or eligible for inclusion in 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 struck down 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 an expert consultant in architectural history and historic preservation, Candace Jenkins, the Corps made no assessment of 2 properties listed on the National Register, 1 property that has been determined eligible and at least 20 properties that are eligible for inclusion on the

National Register. Ex. 12, at 2-5. In other words, the Corps has failed to assess at least 23 historic properties for visual effects as required under the NHPA.[40]

Specifically, the consultant concluded that the William Street National Register Historic District, the Seaman's Reading Room and the Ritter House, all located in Tisbury, MA, were not assessed by the Corps despite the fact that each property expressly meets the definition of a "Designated historic property" under the Corps' rules. *Id.* at 2. In addition, 4 historic properties in Falmouth, MA, 7 properties in Yarmouth, MA, 1 historic property in Harwich, 5 historic properties in Chatham, MA, 2 historic properties in Oak Bluffs, MA and 1 historic property in Tisbury, MA are all "eligible for inclusion in the National Register," but were not assessed by the Corps. *Id.* at 2-5.

The Corps' failure to assess visual effects to these 23 historic properties violates Section 106 of the NHPA and the Corps' own regulations. Under these circumstances, grant of the permit application would be unlawful and not in the public's historic preservation interests.

5. The Permit Application Must be Denied Because the Energy Plant Will Result in the Unlawful Incidental Take of Marine Mammals in Violation of the Marine Mammal Protection Act.

It is virtually certain that the CWA wind energy plant will cause take of marine mammals. When an activity will result in the take of marine mammals, the courts have ruled that the underlying action is unlawful and subject to injunction. *Kokechik Fishermen's Ass'n*, 839 F.2d 795 (D.C. Cir 1988).[41] In this case, despite the clear fact that unlawful incidental take will occur, CWA has failed to even apply for the required authorization, 16 U.S.C. § 1371(a)(5). As a result, the only possible conclusion is that the project is in violation of the MMPA and must be prohibited.

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[40] The consultant's review was limited to properties that had been recommended for listing by professional consultants as the result of comprehensive surveys or had been evaluated by Massachusetts Historical Commission staff through their National Register Eligibility Opinion process. Exhibit 12, at 2. Many of the properties 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. *Id.*

[41] The take associated with the CWA project will be significant. As noted in *Kokechik*, even *de minimus* incidental take of a few animals results in a prohibition of the underlying project if no authorization is granted. The ruling in *Kokechik* that a permit for known incidental take is necessary before an action can be approved has been affirmed in *Earth Island Institute v. Mosbacher*, 746 F.Supp 964, 974 (N.D.Cal. 1990).

In May 2002, the Corps appears to have initiated informal ESA section 7 consultation with the Northeast Regional Office of NMFS concerning construction of the data tower in Nantucket Sound. The purpose of the tower was to collect data for use in assessing the pros and cons of constructing the full wind plant in Nantucket Sound. Construction of the tower required driving of three pilings, which was expected to take three days.

In a response a letter dated June 27, 2002, the Regional Administrator identified ESA-listed species known to occur in the Sound. The letter noted that sound levels of approximately 125 dB were expected to be produced during the pile driving. It noted further that, during prior consultations, NMFS had identified 180 dB as the threshold level for preventing injury and harassment of marine mammals and sea turtles, and that the sound level expected to be generated by the pile driving was below this threshold. To confirm the expectation and ensure compliance with the 180 dB threshold, NMFS recommended that:

- the sound levels be monitored during the initial pile driving;
- an NMFS-approved observer be present during the pile driving to document the presence of listed species;
- work be suspended if a listed species is sighted in the vicinity of the pile driving; and
- all construction activities be immediately stopped, and further consultations be initiated, if a listed species is injured incidental to the construction.

The letter also noted that all marine mammals were afforded special protection under the MMPA and that the response was limited to the inquiry concerning ESA-listed species.

The DEIS for the proposed project indicates on page 1-10 and elsewhere that the Corps subsequently issued a permit to CWA for construction and operation of the data tower and that the permit contained a condition requiring that sound levels be monitored during pile driving at "an initial safety zone radius of 500 meters to determine compliance with the 180-dBL NMFS threshold." The DEIS also notes that "[a] similar safety radius was established by NMFS for pile installation at the San Francisco-Oakland Bay Bridge ...."

These actions and the June 27, 2002 letter from the Regional Administrator of the NMFS are cited repeatedly in the DEIS as the basis for proposed measures that it asserts would prevent marine mammals and sea turtles from being killed or harassed incidental to the installation of 130 wind turbines and the centrally located transformer platform. The proposed measures include: (1) establishment of a 500 m marine mammal and sea turtle safety zone around the sites where pilings are being driven; (2) suspending pile driving if a marine mammal or sea turtle is sighted within the 500 m safety zone; and (3) having an NMFS-approved observer present during the *initial* pile driving to look for and notify the operator if a marine mammal or sea turtle is sighted within the 500 m safety zone.

There is no indication of what is envisioned as "initial" pile driving, or why it apparently is expected that marine mammals and sea turtles would avoid areas where pile driving is occurring after this initial period. Also, while the referenced safety radius established by NMFS for pile installation at the San Francisco-Oakland Bay Bridge was a condition of an incidental harassment authorization issued by NMFS in accordance with the MMPA, the DEIS makes no mention of the applicable provisions of the MMPA or the requirement to obtain a MMPA "taking" authorization if the construction and/or operation of the proposed project would result in the taking of marine mammals as defined by the Act.

Although it does not say so explicitly, the June 27, 2002 letter from the NMFS Regional Administrator to the Corps appears to reflect a determination that the sound levels of approximately 125 dB expected to be produced during driving of three pilings over three days would not result in the taking of marine mammals as defined by the MMPA, provided a NMFS-approved observer was on-site to look for and confirm that pile driving was suspended if a marine mammal was sighted within the 500 m safety zone. Such a determination arguably was justified, given the expected low level of sound, the short duration of the activity, and the recommended monitoring measures. It does not follow, however, that installation of 130 turbines plus the transformer platform, over a period of 13 months or more, would have similar effects or that any adverse effects could be avoided by the same monitoring measures. In this regard, it is essential to recognize the following:

- The sound levels expected to be generated during installation of the 130 turbines are expected to be substantially greater than the 125 dB that was anticipated to be produced during installation of the data tower;

- If animals do not abandon or avoid areas where pile driving or other noise producing activities are occurring,

they could be exposed to potentially adverse sounds for extended periods of time;

- While there is reasonable evidence that exposure to sound levels 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., startle or frighten animals and cause 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 a highly endangered right whale in areas where they possibly could be affected by the proposed construction and operation of the proposed plant;

- Humpback whales, pilot whales and other cetaceans also are known to occur at least occasionally in Nantucket Sound, although what brings them there and what they do there is unknown;

- There are harbor seal and gray seal haul-outs and pupping sites around Nantucket Sound, and although the in-water movements of the seals have not been documented, it is likely that they routinely move through and possibly feed in and near the area where the wind plant is proposed to be constructed;

- Substantial numbers of fish are likely to 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; and

- 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.

Given the preceding, it is likely, if not virtually certain, that construction of the proposed project would result in the taking of marine mammals as defined by the MMPA. There also is a reasonable possibility that operation and decommissioning of the proposed plant would result in the taking of marine mammals. 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. Thus, compliance with the applicable provisions of the MMPA may require CWA to seek a waiver of the MMPA's moratorium on taking of marine mammals or a section 101(a)(5)(A) "small-take" authorization, rather than a section 101(a)(5)(D) incidental harassment authorization. In either case, an MMPA incidental take authorization is required, and CWA has not even applied. The project is therefore prohibited as a result of this unauthorized take.

6. The Permit Application Must be Denied Because the Energy Plant Will Result in Unlawful Discharges Under the Clean Water Act.

a. The project requires a section 404 permit.

The Clean Water Act prohibits the discharge of any "pollutant" from a point source to waters of the United States without a permit. Section 404 of the Clean Water Act authorizes permits for discharges of dredged and fill material into waters of the United States. 33 U.S.C. § 1344. Section 404 applies to navigable waters, which includes waters of the United States and the territorial seas. The term "territorial seas" means the belt of the seas measuring three miles seaward of the baseline. 33 U.S.C. § 1362(8). This three-mile limit applies to the cables and to the portion of the project falling within state waters. As discussed in Section IV.C.1, a substantial portion of the preferred alternative falls within state waters, when the federal-state boundary is correctly identified.

"Fill" is defined in Corps regulations as:

> (1) … material placed in waters of the United States where the material has the effect of:
>
> (i) Replacing any portion of a water of the United States with dry land; or
>
> (ii) Changing the bottom elevation of any portion of a water of the United States.

> (2) Examples of such fill material include, but are not limited to: rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and material used to create any structure or infrastructure in the waters of the United States.

33 C.F.R. § 323.3(e). *See also* 67 Fed. Reg. 31129 (May 9, 2002).

Both the erosion control mats and the rip rap alternative constitute "fill" under Corps regulations. According to the DEIS, there will be six plastic erosion control mats totaling approximately 800 feet per pole. This adds up to 2.4 acres of mats for 130 poles. The purpose of the mats is to control erosion associated with infrastructure. The mechanics of the mat design intentionally cause sediment to settle on the mats. This raises the bottom elevation of the seabed. Thus, the plastic erosion control mats clearly constitute fill.

The alternative described in section 4.1.3.3 also clearly constitutes fill. That alternative states that, if the mats are ineffective, CWA will resort to more classical forms of erosion control such as riprap (i.e., rock). Riprap raises the bottom elevation of the seabed and, as with the mats, the purpose of the riprap is to control erosion associated with infrastructure. Moreover, rock is specifically cited as an example of fill in Corps regulations. 33 C.F.R. § 323.3(e). However, after the erosion control mats are found to be ineffective, it will be too late to assess the impact of placing 2.4 acres of rock on the seabed. A section 404 analysis should be done in advance because, whether mats are used to induce a build-up of sediments above the existing seabed, or rip rap is used, the fact is that 2.4 acres of the seabed will be covered. Clearly, at least those areas of the project within three miles of the new extended baseline are subject to this requirement.

The use of jet plow technology to install the project cables also results in a discharge of dredged material and is regulated under section 404. EPA and Corps regulations provide that "the use of mechanized earth-moving equipment to conduct ... ditching or other earth moving activity in waters of the United States as resulting in a discharge of dredged material unless project specific evidence shows that the activity results in only incidental fallback." 33 C.F.R. 323.2(d)(2)(i); 40 C.F.R. 232.2(2)(i). In evaluating whether there is a regulable discharge, the Corps must determine if the equipment "pushes or relocates dredged material beyond the place of excavation, as well as whether material is suspended or disturbed such that it is moved by currents and resettles beyond the place of initial removal in such volume as to constitute other than incidental fallback, and thus be a regulable discharge." See 66 Fed. Reg. 4550, 4553 (Jan. 17, 2001). In order to qualify as "incidental fallback," the project must involve only "small volumes of dredged material." *See,*

e.g., 33 C.F.R. 323.2(d)(2)(ii). The jet plow technology results in suspension and disturbance of the sand, which will not necessarily resettle in the place from which it was removed. Moreover, the use of the technology to install the cables over miles will result in a disturbance of a significant amount of sand. The suspension and disturbance of this sand is a significant volume of dredged material, does not qualify as "incidental fallback" and, therefore, clearly is regulated under Section 404.

(i) The Corps has failed to evaluate the energy project under the section 404(b)(1) guidelines.

Because the project requires a section 404 permit, it must be evaluated against the Clean Water Act Section 404(b)(1) Guidelines ("Guidelines"). *See* 40 C.F.R. Part 230.

The Guidelines are the substantive environmental standards by which all section 404 permit applications are evaluated. The basic principle of the Guidelines is that discharges of dredged or fill material into waters of the United States should not occur unless it can be demonstrated that such discharges, either individually or cumulatively, will not result in unacceptable adverse effects on the aquatic ecosystem. The Guidelines specifically require that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" or unless the Corps determines that a project is necessary for navigation or anchorage. *Id.* § 230.10(a). Based on this provision, an applicant is required in every case (irrespective of whether the discharge site is a special aquatic site or whether the activity associated with the discharge is water dependent) to evaluate opportunities for use of non- aquatic areas and other aquatic sites that would result in less adverse impact on the aquatic ecosystem. *Id.* § 230.10(a)(1)(i). *See also* U.S. Environmental Protection Agency, Department of Defense, Army Corps of Engineers Memorandum: Appropriate Level of Analysis Required for Evaluating Compliance with the Section 404(b)(1) Guidelines Alternatives Requirements.

Under the Guidelines, the Corps must make appropriate factual determinations. The Corps must determine in writing the potential short-term or long-term effects of the proposed discharge on the physical, chemical and biological components of the aquatic environment, including determinations regarding: physical substrate; water circulation, fluctuation and salinity; suspended particulates/turbidity; contaminants aquatic ecosystem and organisms; proposed disposal site; cumulative effects and secondary effects. 40 C.F.R. §§ 230.11.

Among many other factors, the Corps must consider the effect of the discharge on "aesthetics" and on certain "preserve" areas. Specifically:

> 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. Similarly, the Corps must consider the effect of the discharge on parks, national and historical monuments, national seashores, wilderness areas and similar preserves:

> Those preserves consist of areas designated under Federal and State laws or local ordinances to be managed for their aesthetic, educational, historical, recreational or scientific value ... The discharge of dredged or fill material may modify the aesthetic, educational, historical, recreational and/or scientific qualities thereby reducing or eliminating the uses for which such sites are set aside and managed.

Id. at § 230.54.

In addition, the Corps also must determine that the proposed disposal site complies with the restrictions on discharge, including the inclusion of appropriate and practicable discharge conditions to minimize pollution or adverse effects to the affected aquatic ecosystems. The Guidelines specify how the Corps must conduct its evaluation and testing. *Id.* at § 230.60. The Corps *must* specify that the proposed discharge fails to comply with the Guidelines where:

> There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences; or
>
> The proposed discharge will result in significant degradation of the aquatic ecosystem ...
>
> The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem; or
>
> There does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with these Guidelines.

Id. § 230.12. Once these written findings are made, appropriate and practicable steps must be taken to minimize the potential adverse effects of a discharge. *Id.* at § 230.70 - 77.

Thus, at a minimum, the DEIS is inadequate because it fails to address the applicability of the Guidelines. In addition, none of the necessary findings have been made. The Corps is required to evaluate whether there is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem. As discussed in the alternatives discussion of these comments, there are numerous practicable alternatives available, and the CWA project is therefore prohibited at this location under section 404.

(ii) The Corps cannot overcome the presumption that practicable alternatives are available.

Because the proposed discharge is not water dependent, and would be located in a special aquatic site, there is a presumption that practicable alternatives to the discharge are available.

The Guidelines expressly provide that, 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).

Sanctuaries are specifically recognized in the regulations as special aquatic sites:

> Sanctuaries and refuges consist of areas designated under State and Federal laws or local ordinances to be managed principally for the preservation and use of fish and wildlife resources.

Id. at § 230.40(a). The preferred alternative would be located partially within a special aquatic site, as the Commonwealth has designated the Nantucket Sound as part of the CIOS under the MOSA, M.G.L. c. 132A.

Further, the Massachusetts DEP already "has determined that the wind turbines and transmission cables *do not meet the criteria to be classified as water dependent*" under 310 CMR 9.12. *See* May 26, 2003 Letter to Ellen Roy Herzfelder, Secretary, Executive Office of Environmental Affairs, Massachusetts DEP from Robert P. Fagan, Regional Engineer, Bureau of Resource Protection, Massachusetts DEP.

Because the Nantucket Sound is a special aquatic site and because the proposed project is not water dependent, practicable alternatives are presumed to be available. These alternatives have neither been presented by CWA nor evaluated by the Corps. The project, therefore, would result in illegal discharges under the Clean Water Act.

b. The project requires a section 402 permit.

The Clean Water Act 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). The term "pollutant" is defined as:

> ... dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological

> materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal and agricultural waste discharged into water ....

Id. at § 1362(6). 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). A permit under section 402 typically contains limitations on what can be discharged, along with monitoring and reporting obligations. *See* 40 C.F.R. Part 122.

In addition, 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. Ocean discharge guidelines are regulatory requirements, which specify the ecological, social, and economic factors that must be used by permit writers when they evaluate the impact of a discharge on the territorial seas, the contiguous zone and the ocean.

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, (3) Unreasonable loss of aesthetic, recreational, scientific, or economic value in relation to the benefit derived from the discharge.

Id. at § 125.121(e).

The project potentially could result in a Section 402-regulated discharge, but the DEIS does not adequately discuss the issue of wastewater discharges or the applicability of Section 402 and the Ocean Discharge Guidelines. These issues must be evaluated in a supplemental DEIS and, contingent upon that review, section 402 should be applied.

c. The DEIS fails to address the risk of oil spills from the transformer tank.

The proposed project will include a 40,000 gallon transformer tank to be filled with dielectric oil, but the DEIS fails to address the risk that the tank could rupture or spill or provide any information on what could happen in the event of a spill.

Regulations of the Minerals Management Service ("MMS") provide that owners or operators of oil storage facilities that are located seaward of the coast line must submit spill response plans for MMS approval. 30 C.F.R. § 254.1. In a November 2004 letter, the MMS stated that, based on these regulations, the project operator must submit an oil spill trajectory analysis identifying offshore and onshore areas that an oil spill could potentially affect. The analysis must assess worst case impacts. To date, such an analysis has not been conducted by CWA or the Corps. Becuase this is such a serious issue, and as a result of the Corps' failure to address it, APNS has commissioned its own studies. The results of our oil spill risk analysis are set forth in Volume II of these comments. Our previously filed report on these substances is set forth in Ex. 13.

7. The Permit Must be Denied Under the CZMA Because the Energy Plant Is Inconsistent with the Massachusetts Coastal Zone Management Plan.

The proposed project is subject to federal Coastal Zone Management consistency review, not only because the wind power plant will be partially located in the Massachusetts Coastal Zone, but also because the entire project will substantially affect the Coastal Zone. MCZN informed the Corps in a letter dated April 5, 2002 that because the project will have reasonably foreseeable effects on land or water uses or natural resources of the coastal zone "project components in or affecting Massachusetts coastal resources or uses are subject to CZM's federal consistency review." Letter from Thomas Skinner, Office of CZM, to Colonel Brian E. Osterndorf, Corps of Engineers, Re: Cape Wind Energy Project, File No: 200102913, dated April 5, 2002. Thus, the proposed project, including the wind turbines adjacent to Massachusetts marine waters, must be consistent with the enforceable policies of the Massachusetts Coastal Zone Management Program under the Coastal Zone Management Act, 16 U.S.C. § 1456(c).

CWA 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. The Massachusetts CZM Program lists section 10 Corps permits as a permit routinely reviewed for consistency. 301 CMR 21.07(2)(a)(1)(b). As a listed permit, the Corps' section 10 permit can not be issued without a certification from the applicant and

concurrence from CZM that the project complies with the enforceable policies of Massachusetts CZM Program. 16 USC §1456(c)(3)(A). CWA may also be subject to consistency review as federally-funded project under 16 USC §1456(d), and as an unlisted federal permit activity.

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." M.G.L. c.21A, §4A establishes the policies of the Massachusetts Coastal Zone Management Program. The policies are found at 301 C.M.R. 21.98: Policy Appendix.

a. The proposed project is not consistent with MCZM energy policy # 1.

Of the 19 distinct policies, Energy Policy #1 speaks directly to energy facilities located in the Massachusetts Coastal Zone. This Policy states that "[f]or 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 Massachusetts Coastal Zone Management Plan, dated March, 2002 (the "Plan") explains that, for purposes of Energy Policy #1, "CZM's objective is to ensure that the development and maintenance of energy resources are completed with minimal displacement of water-dependent industry and by the least environmentally damaging means practicable." Most types of energy facilities are categorically defined in the Plan either as coastally dependent or non-coastally dependent. However, for wind energy projects the MCZM Plan expressly provides that "wind power generation may be determined to be coastally dependent based on the nature of the specific project proposal." Plan, at 81.

In order for an energy facility to be coastally dependent, it must meet the following criteria: "(1) Utilize the indigenous energy resources of the coastal zone. (2) Serve as a transfer point between ocean and land. (3) Transmit or transport energy or energy sources from a transfer point or other energy facility located in the coastal zone to an inland or other coastal location. (4) Store energy or energy sources necessary for trans-shipment from the ocean, for surge storage, or to supply coastal energy facilities and maritime industries." Plan, at 78.

In terms of the proposed project, item (1) above is the only criterion that could possibly apply to render the project coastally dependent. However, it is clear from CWA's own data that wind is not a resource that is indigenous to the coastal zone. The DEIS is replete with examples of locations where wind – even the high class winds the CWA claims it needs – occurs outside of the coastal locations. The fact that such alternate project locations outside of the coastal zone may be more costly to develop does not change the fact, and thus the necessary finding, that wind is simply not indigenous to the coastal zone. The proposed project cannot be found to be coastally dependent and CWA must be required to consider an alternative outside of the coastal zone. All of the alternatives studied in the DEIS are located within the coastal zone and therefore the DEIS is fatally flawed.

b. The proposed project is not consistent with the MOSA.

The MCZM regulations clearly state that Massachusetts Ocean Sanctuary Act (MOSA) is part of MCZM's enforceable policies. 301 C.M.R. 21.98(12). As discussed in section IV.B.3., MOSA prohibits the construction of wind farms, including their associated transmission cables, within the CIOS. Therefore, the proposed wind power plant project cannot be found to be consistent with MCZM's enforceable policies.

MOSA is listed in the CZM Program under "Authorities for Program Policies." 301 C.M.R. 21:98. MOSA was submitted to the federal Office of Coastal Resource Management ("OCRM") in its initial submission for program approval, Massachusetts CZMP and Final EIS at 117, in 1978, and was approved by OCRM as part of a routine program change to the Massachusetts CZM Program and Federal Consistency Procedures in 1997. *See* Letter from Jeffrey R. Benoit, Director, OCRM to Margaret M. Brady, Director Massachusetts CZM Office, March 11, 1997. MOSA is therefore an enforceable policy in the Massachusetts CZM Program, and CWA must therefore certify that it is consistent with MOSA before the Corps may issue a section 10 permit.

As part of the Massachusetts CZM Program, MOSA contains specific requirements controlling private and public uses of the coastal zone pursuant to 15 CFR 930.11(h). As described in Section IV.B.3., these requirements, *inter alia*, prohibit activities in state sanctuaries such as structures on or under the seabed and offshore floating electric generating stations, M.G.L. c. 132A, §15, and other activities associated with the generation, transmission and distribution of electrical power. M.G.L. c. 132A, §16.

Both the portions of the proposed project that lie in federal waters outside state sanctuaries and within state sanctuaries must be consistent with the enforceable

policies of the Massachusetts CZM Program. As part of the enforceable policies of the Massachusetts CZM Program, MOSA provides that "[a]ll ocean sanctuaries ... shall be protected 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*, or the Cape Cod National Seashore." M.G.L. c. 132A, §14 (emphasis added).

In fact, in discussing CZM's authority and responsibility under MOSA, the MCZM Plan specifically provides:

> the Massachusetts Ocean Sanctuaries Act, which encompasses coastal waters of the highest water quality and the preponderance of offshore shellfish beds and traditional commercial and sports fishing grounds, *requires state agencies . . . to give special cognizance to the care and protection of the sanctuaries in siting energy facilities.*

Plan, at 81 (citations omitted).

In enacting MOSA, the Legislature has expressly decided that the protection of Ocean Sanctuaries requires the outright ban of energy generating facilities, with all their attendant structures, in Ocean Sanctuaries. Thus, MCZM cannot find the project to be consistent with a statute, MOSA that prohibits its very existence. Further, the project is inconsistent with MOSA regardless of whether it is located partially, entirely, or only adjacent to CIOS. MOSA has spoken in no uncertain terms: Siting electric generation facilities in ocean sanctuaries is, per se, against the public policy of this Commonwealth because of its adverse effects on those sanctuaries. Moreover, the portions of the proposed project located in federal waters "significantly alter" or "endanger the ecology or the appearance of the ocean" in ways that adversely affect ocean sanctuaries under MOSA. The legislature has decided that electric generation facilities, like the proposed project, present such adverse effects on our coastal resources that they must be categorically banned. Those adverse effects are equally repugnant to MOSA when the electric generation facility is located right next to and completely surrounded by the ocean sanctuary.

MCZM has already stated that its jurisdiction extends to projects that have direct OR reasonably foreseeable effects on land, water uses or natural resources of the Massachusetts coastal zone. Clearly the proposed project presents just the kind of reasonably foreseeable adverse effects that MOSA plainly prohibits. Since MOSA is part of the MCZM enforceable policies, the Proposed Project is clearly inconsistent with those policies.

c. The DEIS does not address MCZM's concerns.

MCZM's April 2002 Letter included grave concerns about the proposed project. These concerns have not been addressed and, therefore, the DEIS is clearly inadequate. For example, in the Letter MCZM requests "that the federal DEIS include a full alternatives analysis of current and future power demands in the New England region, and potential energy sources and sites for the generation of electrical power for transmission to the New England grid." MCZM states its belief that "it is not appropriate to consider the details of the proposed wind farm at Horseshoe Shoals until such an analysis has been completed." Indeed, there is no such analysis contained in the DEIS, and therefore, there is not an adequate basis upon which MCZM can conduct its consistency review.

Similarly, MCZM finds critical deficiencies with respect to CWA's alternatives analysis:

> In the context of Energy Policy #1, a determination must be made by CZM that the proposed energy facility is dependent on siting within a coastal location; that is, the project is "coastal dependent". *Absent a comprehensive alternatives analysis, CZM does not believe that the proposed project can be found to be consistent with its energy policy.*

(Emphasis added.) Again, CWA has put the cart before the horse. In the DEIS, CWA has studied only coastal alternatives. Even the on-shore MMR alternative is located within the coastal zone. Once again, a robust alternatives analysis -- here, one which would include non-coastal alternatives -- is completely lacking. Accordingly, MCZM has no choice but to determine, based on the data that is included in the DEIS that the proposed project is not coastally dependent because the DEIS includes examples of many non-coastal sites that have occurrences of high-class winds.

d. The impacts of the proposed project will also violate certain enforceable policies of the Massachusetts CZM program.

Habitat Policy #1: How will the proposed project adversely affect habitat in the coastal zone?

Coastal Hazard Policy #1 and #2: Will it create erosion hazards within the CZ?

Ports Policy #3: What effects will it have on Ports?

Public Access Policy #1: Will it adversely affect recreational access?

Ocean Resources Policy #2 and #3: How will it adversely affect fisheries, birds and other ocean resources?

Growth Management Principle #1: What are its adverse growth inducing impacts?

B. The Permit Application Should Be Denied Under Massachusetts Law.

1. The Corps Must Defer to the Position of the State and Affected Local Governments and Deny the Application.

a. The Corps' section 10 regulations require that the permit be denied due to state opposition.

Under its regulations, the Corps must deny the permit. Corps regulations include a comity provision that requires the Corps to deny permits without prejudice when there is state opposition to the proposed project. Under the Corps' general regulatory policies:

> [W]here the required Federal, state and/or local authorization and/or certification has been denied for activities which also require a Department of the Army permit before final action has been taken on the Army permit application, the district engineer will, after considering the likelihood of subsequent approval of the other authorization and/or certification and the time and effort remaining to complete processing the Army permit application, either immediately deny the Army permit without prejudice or continue processing the application to a conclusion. If the district engineer continues processing the application, he will conclude by either denying the permit as contrary to the public interest, or denying it without prejudice indicating that except for the other Federal, state or local denial the Army permit could, under appropriate conditions, be issued.

33 C.F.R. § 320.4(j). The regulations further provide that "[e]ven if official certification and/or authorization is not required by state or federal law, but a state, regional, or local agency having jurisdiction or interest over the particular activity comments on the application, due consideration shall be given to those official views as a reflection of local factors of the public interest." *Id.* The importance of these state approvals is confirmed by the statement of the Corps' project manager, Ms. Karen Adams, in the *New York Times*, where she states that the several state and local agencies "all have to say yes" for the permit to be approved. Ex. 14.

As has been evident from the start of the review process, the official position of the state is one of total opposition to the project. Governor Romney, Attorney General Reilly, Senator Kennedy, and Congressman Delahunt – the Representative for the region – have each, on numerous occasions expressed their opposition to the proposed project. For example, Governor Romney testified at a Corps' hearing on December 7, 2004, in which he stated, "I've seen wind farms, and they are not pretty. If we want them in Massachusetts, we'll build them, but not here on Nantucket Sound." At that same meeting, Attorney General Reilly commented, "I support renewable energy, but there is a right and a wrong way and this is the wrong way. . . . This is no wind farm; it's a power plant." Each of these state officials has expressed their opposition in formal letters as well. Ex. 15. As such, the Corps must take those comments into account as "a reflection of local factors of the public interest."

Moreover, Corps regulations acknowledge that the Corps is not responsible for determining land use matters, which instead rest with state and local government. 33 C.F.R. § 320.4(j). The regulations direct the Corps normally to "accept decisions by such governments on those matters unless there are significant issues of overriding national importance." *Id.* There are no issues with overriding national importance with the proposed plant.[42] Consequently, the Corps must accept the decisions of the state on this matter and deny the project.

b. The permit must be denied under Executive Order 13352 on cooperative federalism.

Not only do Corps regulations indicate that the permit application should be denied in deference to the Commonwealth's stated opposition, President Bush's Executive Order on Cooperative Conservation further underscores the necessity of comity in federal/state project review. *See* 69 Fed. Reg. 52989 (Aug. 30, 2004). As previously noted, President Bush signed Executive Order 13352 on Facilitation of Cooperative Conservation last August. The purpose of the Executive Order "is to ensure that the [federal agencies] 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 decision-making, in accordance with their respective agency missions, policies, and regulations." *Id.*

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[42] Even though the regulations indicate that national energy needs is one issue of national importance to be considered, the project cannot be claimed to be of national significance with respect to the provision of power. The proposed project is not necessary to meet energy needs, particularly in New England where there is an energy surplus. Even the project proponent does not attempt to justify the project as necessary to satisfy pressing energy needs, but rather because of its supposed effect on global warming.

The Executive Order defines the term "cooperative conservation" to mean "actions that relate to use, enhancement, and enjoyment of natural resources, protection of the environment, or both, and that involve collaborative activity among Federal, State, local, and tribal governments, private for-profit and nonprofit institutions, other nongovernmental entities and individuals." *Id.* The Corps is also to take into account and respect "the interests of persons with ownership or other legally recognized interests in land and other natural resources" and accommodate "local participation in Federal decision-making." *Id.*

Under the Order, the Corps is therefore required to implement the RHA in a manner that promotes the use, enhancement, and enjoyment of Nantucket Sound and protects this important environment, with due deference to the interests and concerns of the Commonwealth, local government, and affected parties. The state and local opposition to the project, as expressed by those elected by the residents to represent their interests, could not be clearer. The construction of the proposed project will not enhance Nantucket Sound, nor facilitate the enjoyment of this valuable natural resource. While wind energy generally will help improve the environment, it will only do so by thoughtful siting. Neither the applicant nor the Corps has provided an adequate analysis of the purported benefits in the real-world context of this project. Any benefits that can be truly attributed to the project in this regard are small. The Commonwealth's officials, as well as local government officials, have spoken out against the proposed project with a practically unanimous voice. Permitting of the proposed project can only be done in defiance of President Bush's Executive Order.

c. The permit must be denied under Executive Order 13158 on Marine Protected Area conservation.

Pursuant to Executive Order 13158, Nantucket Sound qualifies as a marine protected area ("MPA") and consequently must be accorded additional protections by the Corps during the federal decision-making process.[43] 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. 34909 (May 31, 2000).

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[43] President Bush affirmed the federal policy mandate established in Executive Order 13158 on June 4, 2001. Secretary of Commerce Donald L. Evans announced that the Administration had "decided to retain Executive Order 13158 on marine protected areas." Secretary Evans further stated that the Administration was "committed to improving conservation and research in order to preserve our great marine heritage," describing marine protected areas as a "national treasure" that "must be protected and dutifully maintained."

Nantucket Sound qualifies as an MPA under the definition set forth in the Executive Order. Under the Order, all federal agencies are directed by the President to avoid harming the MPA. In a case such as this, where the proposed federal action is antithetical to the protected values of the MPA, compliance with this Presidential mandate requires the Corps to reject CWA's application. Although APNS has repeatedly raised this issue with the Corps, *see, e.g.*, APNS letters of July 8, 2002, December 23, 2002, June 3, 2003, and September 9, 2003, the Corps has done nothing to indicate how it intends to abide by the Order. Indeed, the DEIS entirely fails to address the issue.[44]

The purpose of the MPA system is to:

(a) strengthen the management, protection, and conservation of existing MPAs and establish new or expanded MPAs;

(b) develop a scientifically based, comprehensive national system of MPAs representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources; and

(c) avoid causing harm to MPAs through federally conducted, approved, or funded activities.

Id. Under the Order, all federal agencies are obligated to provide special protections to MPAs. 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. The Order effectively instructs federal agencies not to permit federal activities that conflict with the types of values protected in an MPA under federal, state or local law.

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[44] The federal MPA program and its applicability to this project are discussed in Donald C. Baur, W. Robert Irvin, Darren R. Misenko, *Putting "Protection" into Marine Protected Areas*, 28 Vt. L. Rev. 497 (2004).

The MPA Center has developed criteria to identify specific sites or classes of sites that fall within this definition. *See* <http://mpa.gov/mpaservices/sup1_define.html>. These criteria indicate that the site must be a marine site with defined geographical boundaries, that there must be some sort of federal, state, territorial, local or tribal law or regulation applicable to the site year-round, and that these regulations should be established with an expectation of, or at least the potential for, permanence.[45] *Id.*

By operation of law, Nantucket Sound qualifies as a MPA pursuant to two separate bodies of state law. The designation of Nantucket Sound as part of the Cape and Islands Sanctuary ("CIOS") qualifies, at the very least, the state waters of the Sound as an MPA. The Commonwealth's complex body of fishery laws, which unquestionably apply throughout Nantucket Sound, qualifies the entirety of Nantucket Sound as an MPA.

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 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

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[45] Although the MPA Center has not yet finalized its inventory of all MPA sites, the CIOS is listed on the inventory of marine managed areas that will be used to fulfill the Center's Executive Order-imposed duty to publish and maintain a list of MPAs. According to the MPA Center, there are now 251 federal sites, 25 federal-state partnerships, and 41 state sites, and the state list includes the CIOS. *See* <http://mpa.gov/mpaservices/inv_status/status_inv.html>. Subsection 4(d) further indicates that the Secretary of Commerce and the Secretary of the Interior are to establish and jointly manage a website for information on MPAs and must publish a list of MPAs that meet the definition of an MPA. *Id.* While no final MPA list has yet been prepared, the Secretaries of Commerce and the Interior have established the referenced website containing a partial list of areas that satisfy the MPA criteria. *See* <http://mpa.gov/mpaservices/mpa_inventory.html#definition>. The CIOS is on the preliminary list, and it easily meets the MPA List Site's working definition and operational criteria regardless of the status of a finalized list. The MPA Center's failure to finalize the inventory list should not be grounds for a federal agency to ignore the protections afforded under state law to a per se MPA site.

> Bay, the Cape Cod Canal, Pleasant Bay, and portions of the Atlantic Ocean.

G.L.M. 132A, § 13(c) (emphasis added).[46]

The MOSA extends special protections to the waters of Nantucket Sound. The Massachusetts legislature fully intended those protections to apply permanently, year-round, to a clearly defined geographical area, which qualify it for MPA status. The MOSA itself 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. State law further ensures compliance with the provisions of the MOSA: "It shall be the responsibility of all state agencies to issue, deny or condition permits or licenses or to conduct their activities consistently with the provisions of M.G.L. c. 132A, § 18." 302 C.M.R. § 5.09 (2).

There has been considerable discussion regarding whether the CIOS includes the center portion of Nantucket Sound so that all of the Sound qualifies as an MPA. Mr. Myron Gildesgame, Director of the Office of Water Resources for the Commonwealth has argued that the Executive Order does not apply to the Corps' review because the proposed project is located outside of the MOSA, in the middle of

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[46] The Supreme Court determined in 1986 that the center of Nantucket Sound belonged to the United States. *See United States v. Maine*, 475 U.S. 89, 103-05 (1986). Nonetheless, there is no doubt that the Commonwealth intended to include all of Nantucket Sound in the CIOS. In fact, the Commonwealth not only intended to protect the whole of Nantucket Sound under the MOSA, the Massachusetts Attorney General's Office, the Executive Office of Environmental Affairs, the Massachusetts Coastal Zone Management Office, and the state Division of Marine Fisheries jointly nominated the Sound in 1980 to be designated a national marine sanctuary. *See* <http://www.capecodonline.com/cctimes/archives/2002/dec/15/ed.htm>. Citing the Sound's importance as a "'habitat area containing spawning, nursery and feeding grounds and migration routes for a number of the nation's important living animal resources, an area with a high biological productivity and diversity of species, and a premier marine-oriented recreational and historic area of regional and national significance,'" these state agencies sought to protect 163 square miles of water and seabed, some of which is located outside the three-mile limit, under the Commonwealth's management. *Id.* State officials have consistently advocated the management of the Sound under the jurisdiction of one office, explaining that "'layers of jurisdiction'" are too complex for efficient and effective administration of the Sound's resources. *Id.* Indeed, it is hard to imagine a project that could more clearly illuminate the inanity of the current jurisdictional framework for the Sound than the proposed project.

the Sound in federal waters. The issues of the state's actual boundary is discussed in more detail later in these comments. Ultimately, whether the MOSA establishes the entire Sound as an MPA is irrelevant for the purposes of the Corps' review. The Executive Order does not limit the responsibility of federal agencies to protect MPAs to the maximum extent practicable only when the proposed federal action is occurring in the MPA itself. Rather, the Executive Order provides that "[e]ach 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 . . . shall avoid harm to the natural and cultural resources that are protected by an MPA. . . " 65 Fed. Reg. 34909. Thus, projects falling outside of MPAs, but nonetheless having the potential to "affect" MPAs, must be evaluated with the directives of the Executive Order in mind. Because of the unique geographic configuration of the Sound, and the unusual jurisdictional framework that is in place, it makes no difference that the proposed project is a few miles from state waters. The project will unquestionably affect state sanctuary waters, and thus, the Corps must comply with the Executive Order in its review of this project.

Of course, the central purpose of the MOSA further illustrates the reason that the Corps must undergo MPA review for the proposed project, even if the project falls outside the MPA. The proposed project will impact the ecology of the Sound, including areas well within the Commonwealth's jurisdiction. Impacts to avian and marine species will not be somehow contained within the federal pocket. Noise impacts, altered patterns of migration, changes in habitat do not follow political boundaries. Furthermore, given the scale of the project, there is simply no way to construct it without running afoul of MOSA prohibitions, which protect sanctuary waters from any activity that "would significantly alter or otherwise endanger the ecology *or the appearance of the ocean*, the seabed, or subsoil thereof." *Id.* 132A § 14. Permitting of the proposed project cannot occur without violating this prohibition. APNS's conclusion on this point is bolstered by CLF, an avid supporter of the proposed project. CLF noted just five years ago that the state marine sanctuary program, although in need of strengthening, "ha[s] stopped some conflicting proposals, including oil and gas pipelines, sewage treatment outfalls, electrical energy cables, and *ocean windmill farms*." Jennifer Atkinson et al., *The Wild Sea, Saving Our Marine Heritage*, Conservation Law Foundation, 95 (Sept. 2000) (emphasis added). It is clear that the appearance of state sanctuary waters will be fundamentally degraded by the proposed project.

Even if the Corps refused to acknowledge the incongruity of its position that permitting the project is permissible because the waters are federal and the project would not "affect" state waters, the entire Sound is covered as an MPA pursuant to the complex set of fisheries regulations promulgated by the Commonwealth. It is

indisputable that the Commonwealth has the authority to regulate federal waters for fishery purposes. Under the FCMA, Congress extended the Commonwealth's fishery jurisdiction over the entirety of Nantucket Sound because of the problems inherent in having the state regulate the waters three miles from the coast and the federal government regulate the pocket of waters in the middle. *See* 16 U.S.C. § 1856; *Davrod Corp. v. Philip G. Coates*, 971 F.2d 778, 786 (1st Cir. 1992).

Instead, Congress granted Massachusetts jurisdiction over fisheries, *see* 16 U.S.C. § 1856, pursuant to which the Commonwealth has closely regulated fishing activities. As noted above, an MPA exists under the Executive Order whenever state laws or regulations provide "lasting protection for part or all of the natural resources . . . therein." The MPA Center recognizes fishery conservation regulations as qualifying for this purpose. For example, the MPA Center's preliminary federal inventory identifies 36 federal fisheries management zones that fall under one of the following categories: 1) Federal Fisheries Management Zones; 2) Federal Threatened and Endangered Species Protected Areas; 3) and Federal Threatened and Endangered Species Critical Habitats. *See* <http://mpa.gov/mpaservices/inv_status/sup1b_nmfs.html>. The majority of the listed federal fisheries management zones "are gear-restricted areas (i.e., areas that prohibit the use of one or more gear types) established to protect habitats, fishery stocks or species assemblages, and/or promote the recovery of threatened or endangered species." *Id.*

The regulations that qualify federal gear-restricted areas for special status are substantially similar to those managing the Sound. The Massachusetts Division of Marine Fisheries has promulgated numerous regulations that "provide lasting protection for part or all of the natural . . . resources" of the Sound. These regulations include: 1) M.G.L. c.130, § 2B, which establishes a marine fisheries fund that uses funds collected "for the purpose of managing and protecting marine fish and fisheries" to help carry out the Division's functions; 2) M.G.L. c.130, § 17, which lists one of the Director's powers as "establish[ing] and maintain[ing] properties at such places within the commonwealth as he may select for the purpose of propagating, rearing and protecting fish"; 3) M.G.L. c.130, §§ 42, 54, 72, which establish facilities to assist in the propagation of lobsters and shellfish, and limit the taking of scallops as protection against over-harvesting; and 4) M.G.L. c.130, § 105, which empowers the Commissioner of Environmental Protection to protect public and private property, wildlife and marine fisheries by "restricting or prohibiting dredging, filling, removing or otherwise altering, or polluting, coastal wetlands." *See generally* M.G.L. c. 91, 130, and 132A.

These regulations are generally applicable to all waters within the state marine fisheries jurisdiction, but the Commonwealth also has promulgated regulations that are specifically applicable to the Sound. For example, the Commonwealth has

established the Sound as part of the southern area management zone for the purpose of regulating the use of gill nets for taking bluefish. *See* 322 C.M.R. § 4.05 (1)(b). Similarly, at-sea processing of any fish or shellfish in Nantucket Sound requires a special permit from the Director of Marine Fisheries. 322 C.M.R. § 8.08 (1). In addition, the Massachusetts Division of Marine Fisheries has exercised its jurisdiction over Nantucket Sound by passing restrictions governing the permissible boat length of any boat fishing the waters of the Commonwealth, including Nantucket Sound. *See Davrod*, 971 F.2d at 780 (finding that a boat length restriction was reasonably related to the conservation of the fishery). Indeed, the DMF requires virtually all commercial fishing vessels to obtain a permit before they may take fish or shellfish. *See Strahan v. Coxe*, 939 F. Supp. 963, 974 (D. Mass. 1996), *affirmed in part, vacated in part*, 127 F.3d 155 (1st Cir. 1997) (*citing* 322 C.M.R. §§ 7.01-7.05, 8.08). *See also* M.G.L. ch. 130, § 80 (with exceptions for holders of other permits, "no person shall fish for or take fish for commercial purposes in the coastal waters . . . unless he is the holder of a commercial fisherman permit"); §§ 7.01- 7.03 permits; § 7.01(7) ("The Director [of the Division of Marine Fisheries] may at any time, in his discretion, attach any written conditions or restrictions to the permit deemed necessary or appropriate for purposes of conservation and management or to protect the public health, welfare and safety."); § 8.10 ("A regulated fishery permit shall be required to harvest, catch, or take any species of fish by means of a gillnet to be issued in accordance with 322 CMR 7.01(4)(a).").

Between the MOSA and the Commonwealth's fisheries regulations, there are a number of provisions that protect Nantucket Sound from development. Those provisions qualify the Sound as an MPA entitled to heightened protections under federal law and Executive Order 13158. This Order is intended to "help protect the significant natural and cultural resources within the marine environment for the benefit of present and future generations by strengthening and expanding the Nation's system of marine protected areas," and to help "to avoid causing harm to MPAs through federally conducted, approved, or funded activities." 65 Fed. Reg. at 34909.

The strength of this argument is enhanced by the recent extension of the Massachusetts boundary, as discussed in the following section. As a result of that new boundary, the CIOS itself now extends into the project itself, along with the MOSA prohibitions. Thus, Executive Order 13158 and its harm prohibition directly apply to the project by virtue of sanctuary status as well.

The proposed project is completely at odds with the protections the Commonwealth has painstakingly developed and enforced for the Sound. These protections, pursuant to the Executive Order, circumscribe federal action. The Corps' complete disregard of the Executive Order, in what is the federal government's first real test in the MPA arena, suggests that the Department of the Army views the

Executive Order as an impotent, symbolic measure, the purpose of which is to allow the Department to pay lipservice to environmental concerns. There are numerous other locations that are entitled to protected status under the Order, and many of those areas, if not yet currently threatened, will soon be by developers intent on hijacking the section 10 process, with the Corps' assistance, for private gain.

As a federal agency, the Corps must comply with this Executive Order. The only way to do so is to deny the permit requested. The DEIS must also explain the Corps responsibilities under the Order and how it intends to fulfill them, which it currently fails to do.

2. The DEIS Fails to Consider the True State Boundaries.

It is now clear that the federal/state boundary that CWA relied upon in its effort to escape the state law protections for the Sound, that the Corps has used to evaluate this project, and that the Corps knowingly had the public to use for comment through the premature release of this DEIS, is erroneous. All of the charts published by the Corps in the DEIS were based on the NOAA navigation chart. The Corps failed to use the submerged lands map prepared by the MMS. This was a major error, resulting in the Corps misrepresenting to the public what authorities applied to which of the alternatives.

APNS and the Governor of the Commonwealth warned the Corps of this problem months ago and requested that the Corps delay the release of the DEIS until the United States Boundary Committee, which had announced its intention of resurveying the federal/state boundary in Nantucket Sound, completed its study. *See* Ex. 16. The Boundary Committee conducted its field research in recent months, and one week before these comments are due, the Massachusetts Highway Department announced that the boundary would be redrawn. Ex. 17. Indeed, two days before these comments were due, the federal government granted Massachusetts' request to redraw the state boundaries. Ex. 18. It is unconscionable that the Corps refused to delay the release of the DEIS, had numerous parties commit precious time and resources reviewing a document that they knew to a certainty was incorrect with respect to one of the alternative sites and had very good reason to know was incorrect with respect to the preferred alternative.

As APNS has previously noted, the federal/state boundary is self-executing. *See* APNS letter (July 29, 2004). An official statement from the Boundary Committee was not necessary for the boundary to change. If the Corps had actually wanted to resolve the issue in a manner sensitive to the public's resources and concerns, all that was necessary was for the Corps to visit the features in question with a geologist. Given that the Corps' expertise is actually with the development of civil works

projects, it is inexplicable why the agency simply did not conduct its own investigation of the issue.

Indeed, if the Corps intended to comply with NEPA, it should have. NEPA regulations provide that where "incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement." 40 C.F.R. § 1502.22(a). The costs of this exercise are hardly exorbitant, and the information was necessary to define the project itself and determine the applicable legal requirements. Hence, the Corps has violated NEPA by failing to take this issue into account so that the public has an opportunity to review and understand what authorities apply to the project. *See* discussion in Section V.E., *infra*.

In fact, the true boundary extends 5.5 miles from the coast, when measured as it should be from the Bishop and Clerks rock formation. This extension not only expands the Commonwealth's jurisdiction by approximately 12 square miles, it also scoops up approximately 10% of the turbines in the proposed project. CWA's response has been that it does not believe that the change will affect its project significantly. It has said numerous times in the past that if the boundary does change, it will simply reconfigure the grid of turbines to avoid state jurisdictions (and state prohibitions).

Of course, that response is contradicted by CWA's vigorous behind-the-scenes efforts to have the boundary remain the same as inaccurately reflected in the NOAA maps. Ex. 19. In fact, as noted in correspondence between Helen Golde with the Department of Energy and Carla Sullivan, at NOAA, CWA has been quite concerned with how a boundary change will affect its project for some time. In fact, after a conversion with Mr. Duffy, Ms. Golde stated that:

> Mr. Duffy has heard that the State of Massachusetts is interested in designating the rock that this beacon sits on as an island, which would expand Mass state waters. This expansion would encompass a significant number of the planned turbines in State waters (he wasn't sure how many, but perhaps as many at (sic) a quarter of the turbines, *which he says might kill the project*).

Ex. 20.

An additional problem is one that did not even require the resolution through an on-site investigation. In this case, all that was necessary was for the Corps actually to read a Supreme Court case to identify the accurate boundary. In *United States v.*

Maine, 516 U.S. 365, 366 (1996), the Court determined that "the coastline of Massachusetts includes the following straight lines: (d) A line from a point on Point Gammon on Cape Cod...to the southwestern-most point of Monomoy Island...." The federal/state boundary is measured three nautical miles from the bay closing line. Waters that are landward of the bay closing line are considered the internal or inland waters of the state. That line separates the internal waters of the state from the adjacent territorial sea. The actual state-federal boundary line bisects the Handkerchief Shoal site so that perhaps half of the site falls within state waters. Once again, the Corps did not bother to address this significant discrepancy, content to let the public waste its time reviewing an inaccurate DEIS. The Corps' failure to clarify this critical matter is unfathomable.

3. The Proposed Project Is Prohibited by MOSA, Which All Massachusetts State Agencies Are Charged with Enforcing.

Regardless of whether any of the turbines fall within federal waters, the project cannot be permitted under state law. State law prohibits the construction of offshore energy generating facilities within the state waters of Nantucket Sound. Even CWA and ESS acknowledge this fact in a white paper regarding the analysis of alternatives. Ex. 21, at 5. That prohibition applies to the wind turbine array and to any part of the unitary power plant that falls within state waters, even if the only portion is a transmission cable.

The purpose of the proposed project, as defined by CWA and acquiesced in by the Corps, is to construct a unitary power plant. Therefore, for purposes of federal environmental review, the proposed project is a unitary power plant project that is comprised of several component parts, including wind turbine generators, a transformer platform and transmission cables. The same is true for conducting the state environmental review – the proposed project is a unitary power plant project, comprised of several component parts, including wind turbine generators and transmission cables. The transmission cables (and a portion of the wind turbines) are not a separate project the purpose of which is to lay a transmission cable; rather, the transmission cable is a critical portion of the unitary power plant project that is planned to travel through the Commonwealth's geographical limits.

Although the Commonwealth's geographical jurisdiction extends only to that portion of the power plant located within the boundary of Massachusetts, the Commonwealth is still responsible for evaluating what is a unitary power plant. Thus, in conducting their regulatory reviews, MEPA and all other state agencies cannot artificially and improperly segment the proposed project. The proposed project is not a unitary project for the purposes of federal review and two separate projects for the purposes of state review, one for wind turbine generators, another for electric

transmission cables and a subset of turbines. That some components are physically located within Massachusetts and some are not does not change the essential nature of the proposed project.

Importantly, CWA could have engineered its proposed project to avoid completely the jurisdiction of the Commonwealth by routing the transmission cable to through another state's waters. It did not. If the proposed power plant were entirely located in federal waters, the Commonwealth might well be restrained in its regulatory ability to consider impacts from the power plant. In fact, CWA failed even to engineer those portions it intended to place in federal waters so that they actually fell within federal waters. Accordingly Massachusetts not only has the right, but also the sovereign responsibility to assess whether the power plant will have adverse effects on resources of the Commonwealth.[47]

Perhaps part of why the DEIS misapprehends the appropriate scope of the Commonwealth's review is because of the regulatory void created by the absence of a comprehensive siting statute. In the absence of such a regime, the Commonwealth is forced to use its regulatory authority to consider what is essentially a land use decision. Is Nantucket Sound the appropriate place to locate a large, offshore power plant? The answer is a resounding "no" and Massachusetts can and should incorporate sound land use principles in exercising its regulatory authority.

As discussed in the following sections, the DEIS does not accurately describe the federal-state boundary or the jurisdictional authorities that apply to the review of the project. Offshore power plants – and all their component parts – are prohibited under state law. Further, as a matter of Massachusetts land use jurisprudence, the Commonwealth simply cannot authorize use of the waters of Nantucket Sound, which are designated as state sanctuary waters for the power plant's transmission cable (even if CWA reconfigured the turbine grid so that no turbines fell within state waters), where the power plant would itself is barred under state law. *See Beale v. Planning Board of Rockland*, 423 Mass. 690 (1996); *Richardson v. Zoning Board of Appeals of*

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[47] To illustrate, imagine if the project were for an offshore coal power plant, or an offshore nuclear power plant, rather than a wind power plant. It is unquestionable that in regulating transmission cables to a coal power plant, the Commonwealth would have the right to consider the potential adverse impacts of air pollution from that power plant on important natural resources of the Commonwealth. Likewise, in regulating transmission cables to a nuclear power plant the Commonwealth would have the right to consider the potential adverse impacts of radioactive materials on important natural resources of the Commonwealth. Indeed, Massachusetts would be setting a dangerous precedent if it were to abdicate its right and duty to carefully and thoroughly consider the effects of the entire project on the resources in and surrounding Nantucket Sound.

Framingham, 351 Mass 375 (1966); *Harrison v. Building Inspector of Braintree*, 350 Mass. 559 (1966); *Brookline v. CoRay Realty Co.*, 326 Mass. 206 (1950); *Moduform, Inc. v. Planning Board of Fitchburg*, 17 Mass. L. Rptr. 3 (Mass. Super. 2003).

The Massachusetts Ocean Sanctuaries Act ("MOSA"), which is set out in sections 12A to 16E and section 18 of Chapter 132A of the General Laws, was first passed in 1970. The MOSA was aimed at protecting the portion of Massachusetts territorial waters bordering the Cape Cod National Seashore. 1970 Mass. Acts, ch. 542. Since then, it has been expanded through the creation of a total of five ocean sanctuaries. G.L. c. 132A, § 13. The purpose of the act is to protect the sanctuaries "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, or the Cape Cod National Seashore." G.L. c. 132A, § 14.

Each state agency is charged with enforcing MOSA to the full extent of the agency's authority. Specifically, state agencies must "conduct their activities consistently with the act, and *shall not permit or conduct any activity which is contrary to the provisions of the Act*." G.L. c. 132A, § 18 (italics added).[48] Massachusetts agencies, including MEPA, have no discretion in this regard. MOSA contains no waiver provisions or general exceptions to which an agency could resort in order to allow an otherwise prohibited activity. The proposed project as described in the application violates several of the specific prohibitions of MOSA, and thus MEPA and any other reviewing State agencies should deny the project approval in order to comply with their duties under G.L. c. 132A, § 18.

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[48] Section 18 states in its entirety:

> All departments, divisions, commissions, or units of the executive office of environmental affairs and other affected agencies or departments of the commonwealth shall issue permits or licenses for activities or conduct their activities consistently with the act, and shall not permit or conduct any activity which is contrary to the provisions of the Act. Except as provided by sections sixteen B through sixteen F, inclusive, the Act shall not require any additional permits from the department, but other departments, divisions, commissions, units, or other agencies shall confer and consult with the department to ensure compliance with the Act. The attorney general or the appropriate state agency shall take such action as may be necessary from time to time to enforce the provisions of the Act, and the superior court shall have jurisdiction to enforce the provisions thereof.

a. The only purpose of the transmission lines is to permit the operation of an electric generating station; permitting the construction of the transmission lines therefore violates MOSA.

As described in the application, the only purpose of the transmission facilities under review by the MEPA and the Corps is to interconnect a 420-megawatt nominal capacity power plant to the Barnstable substation. The power plant would be an offshore electric generating station located in Nantucket Sound, and would consist of at least 131 structures (130 wind turbine generators and the transformer platform) affixed to the seabed or under the subsoil of Nantucket Sound. The Massachusetts Legislature intended to prohibit such a use of Nantucket Sound to the full extent of state authority, and no State agency has the discretion to approve a transmission facility within its jurisdiction when the only purpose of the facility is to permit such uses to occur.

b. Section 13 of MOSA includes Nantucket Sound in the Cape Cod Ocean Sanctuary and section 15 prohibits electric generating stations in the sanctuary.

The Massachusetts Legislature included all of Nantucket Sound within the CIOS when it created the CIOS in 1971. G.L. c. 132A, § 13; 1971 Mass. Acts, ch. 742.[49] Indeed, the statutory description of the geographical scope of the CIOS

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[49] The statute defines the boundaries of the CIOS as follows:

> The Cape and Islands Ocean Sanctuary is bounded and described as follows: Beginning at a point on the mean low-water line at the southernmost point of Monomoy Point; thence due south to a point in the Atlantic Ocean three miles due south (180 Degrees True) of the mean low-water line at the southernmost point of Monomoy Point; thence due east (90 Degrees True) to the Exterior Line of the Boundary of the Commonwealth as established on the aforementioned Marine Boundary Map; thence in a generally southerly and then westerly direction along said Exterior Line to the point of intersection with the extension of the lateral boundary of Rhode Island and Massachusetts; thence northerly along said lateral boundary to the mean low-water line near Quicksand Point; thence following the mean low-water line around Buzzards Bay, the Cape Cod Canal to the Bourne-Sandwich town boundary, and the southern portion of Cape Cod to the point of intersection in Pleasant Bay with the western boundary of the Cape Cod National Seashore; thence southerly along said boundary; thence by the shortest distance to the mean low-water line of Monomoy Island; thence to the point beginning by following the mean low-water line of the western side

explicitly states "meaning and intending to include the following bodies of water: Nantucket Sound...." The Massachusetts Legislature prohibited, and directed state agencies to refrain from permitting or conducting, a number of activities in ocean sanctuaries such as the CIOS. These prohibitions are:

> . . . the building of any structure on the seabed or under the subsoil; the construction or operation of offshore or floating electric generating stations, the drilling or removal of any sand, gravel or other minerals, gases or oils; the dumping or discharge of commercial, municipal, domestic or industrial wastes; commercial advertising; the incineration of solid waste or refuse on, or in, vessels moored or afloat within the boundaries of an ocean sanctuary.

G.L. c. 132A, § 15 (italics added).

The proposed wind facility violates two of the prohibitions that the Massachusetts Legislature directed Massachusetts agencies to enforce to the full extent of their authority. The wind facility would be an "offshore electric generating station" and it would comprise 131 "structures on the seabed or under the subsoil" in Nantucket Sound, which is within the CIOS. There is no dispute regarding these essential facts. Even if all of the wind turbines were sited to fall outside of state waters, state agencies, including MEPA, *can* nonetheless prevent these activities by denying approval to build a transmission facility that is meant only to permit those activities to occur. In fact, those agencies *must* deny any such approval in order to comply with G.L. c. 132A, § 18. To do otherwise would be "inconsistent[] with the act" and would "permit or conduct an[] activity which is contrary to the provisions of the act."

The fact that the "offshore electric generating station" and its 131 "structures on the seabed or under the subsoil" of Nantucket Sound would be located beyond the three mile limit of Massachusetts territorial waters has absolutely no effect on a state agency's obligation to deny approval of the proposed project. As discussed below, the location of the WTGs and ESP outside the three mile limit would be relevant only if a

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> of Monomoy Island; 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.

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

state agency's implementation of MOSA's directives would be in conflict with federal law, but it is not.

All state agencies, including MEPA, are obligated, therefore, to enforce the provisions of MOSA if there is a jurisdictional basis for doing so. There is no dispute that such a basis exists because of the unchallenged authority of several state agencies, including MEPA, MADEP and the EFSB, over the project's transmission lines on land and within three miles of the Cape Cod shoreline.

c. The project will significantly alter the appearance of the ocean and the seabed in the CIOS in violation of section 14 of MOSA.

The prohibition against offshore electric generating facilities and structures on the seabed in the CIOS are but specific examples of activities that would countermand MOSA's prime directive, which is set forth in section 14. That section states that "[a]ll ocean sanctuaries as described in section thirteen ... shall be protected 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...." M.G.L. c. 132A, § 14.

It is clear that even in the absence of the specific prohibitions in section 15, the proposed project - of which the transmission facility is a critical component - would violate section 14, and MEPA should make such a finding. There is simply no dispute that the proposed project constitutes an "exploitation, development, or activity" that would, at the very least, "significantly alter . . . the appearance of the ocean, the seabed, or subsoil" of Nantucket Sound, which is located in the CIOS. The project comprises 130 wind turbines, each reaching the height of a 40-story building, spread over a 24 square mile area in Nantucket Sound. There is no dispute that the turbines will significantly alter the appearance of the ocean within the meaning of section 14 and will "seriously alter" the CIOS in contravention of regulations adopted by the Division of Conservation and Recreation ("DCR," formerly known as the Division of Environmental Management) enforcing MOSA by "developing any previously undeveloped or natural areas." 302 C.M.R. 5.04 (h). There can also be no dispute that 130 such structures, along with the transformer platform and the various cables interconnecting the turbines and the platform, would significantly alter the seabed and subsoil on Horseshoe Shoal within the meaning of section 14 and "will seriously alter" the CIOS by "driving pilings or erecting buildings, structures or obstructions of any kind of any significant size or quantity, whether or not they interfere with the flow of water," again in violation of the DCR's regulation. 302 C.M.R. 5.04 (d). There is not a single fact in the record that would support a contrary finding by the Corps or MEPA.

The term "seriously alter,"[50] as it relates to this catalogue of effects in the regulations implementing MOSA is defined as follows:

> Seriously alter includes, but is not limited to, one or more of the following actions:
>
> (a) removing, excavating, or dredging any soil, sand, gravel, or other minerals or aggregate material of any kind in any significant amounts;
>
> (b) changing drainage or flushing characteristics, salinity distribution, sedimentation or flow patterns, flood storage areas or the water table, to more than a negligible extent;
>
> (c) dumping, discharging, or filling with any material of any kind that could significantly degrade water quality;
>
> (d) *driving pilings or erecting buildings, structures or obstructions of any kind of any significant size or quantity, whether or not they interfere with the flow of water*;
>
> (e) destroying or adversely affecting in more than a negligible way any plant or animal life, including shellfish and fisheries;
>
> (f) changing the temperature, biochemical oxygen demand (BOD) or other natural characteristics of the water so that there is a more than negligible adverse effect on the marine environment;
>
> (g) significantly increasing the development of already developed areas;
>
> (h) *developing any previously undeveloped or natural areas.*

302 C.M.R. § 5.04 (italics added).

As discussed below, CWA has not made an adequate showing that the proposed project does not violate any of the above MOSA sections. Further, certain of these violations are beyond any dispute. The construction of the wind facility

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[50] So in original. Probably should be "significantly alter."

would involve driving pilings and erecting structures of a significant size. These structures would be placed in a "previously undeveloped or natural area," namely Horseshoe Shoal, which currently has no such structures affixed to it. These uses clearly frustrate the fundamental purposes of MOSA, as expressed in G.L. c. 132A, § 14, which include the protection of important marine areas in or near the Commonwealth, like Nantucket Sound, from industrial development.[51] Section 18 of MOSA requires state agencies, including MEPA, to act consistently with these fundamental purposes, and to refrain from permitting or conducting any activity that would be contrary to the provisions of the act. Allowing the construction of a transmission facility, the operation of which would have such profound impacts on one of the ocean sanctuaries MOSA was meant to protect, would violate MEPA's duties under Section 18.

d. The exceptions in section 16 from the prohibitions of sections 14 and 15 do not include the generation plant or the transmission lines.

Section 14 and 15 clearly prohibit the 130 wind turbines and the transmission lines. There remains to consider only whether they are "permitted activities" under section 16 ("permitted" here used in the limited sense of not prohibited by MOSA). The unequivocal answer is that they are not, a fact which ESS and CWA have already acknowledged. *See* Ex. 21.

Section 16 of MOSA describes activities that are not prohibited within ocean sanctuaries, notwithstanding the prohibitions in sections 14 and 15. One of these relates to "activities, uses and facilities associated with the generation, transmission, and distribution of electrical power":

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[51] The fact that the proposed project involves an offshore electric generation facility that uses wind as its energy source does not change this analysis whatsoever. Although CWA has argued for recognition of the purported benefits of wind power, any such characteristics are irrelevant to the question of whether MOSA prohibits MEPA from allowing the construction of a project that would allow an offshore electric generation facility to be built in the CIOS. The Massachusetts Legislature created no exceptions for electric generation facilities "powered by renewable energy sources" or for "cables interconnecting electric generation facilities powered by renewable energy sources." Reading such an exemption into the statute would violate a well-established canon of statutory construction – namely, that one is "not permitted to add words to a statute that 'the Legislature did not see fit to put there.'" *Commonwealth v. Russ R.*, 433 Mass. 515, 520 (2001), citing *General Elec. Co. v. Department of Environmental Protection*, 429 Mass. 798, 803 (1999). If the Massachusetts Legislature intended wind-powered generation facilities to be treated any differently than coal, gas, or nuclear facilities, it would have said so.

> Nothing in this act is intended to prohibit the following activities, uses, or facilities: In all ocean sanctuaries except the Cape Cod Ocean Sanctuary *the planning, construction, reconstruction, operation and maintenance of industrial liquid coolant discharge and intake systems and all other activities, uses and facilities associated with the generation, transmission, and distribution of electrical power . . .*

G.L. c. 132A, § 16 (italics added).

An argument that an electric generating station such as the 130 turbine plant is not prohibited because it is an ancillary facility under the above exception fails. Such an interpretation of the statute would be completely at odds with basic canons of statutory construction and with the clear legislative history of the various prohibitions and permissions that exist in the current version of the statute.

Section 16 of MOSA did not negate the ban on electric generating stations in the CIOS contained in section 15. The argument that the legislature undid in section 16 nearly all that it had done in section 15 violates several canons of statutory construction. First, such an interpretation would equate the phrase "planning, construction, reconstruction, operation and maintenance of industrial liquid coolant discharge and intake systems and all other activities, uses and facilities associated with the generation, transmission, and distribution of electrical power," which is used in section 16, with the phrase "offshore electric generation facilities," which is used in section 15. This ignores the plain language of the statute. "[T]he primary source of insight into the intent of the Legislature is the language of the statute." *Commonwealth v. Hatch*, 438 Mass. 618, 622 (Mass. 2003) (citing *International Fid. Ins. Co. v. Wilson*, 387 Mass. 841, 853 (1983)). Where the legislature intended to refer to "electric generating facilities," as in section 15, it did so directly. The legislature's use of other terms in section 16 evinces a clear intention to permit uses other than "electric generating facilities" themselves that were prohibited in the previous section.

The words of the exception in section 16 shows that the permitted activity, construction and operation of "industrial liquid coolant discharge and intake systems" is itself an ancillary activity – that is, an activity that might otherwise be prohibited by section 15. The phrase "other activities, uses and facilities" refers to other such ancillary activities and facilities "associated with generation, transmission and distribution," but not to generation, transmission, or distribution activities and facilities themselves. This interpretation is required by the plain meaning of the statute. As discussed further below, the legislative history of the various prohibitions

and permissions in sections 15 and 16 of MOSA conclusively confirms this interpretation.

Further, reading the above exception in section 16 as allowing the construction and operation of the very electric generating stations that were prohibited in section 15 would render the prohibition in section 15 meaningless. Such an interpretation would have one believe that the Massachusetts Legislature prohibited electric generating stations in all five Ocean Sanctuaries in section 15, then negated that prohibition with respect to four of the five Ocean Sanctuaries in the very next statutory section, rather than simply banning electric generating facilities only in the Cape Cod Ocean Sanctuary in the first instance. This is an absurd result that ignores the plain language of section 16, which is written to cover ancillary activities and facilities "associated with generation, transmission and distribution," but not the primary activities or facilities to which they relate. "If a sensible construction is available, we shall not construe a statute to make a nullity of pertinent provisions or to produce absurd results." *Flemings v. Contributory Retirement Appeal Bd.*, 431 Mass. 374, 376 (2000) (citing *Manning v. Boston Redevelopment Auth.*, 400 Mass. 444, 453 (1987)).

As made clear above, a sensible construction is not only available, but required by the words of the statute. For example, under this construction, MOSA did not prohibit ancillary facilities for the Cape Cod Canal plant, the Plymouth nuclear plant or other onshore generation facilities located adjacent to ocean sanctuaries. At the same time, the Massachusetts Legislature prohibited offshore generation facilities.

Further, the legislative history of MOSA shows that the prohibition against offshore electric generating stations applies to all five ocean sanctuaries, and section 16 does not permit such an activity in any of the ocean sanctuaries. When the Massachusetts Legislature first passed MOSA in 1971, it contained only one section and addressed only the waters adjacent to the Cape Cod National Seashore. This sanctuary was designated the Cape Cod Ocean Sanctuary. 1970 Mass. Acts, ch. 542. The single statutory section contained the following prohibitions:

> The following activities shall be prohibited in the Ocean Sanctuary: the building of any structure on the seabed or under the subsoil; the removal of any sand, gravel or other minerals, except as hereinafter provided; drilling for subsoil minerals, gases or oils; commercial advertising; or the dumping of any commercial or industrial wastes.

Id., creating G.L. c. 132A, § 13.

In 1971, the legislature amended MOSA to create two more ocean sanctuaries, the Cape Cod Bay Ocean Sanctuary and the CIOS which, as discussed above, includes Nantucket Sound. The new statutory section governing the CIOS contained the same prohibitions as those that applied in the Cape Cod Ocean Sanctuary, but added a new prohibition regarding waste incineration, and an exception related to coolant water discharges:

> The following activities shall be prohibited in the Ocean Sanctuary: the building of any structure on the seabed or under the subsoil; the removal of any sand, gravel or other minerals, except as hereinafter provided; drilling for subsoil minerals, gases or oils; commercial advertising; the dumping of any commercial or industrial wastes, *excepting such industrial liquid coolant water allowed by the division of water pollution control, in conjunction with the public and private supply of electrical power*, or the incineration of solid waste materials, or refuse on, or in, vessels moored or afloat within the boundaries of the ocean sanctuary described herein.

1971 Mass. Acts, ch. 742, creating G.L. c. 132A, § 15 (italics added).

In 1974, the legislature amended the sections of MOSA pertaining to the prohibited and permitted activities within the CIOS, the Cape Cod Bay Ocean Sanctuary, and the North Shore Ocean Sanctuary (which had been created in 1972); the section addressing the Cape Cod Ocean Sanctuary was left unchanged. The amended statute read:

> Except as otherwise provided herein, the following activities shall be prohibited in the Ocean Sanctuary: the building of any structure on the seabed or under the subsoil; *the construction of electric generating stations*; the removal of any sand, gravel or other minerals, except as hereinafter provided; drilling for subsoil minerals, gases or oils; commercial advertising; the incineration of solid waste materials, or refuse on, or in, vessels moored or afloat within the boundaries of the ocean sanctuary described herein; *provided, however, that nothing in this section shall be deemed to prohibit the construction, operation and maintenance of industrial liquid coolant discharge and intake systems in conjunction with the public and private supply of electrical power as allowed by the division of water pollution control*, or the operation and maintenance or facilities to treat existing municipal, commercial or industrial discharges or the discharges

> from such facilities under the authority and in accordance with such approvals and licenses from federal and state agencies as may otherwise be required by law.

1974 Mass Acts, ch. 822 (italics added). Rather than just allowing the discharge of industrial coolant water "in conjunction with the public and private supply of electrical power" in the CIOS, as it did before 1974, MOSA now allowed "the construction, operation and maintenance of industrial liquid coolant discharge and intake systems in conjunction with the public and private supply of electrical power as allowed by the division of water pollution control" in the CIOS (as well as in the Cape Cod Bay Ocean Sanctuary and the North Shore Ocean Sanctuary).

Under the previous exception, new discharge and intake systems could not be built (the "building of any structure on the seabed or under the subsoil" was banned) because the exception related only to industrial discharge and not facilities. The new version would allow "the construction, operation and maintenance" of *new* industrial liquid coolant discharge and intake systems in conjunction with the public and private supply of electrical power," even if those systems were built in an ocean sanctuary (other than the Cape Cod Ocean Sanctuary).

At the same time this statutory change was made, the legislature also added the explicit prohibition against "the construction of electric generating stations" in the CIOS, Cape Cod Bay Ocean Sanctuary, and North Shore Ocean Sanctuary. Why? There can be only one logical explanation. Because the new version of the statute explicitly *allowed* "construction, operation and maintenance" of facilities in those three ocean sanctuaries that had previously been prohibited, the legislature made it perfectly clear that this change would not allow the "construction, operation and maintenance" of an electric generating station in those ocean sanctuaries. That this was the legislature's intent is reinforced by the absence of an explicit prohibition against "the construction of electric generating stations" in the Cape Cod Ocean Sanctuary, the first and most highly protected of the ocean sanctuaries. An explicit prohibition at the time against that activity in the Cape Cod Ocean Sanctuary was unnecessary because *no* industrial liquid coolant water discharge of any kind was allowed in that sanctuary, and the construction of electric generating stations was already banned by the prohibition against structures on the seabed.

In 1977, MOSA was amended and reorganized. 1977 Mass. Acts, ch. 897. The 1977 reorganization gathered the descriptions of the ocean sanctuaries (now numbering five, as one of the 1977 amendments created the South Essex Ocean Sanctuary) into one section (section 13), added a statement of the overall purpose of the statute (section 14, discussed further below), and set forth the prohibited and permitted uses separately in the next two sections (sections 15 and 16, respectively).

The prohibited activities were left much as they existed in the previous version of the statute, including the prohibition against electric generating stations, which was expanded to include both offshore and floating power plants. The permitted activities were amended to include "the planning, construction, reconstruction, operation and maintenance of industrial liquid coolant discharge and intake systems and all other activities, uses and facilities associated with the generation, transmission, and distribution of electrical power." Because the permitted "activities, uses or facilities" had never been permitted in the Cape Cod Ocean Sanctuary, the new section 16 included the prefatory language "in all ocean sanctuaries except the Cape Cod Ocean Sanctuary . . ."

This history shows that the banning of electric generating stations and the permitting of certain ancillary activities "associated with" electrical power in the CIOS existed side-by-side in the statute from the very creation of the CIOS. In fact, the history of the statute shows that the explicit reference to the banning of electric generating stations in the CIOS and other ocean sanctuaries came into being only to remove any confusion as to the legislatures intent when it allowed certain ancillary activities "associated with" electrical power to go forward in four of the five ocean sanctuaries. The legislature acted only incrementally to permit certain additional uses in those four ocean sanctuaries, taking care to signal its intent to keep the broad prohibitions (including the one against electric generating stations) intact.

The legislative history also shows that if the legislature had intended to allow electric generating stations in four of the five ocean sanctuaries, it would have removed that prohibition from section 15. Recall that the legislature had never perceived the need to explicitly ban electric generating stations in the Cape Cod Ocean Sanctuary, as shown by the 1974 amendments, because the general prohibitions contained in the original section 13 (which applied only to the Cape Cod Ocean Sanctuary) were broad enough to accomplish that result. The fact that the legislature left the explicit ban on electric generating plants in place when it separated the prohibited and permitted uses in 1977 shows that it intended to retain the original function of that language, which was to clarify that the ban, in fact, remained in place in all of the ocean sanctuaries, the permitted uses notwithstanding.

Perhaps the best evidence of MOSA's prohibitions, as applied to this proposal, comes from within CWA's own camp. In its white paper, CWA acknowledges that "Installation of electrical power generating plants is specifically prohibited within 3 miles of the Massachusetts coastline (Ocean Sanctuaries Act), so only sites outside of the 3 mile limit were evaluated." Ex. 21. As previously noted, CLF, which has gone

to great lengths to support this project even before the release of the DEIS,[52] has stated previously that MOSA prohibits ocean wind turbine plants. Jennifer Atkinson et al., *The Wild Sea, Saving Our Marine Heritage*, Conservation Law Foundation, 95 (Sept. 2000) (MOSA "ha[s] stopped some conflicting proposals, including oil and gas pipelines, sewage treatment outfalls, electrical energy cables, and ocean windmill farms.") Ex. 22. Indeed, all parties appear to agree that the MOSA prohibits the type of development CWA is proposing.

e. Section 16 does not except from the prohibitions of MOSA a transmission line dead-ending into an electric generating station in the ocean sanctuaries.

Section 16 of MOSA states "Nothing in this act is intended to prohibit the following activities, uses or facilities: . . . the laying of cables approved by the department of telecommunications and energy . . ." G.L. c. 132A, § 16. Whatever the scope of the term "cables" may be for purposes of this section, it is clear that the legislature did not intend the term to include an electric transmission line such as the one proposed in this case, which dead-ends into an offshore electric generation stations in Nantucket Sound.

Interpreting the term "cables" to include transmission lines intended only to interconnect prohibited offshore power plants would violate at least two canons of statutory construction. First, as discussed above, "If a sensible construction is available, we shall not construe a statute to make a nullity of pertinent provisions or to produce absurd results." *Flemings v. Contributory Retirement Appeal Bd.*, 431 Mass. 374, 376, 727 N.E.2d 1147 (2000). Interpreting MOSA, which prohibits the operation of offshore generating facilities, to permit transmission lines serving exclusively such generating facilities produces an absurd result. Second, in the words of the Supreme Judicial Court, a statute should be interpreted "according to the intent of the Legislature ascertained from all its words construed by the ordinary and approved usage of the language . . . to the end that the purpose of its framers may be effectuated." *Chandler v. County Com'rs of Nantucket County*, 437 Mass. 430, 435, 772 N.E.2d 578 (2002). Under this canon of statutory construction, it is likewise clear that the legislature did not intend to include in the term "cables" dedicated transmission lines dead-ended at electric generating stations in Nantucket Sound. Rather, it was the clear purpose of the framers of MOSA as demonstrated above to

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[52] Indeed, CLF prepared a press advisory supporting the DEIS *before* the DEIS was even released. Ex. 23. In this press release, CLF makes conclusions regarding the impacts of the project, without even relying on the DEIS. Clearly, CLF would support the proposed project, regardless of the devastating environmental impacts it will have on the region.

prohibit the construction and operation of offshore power plants in all of Nantucket Sound. Under this application of the statute, which fully integrates sections 15 and 16 of MOSA giving effect to each in light of that purpose, the exemption for "cables" in section 16 is meant to permit the laying of cables which do not frustrate the purposes and specific prohibitions of MOSA.[53]

The regulatory approval language in section 16 ("the laying of cables *approved by the department of telecommunications and energy*" (emphasis added)) does not change this statutory interpretation. The purpose of the reference to administrative approval "by the department of telecommunications and energy" is the same as that for all of the other similar references in section 16 (*e.g.*, approval by, *inter alia*, appropriate federal and state agencies, the Corps, the Division of Water Pollution Control, the Department of Fisheries) – namely, to make clear that activities which are otherwise not prohibited by MOSA under section 16 must still comply with all other applicable regulatory requirements, and section 16 does not confer a blanket exemption from these requirements. These references to regulatory approvals are not intended to confer, therefore, and do not, in fact confer, on any of these agencies the ability to permit or conduct any activity which is contrary to the provisions of MOSA section 18.

Even if one took exception to the meaning of "cables" advanced above and concluded or assumed that "cables" was intended to be an all inclusive term, section 16 would still not exempt from the prohibitions of MOSA the construction of the transmission lines proposed by CWA. Even under that interpretation, CWA must address the limitation of the exemption for cables to those "approved by the department of telecommunications and energy." This language cannot be ignored, since "wherever possible, no provision of a legislative enactment should be treated as superfluous." *Carter v. Bowie*, 432 Mass. 563, 566 (2000). Massachusetts agencies should interpret this limitation in light of the other sections of MOSA, "so that the enactment considered as a whole shall constitute a consistent and harmonious statutory provision capable of effectuating the presumed intention of the Legislature." *Flemings v. Contributory Retirement Appeal Bd.*, 431 Mass. 374, 376, 727 N.E.2d 1147 (2000).

When considering all of the various sections of MOSA under the alternative statutory interpretation that the term "cables" was meant to be all-inclusive, the laying

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[53] In the proceeding before the Energy Facilities Siting Board, CWA identified several examples of such cables, including transmission cables that connect both Martha's Vineyard and Nantucket to the electrical grid on the mainland. CWA did not, however, give any examples of cables that are used solely for a purpose that is prohibited by MOSA, or that is in any way inconsistent with MOSA.

of cable would not be exempted by section 16 because the approval of the Department is required for any such exemption and such approval could not be granted in this case. This is so because the Department is constrained by G.L. c. 132A, § 18, in the same manner as is the Energy Facilities Siting Board and other State agencies. As discussed above, this section of MOSA constrains the permitting authority of the Department, the Siting Board, and other State agencies by providing that no department, division, commission or agency of the Commonwealth shall "permit or conduct any activity which is contrary to the provisions of the Act." In this regard, it is important to note that nowhere in G.L. c. 132A or c. 164 did the legislature confer on any State agency any special administrative or discretionary authority in applying MOSA. In fact, under section 18, the Attorney General or the appropriate state agency is directed to enforce the provisions of the Act with jurisdiction conferred on the Superior Court to enforce its provisions. Thus, when presented with a proposal for a cable the sole purpose of which would be to enable the prohibited operation of a power plant in the CIOS defined by the legislature to include all of Nantucket Sound, any reviewing State agency is required by law to deny such a proposal, placing the transmission line at issue in this case outside the exemption in section 16 for the laying of cables "approved by" the Department.[54]

4. The Commonwealth Has the Authority to Deny the State Permits Needed Under M.G.L. c. 132A, § 18.

Under the Submerged Lands Act ("SLA"), 43 U.S.C. § 1301 *et seq.*, Congress granted the states including the Commonwealth the authority to regulate the development and the use of lands in the state waters extending out three miles from the shoreline. While the Federal government retained certain powers, the only relevant exercise of such Federal power for the purposes of this proceeding has been in the area of navigation. Although a section 10 permit authorizes an obstruction to navigation, it is not a land use authorization – a matter as to which the states (and the

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[54] Both of these constructions of the exemption from prohibition for "cables approved by" the DTE are consistent with the treatment of the proposed transmission cable by the Executive Office of Environmental Affairs ("EOEA"). In order to gain final approval by the Siting Board and the DTE, CWA will need to obtain approval from the DEP under c. 91. Where this "cable" like the other undersea cables that have come before the Siting Board and the Department, it would need only a license pursuant to G.L. c. 91, § 14, since such a cable would be an "infrastructure crossing facility" and, thus, a "water-dependent use" pursuant to 310 C.M.R. 9.12. As the EOEA has found, however, this cable is not an "infrastructure crossing facility" because it does not connect "existing or new infrastructure facilities located on the opposite banks" of a waterway. 310 C.M.R. 9.02. Thus, in order to be built, the transmission cable will require a variance from c. 91 pursuant to 310 C.M.R. 9.21. There is no evidence whatsoever that the legislature intended to create a blanket exception in MOSA for cables that would typically be banned by c. 91.

Commonwealth under MOSA) retain full authority. That CWA is also seeking a section 10 permit for construction in Federal waters does not change the need for a state permit. Neither does the Supreme Court decision in *United States v. Maine*, 475 U.S. 89 (1986) affect this conclusion.

a. The Supreme Court's decision in *United States v. Maine* only settled title to Nantucket Sound.

In *United States v. Maine*, the United States brought an action to quiet title to certain portions of the seabed along the Atlantic coast, including Nantucket Sound. The case followed a previous action that had determined the location of the Massachusetts coastline, which resulted in a partial settlement that reached no conclusions with respect to the status of Nantucket Sound and Vineyard Sound. The matter was referred to a Special Master, who concluded that Vineyard Sound is a "historic bay" and therefore a part of the inland waters of Massachusetts, but that Nantucket Sound was not - consisting in part of territorial waters of Massachusetts (out to the three mile point from shore) and in part of high seas (that portion laying beyond the three mile mark).

The Commonwealth of Massachusetts argued before the Court that, while it did not have "historic title" to Nantucket Sound, it nonetheless gained title to the Sound under the doctrine of "ancient title." The Commonwealth claimed that Great Britain had acquired title to Nantucket Sound "as a result of discovery and occupation by colonists in the early 17th century and that [Massachusetts] succeeded to the Crown's title by virtue of various Royal Charters or by the Treaty of Paris, which ended the Revolutionary War." *United States v. Maine*, 475 U.S. at 91. The Court rejected this argument on the grounds that Great Britain had not "occupied" the Sound before the freedom of the high seas became a part of international law, and so had no title to the Sound that could be passed to the Commonwealth by charter, treaty, or otherwise. *Id.* at 101-103.

The effect on the Commonwealth's authority of the holding in *United States v. Maine* is easily misunderstood and overestimated. The case determined only title to Nantucket Sound; it was silent with respect to the effects of that determination on any particular state law. The fact that the United States has title to Nantucket Sound has no effect on the ability of the Siting Board to deny the permit CWA seeks under the clear directives of a MOSA or the denial would conflict with federal law.

b. Congress has granted the Commonwealth the authority to deny under MOSA the petition to build the transmission lines.

In 1953, Congress enacted the SLA, 43 U.S.C. § 1301 *et seq.*, for the purpose of conveying to the states the ownership of, and jurisdiction over, certain submerged lands, including the three-mile territorial belt. The SLA was a response to the Supreme Court's decision in *United States v. California*, 332 U.S. 19 (1947), which held that the Federal government, and not the states, possessed title and jurisdiction over the three-mile territorial belt. The SLA conveyed to the states "title and ownership" of the lands beneath navigable waters, as well as "the right and power to manage, administer, lease, develop, and use" those lands. 43 U.S.C. § 1311(a). The term "lands beneath navigable waters" was defined to include "all lands permanently or periodically covered by tidal waters up to but not above the line of mean high tide and seaward to a line three geographical miles distant from the coast line of each such State." *Id.* § 1301(a)(2). Thus, state regulatory jurisdiction applies fully out to three nautical miles offshore. This authority explicitly includes the state regulation of the development and use of lands below the state's waters.

Under the SLA, the United States retained only certain rights. Those rights include:

> all its navigational servitude and rights in and powers of regulation and control of said lands and navigable waters for the constitutional purposes of commerce, navigation, national defense, and international affairs, all of which shall be paramount to, but shall not be deemed to include, proprietary rights of ownership, or the rights of management, administration, leasing, use, and development of the lands and natural resources which are specifically recognized, confirmed, established, and vested in and assigned to the respective States.

Id., § 1314(a). The SLA also reserved to the Federal government its constitutional jurisdiction for the purposes of "navigation or flood control or the production of power." 43 U.S.C. § 1311 (d). In matters relevant to this proceeding, however, the Federal government has only exercised such retained powers in one area – navigation.

This reservation of Congressional power to regulate navigation is no more than an expression of the well-established proposition that the federal government retains a navigational servitude over all navigable waters; state regulation is therefore not preempted unless it is actually in direct conflict with this federal navigational servitude. *See Hawaiian Navigable Waters Preservation Soc. v. Hawaii*, 823 F.

Supp. 766 (D. Hawaii 1993) (holding state regulation not preempted by federal navigational servitude retained under SLA), *aff'd sub nom.*, *Barber v. Hawaii*, 42 F.3d 1185 (9th Cir. 1994); *see also Murphy v. Dep't of Natural Resources*, 837 F. Supp. 1217 (S.D. Fla. 1993) (holding SLA is insufficient to preempt state regulation, absent additional affirmative federal action), *aff'd*, 56 F.3d 1389 (11th Cir. 1995).

c. The denial of an application for permission to build the transmission lines does not violate any federal law.

The primary expression of Federal authority over navigation that applies to the proposed project in this case is section 10 of the RHA. The law is clear that within the three-mile territorial belt the Corps' authority is concurrent with, rather than preemptive of, state and local authority.[55] The issuance of a section 10 permit for any portion of this project thus would not preempt State action with respect to the jurisdictional transmission facility in furtherance of its obligations under its enabling statutes and MOSA.

Section 10 of the RHA states, in its entirety:

> The creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of the Army; and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor or refuge, or inclosure [sic] within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army prior to beginning the same.

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55 As previously discussed, beyond the three-mile belt, the Corps' Section 10 authority is extended by the OCSLA to certain structures that may be erected on the OCS for oil and gas-related purposes.

33 U.S.C. § 403.

Thus, a section 10 permit simply authorizes an obstruction to navigation within the navigable waters of the United States. It is not a land use authorization, nor an authorization to site an energy facility, nor an authorization to generate and transmit electricity, and section 10 reveals no Congressional intent, express or implied, to preempt any state action with respect to the siting of energy facilities located within a state. Section 10 creates no *positive* right to do anything. Rather, it *prohibits* obstructions to navigation.

In fact, the law is clear that section 10 does not preempt state regulations, including in cases where the regulations prohibit structures and activities on lands and waters within a state's territorial limits. Federal assent to erection of a structure in state waters under the RHA does not preclude state denial or other remedies under state law. *New York v. DeLyser*, 759 F. Supp. 982, 992 (W.D.N.Y. 1991) (citing *Cummings v. Chicago*, 188 U.S. 410, 426-31 (1903)). If anything, the proposed state action pursuant to MOSA (denial of approval to build a transmission facility to serve an offshore electric generating station) furthers the purposes of section 10 of the RHA by directly preventing the placement of one obstruction (the transmission facility) in state waters, and indirectly discouraging the placement of 131 obstructions in the Federal waters of the Sound.

Congressional intent to protect navigation and to promote the use of navigable waters for purposes of interstate commerce thus operates concurrently with state and local government regulatory authority over structures located wholly within a state. In this case, there is no conflict whatsoever between the Federal interest in navigation and MOSA's clear directive to all state agencies prohibiting state actions that would allow the operation of offshore power plants in Nantucket Sound.

5. The Proposed Project Also Violates the Requirements Of M.G.L. ch. 91.

The transmission cable is prohibited under Chapter 91 because it is not water dependent. Chapter 91 prohibits the construction of new, non-water dependent uses in flowed tidelands. 310 C.M.R. 9.32. The proposed project is a non water-dependent use that would be located in flowed tideland (Nantucket Sound) and therefore it is prohibited under Chapter 91.

The Department of Environmental Protection ("DEP") is the agency that is charged with administering Chapter 91 and accompanying regulations 310 CMR 9.00 et seq. In connection with a similar proposed wind turbine generator project, by letter dated May 26, 2003, to EOEA Secretary Ellen Roy Herzfelder, DEP specifically

found that transmission cables for off-shore wind turbine generating projects are not water-dependent uses for purposes of Chapter 91. DEP stated that such projects cannot be classified as water-dependent under any criteria used to determine whether a project is water dependent, as set forth in 310 C.M.R. 9.12.

Secretary Herzfelder explicitly adopted DEP's finding that the proposed transmission line constitutes a non water-dependent use under Chapter 91. By letter dated May 28, 2003, the Secretary stated that: "the cable associated with offshore wind farms (both those in state waters and those in federal waters where a cable is proposed to traverse state waters) are non water-dependent uses of tidelands pursuant to 310 C.M.R. 9.12(1) and 9.12(4)." As the agencies responsible for Chapter 91 have unequivocally stated that the proposed project is not water-dependent.

The transmission cables cannot meet the onerous requirements for the granting of a variance under Chapter 91. Chapter 91 expressly provides that:

> The variance is intended to apply in the rare and unusual circumstance where a proposed project satisfies a public interest which overrides the public interest in waterways but cannot be implemented in a manner which is fully consistent with the provisions of 310 C.M.R. 9.00; where application of 310 CMR 9.00 would so restrict the use of private property as to constitute an unconstitutional taking of property; or where application of 310 C.M.R. 9.00 would cause substantial hardship for the continuation of a use or structure existing as of October 4, 1990.

310 C.M.R. 9.21(3).

In the case of the proposed transmission cables, CWA presents no overriding public interest – and indeed there is none – in having this particular project go forward in this particular location in flowed tidelands. Moreover, there is no private property at issue, and the proposed cables would be a new, not an existing, use. Clearly, CWA has not shown and cannot show that the proposed project meets the requirements for a variance under Chapter 91.

Finally, the regulations promulgated under Chapter 91 specifically state that "all projects must comply with applicable environmental regulatory programs of the commonwealth, including but not limited to...[the] Ocean Sanctuaries Act... No License or permit shall be issued for any structure or fill that is expressly prohibited in M.G.L. c.132A, §§1 through 16." 310 CMR 9.33(1)(f). Since offshore power plants are expressly prohibited under Section 15 of MOSA, they are, likewise, prohibited under Chapter 91.

VI. GENERAL DEFICIENCIES IN THE NEPA/MEPA ANALYSIS

NEPA, CEQ and Corps' regulations require the Corps: 1) to rigorously explore and objectively evaluate all reasonable alternatives; 2) to consider all reasonably foreseeable impacts associated with its actions; and 3) to provide adequate opportunity for the public to participate. The Corps has failed on all three counts.

Congress enacted NEPA in recognition of "the profound impact of man's activity on . . . the natural environment, particularly the profound influences of . . . industrial expansions, resource exploitation, and new and expanding technological advances . . ." 42 U.S.C. § 4331. NEPA forces agencies to consider environmental objectives, including assuring a "safe, healthful, productive, and esthetically and culturally pleasing surroundings," during the decision-making process. *Id.* § 4331(b).

Because NEPA creates "a particular bureaucratic decision-making process," but does not mandate a particular outcome in any matter, the efficacy of NEPA is dependent on agency compliance with the Act's procedural requirements. *Sierra Club v. Marsh*, 872 F.2d 497, 500 (1st Cir. 1987). Strict adherence to NEPA's public participation requirements is particularly important, because those requirements enable the public to participate in and police an agency's decision-making process. *See Grazing Fields Farm v. Goldschmidt*, 626 F.2d 1068, 1073-74 (1st Cir. 1980).

NEPA requires the preparation of an EIS for any "major federal action[ ] significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C); *Sierra Club v. Peterson*, 717 F.2d 1409, 1412 (D.C. Cir. 1983). An EIS should consist of a thorough analysis of the potential environmental impacts and should "provide full and fair discussion of significant environmental impacts and shall inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1. The goal of the EIS process is to ensure that the agency has taken a "hard look" at the potential environmental consequences of the proposed action. *Churchill County v. Norton*, 276 F.3d 1060, 1072 (9th Cir. 2001).

An agency must, through its EIS, "consider every significant aspect of the environmental impact of a proposed action," *Baltimore Gas & Elec. Co. v. Natural Resources Defense Council, Inc.*, 462 U.S. 87, 97 (quoting *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 553 (1978)), and "evaluate different courses of action," *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976). The discussion of environmental impacts "forms the scientific and analytic basis for the comparisons" of alternatives. 40 C.F.R. § 1502.16. The EIS must discuss both "direct and indirect effects (secondary impacts) of a proposed project." *Sierra Club v. Marsh*, 976 F.2d 763, 767 (1st Cir. 1992); 40 C.F.R. § 1502.16(b). Though an agency need not

speculate about all conceivable impacts, all reasonably foreseeable significant effects of the proposed action must be evaluated. *Sierra Club v. Marsh*, 976 F.2d at 767. A "reasonably foreseeable" impact is one that "is sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision." *Id.* The agency further has the duty to conduct "reasonable forecasting" when preparing an EIS; courts will "reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as 'crystal ball inquiry.'" *Scientists' Inst. for Pub. Info. v. Atomic Energy Comm'n*, 481 F.2d 1079, 1092 (D.C. Cir. 1973).

An EIS is required to "study all alternatives that appear reasonable and appropriate for study ..., as well as significant alternatives suggested by other agencies or the public during the comment period." *Roosevelt Campobello Int'l Park Comm'n v. United States EPA*, 684 F.2d 1041, 1047 (1st Cir. 1982) (quotations omitted). Consideration of alternatives is "the heart of the environmental impact statement." 40 C.F.R. § 1502.14 (explaining that an EIS 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.") It is "absolutely essential to the NEPA process that the decision maker be provided with a detailed and careful analysis of the relative environmental merits and demerits of the proposed action and possible alternatives, a requirement that we have characterized as 'the linchpin of the entire impact statement.'" *NRDC v. Callaway*, 524 F.2d 79, 92 (2d Cir. 1975) (citation omitted); *see also Grazing Fields Farm*, 626 F.2d at 1072 (Failure to incorporate supportive studies and memoranda contained into an EIS cannot "bring into compliance with NEPA an EIS that by itself is inadequate.").

Because one purpose of the EIS is to "provide decision makers with sufficiently detailed information to aid in determining whether to proceed with the action in light of its environmental consequences," *Northwest Resource Info. Ctr., Inc. v. National Marine Fisheries Serv.*, 56 F.3d 1060, 1064 (9th Cir. 1995), the level of detail needed depends on the nature and scope of the proposed action, *Valley Citizens for a Safe Env't v. Aldridge*, 886 F.2d 458, 463 (1st Cir. 1989). An EIS must have "information sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned." *NRDC v. Morton*, 458 F.2d 827, 836 (D.C. Cir. 1972). An agency must go "beyond mere assertions and indicate[d] its basis for them," and must "explicate fully its course of inquiry, its analysis and its reasoning." *Silva v. Lynn*, 482 F.2d 1282, 1284-85, 1287 (1st Cir. 1973).

These requirements govern the Corps' decisionmaking. As discussed in t his section, the approach used to develop the DEIS violates many of these essential principles of NEPA and the case law interpreting it.

A. The DEIS Is Insufficient Because the Corps Has Allowed CWA an Improper Role in EIS Preparation.

The Corps' handling of the environmental review for this project has been flawed from the start. Ignoring extensive guidance, agency practice, and case law on the need to ensure the objectivity of the NEPA process, the Corps has given this applicant extraordinary and impermissible leeway in the development of the draft EIS. APNS has repeatedly objected to this approach, as have members of the interagency team. These requests have fallen on deaf ears, and the results show in this grossly inadequate, biased and result-oriented DEIS.

In September 2001, before it had even filed its official application to the Corps, CWA's environmental contractor, Environmental Science Services ("ESS"), quickly established the bidding of its employer for the project: "we have requested the September 14 meeting in order to discuss the Proponent's regulatory filing strategy and schedule. We are particularly interested in discussing and identifying the [Corps'] role in the federal NEPA review process, and would like to present our thoughts and suggestions regarding state and federal agency review and coordination." Ex. 24.

From that point on, the Corps allowed CWA and ESS to play a controlling role in the environmental review for the project, despite NEPA regulations to the contrary. Regulations implementing NEPA direct that any EIS "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 further provide, "[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 has established clear guidance on how to ensure EIS objectivity. 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. 18026 #16 (Mar. 23, 1981) (emphasis added). 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.

In addition, accepted agency practices, including those of the Corps, serve as further guidance. In many cases involving complex development projects, the action agency will execute a Memorandum of Understanding ("MOU") with the contractor and the applicant to identify the proper roles of the respective parties and to ensure that the applicant does not influence the contractor or the agency. MOUs are important so that all parties understand the respective roles each will be playing, to establish a basic timeline for the review of the process, and to ensure adequate and defined opportunities for public participation. In addition, because of the factual review a court will conduct when a claim of undue influence is made, an MOU is useful for the agency so that it can defend its approach to the environmental review. An MOU not only makes accusations of bias or corruption harder to sustain (and less likely to occur), it provides a model against which the actual review process can be measured. Agreements between municipal governments and lead agencies help to ensure that the review process is fair and objective.

Several agencies have clearly established policies for employing MOUs. The Department of the Army has encouraged its subdivisions, which presumably includes the Corps, in their relations with local, state, regional, and tribal agencies, to execute MOUs "to identify areas of mutual interest, establish [points of contact], identify lines of communication between agencies, and specify procedures to follow in conflict resolution. . . . Through this process, the proponent may gain insights on other agencies' approaches to EAs, surveys, and studies applicable to the current proposal." 67 Fed. Reg. 15290-01, 15305 (March 29, 2002).[56] Other agencies do the same. The BLM, for example, uses MOUs between the BLM, the applicant and other cooperating agencies, if any, to establish roles and responsibilities and to address any cost reimbursement aspects of the project. See 43 CPR 2808.3-1. Under the MOU, BLM is to actively administer the contract – *i.e.,* to work directly with the contractor on NEPA-related matters and provide technical guidance and direction in the preparation of the EIS. The MOU identifies the proposed schedule for the project and the BLM estimated cost schedule, by quarter. H-1790-1 - National Environmental Policy Act HandBook, App. 7.

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[56] APNS provided the Corps with an example of such an MOU from the Corps' own practices, but still the New England District ignored this important, standard step in EIS preparation.

Proper insulation of the applicant from the review process is critical. The court in *Northern Crawfish Frog (Rana Areolata Circulosa) v. Federal Highway Admin.*, for example, explained the importance of the contractor selection requirements:

> 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 . . . .

858 F. Supp. 1503, 1528 (D. Kan. 1994) (emphasis added).

Unfortunately, the Corps did nothing more than rubberstamp CWA's selection of an environmental contractor. As indicated by the lack of any other documentation available in the record, the Corps simply accepted the role assumed by ESS. In fact, none of the documents provided to APNS under FOIA indicate that the Corps employed any screening process whatsoever. Moreover, the Corps did not bother to obtain a disclosure statement until ten months after the review process had begun. Ex. 25.

ESS' bias in favor of the project was obvious from the start. In its November 21, 2001 Environmental Notification Form for CWA, ESS stated that the "best available site for the Project" has already been selected and that the effects of the project had already been "fully evaluated." Ex. 26. ESS also described the project of its client as "exciting." Ex. 27. As the environmental consultant that prepared the initial studies for CWA, ESS clearly has an interest in seeing that the studies it preliminarily conducted for CWA are confirmed and the project constructed. It is inconceivable that the Corps would select an EIS consultant that not only works directly for the applicant, but also one that has no separation from the direction of the applicant during DEIS preparations and that actually is on the record from the outset advocating for a preferred project site.

As soon as APNS became aware of the Corps' failure to comply with its regulations and the contractor's bias in favor of the applicant, it wrote to the Corps to address the issue. By letter dated August 16, 2002, APNS asked for remedial action to ensure the integrity of the NEPA review, including separating CWA from analytical and decision-making aspects of the EIS process and replacing ESS with a contractor selected under CEQ's recommended procedures.

The Corps' response to APNS's concerns on this subject has been dismal. The Corps has never addressed this issue directly. By letter of November 8, 2002 letter, Ex. 28, the Corps merely stated that it is permissible for an outside consultant to prepare an EIS when appropriate steps are taken to ensure the objectivity of the review. APNS explained by letter of January 24, 2003 to the Corps that its November 9 letter was not responsive to APNS's concerns. APNS wrote again to the Corps on April 1, 2003 to explain how CWA and ESS's involvement was compromising the process. Other parties participating in the NEPA process also raised this concern, including the Safewind coalition of environmental groups, by letter of May 5, 2003.

At no time did the Corps indicate that it had or intended to take appropriate steps to cure the problem. Indeed, as the record shows, *the Corps took no steps*. ESS continued to function as CWA's advocate throughout the review process, at the same time it was serving as the EIS consultant, apparently conveying the applicant's arguments to the Corps regarding the scope of review, the types of studies needed and the legal approach the Corps should be following.

Even if ESS had been selected according to proper procedure and was determined, through careful scrutiny to be a disinterested party, the Corps has nonetheless allowed CWA to be impermissibly involved in the NEPA review process. Throughout almost the entirety of the process, the Corps has allowed CWA itself to attend many interagency meetings, including those where legal and policy issues have been addressed.[57] The Corps allowed this to happen even though other interested

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[57] It appears that the Corps attempted to mitigate the pervasive role it allowed the applicant to play by taking certain actions. These were ineffective and did nothing to counteract the CWA/ESS manipulative role. The Corps hired TRC – Environmental, for example, apparently to draft certain sections of the DEIS. As noted by the Boston Herald on November 9, 2004, "TRC specializes in speeding wind power projects through the permitting process and could be in line for lucrative consulting work should Cape Wind come to pass." Ex. 30. Indeed, as discussed during a TRC earning conference call, TRC makes money on the licensing of wind energy projects:

> The one area of our power delivery engineering that is affected by the delay in the energy bill is the EPC work-for-wind projects. *The developers will spend the money for licensing, which we perform.* When they go for construction financing, they want to know that those tax credits are in force pursuant to the provisions in the energy bill. So we're currently waiting on decisions on around four to five wind projects that will probably be on hold until the energy bill is passed.

TRC Companies Earnings Conference Calls, February 5 (Q2). It is clear that facilitating the first offshore wind energy facility will only assist TRC in obtaining additional clients. There is no evidence that the Corps took any actions to insulate TRC from ESS or CWA.

parties have been denied access and interagency team members expressed concern about the applicant's role. Ex. 29. This permissive practice continued throughout the process, as verified by attendance sheets and emails requesting the applicant not attend submitted as exhibits to APNS letter dated, January 24, 2003. Even when CWA representatives themselves did not attend these meetings, there was nothing established to prevent ESS from conferring with its client on each and every issue considered. This is another result of the failure to use an MOU to define appropriate NEPA roles and insulate the process from undue applicant involvement. The opportunity from the applicant to exert its influence on the DEIS was virtually unchecked, and the results are apparent in the DEIS.

These are not abstract concerns. Although it has been very difficult to obtain from the Corps full disclosure regarding CWA's role in the process because of the Corps refusal to meet with APNS on this subject,[58] the record itself reveals serious breaches in the objectivity of the DEIS process. One of the most egregious examples of this problem also involves one of the most important questions to be addressed under NEPA. Instead of drafting its own purpose and need statement, the Corps solicited one from CWA and circulated it among the inter-agency team for comment. Ex. 32. Responses to the statement from the team, which are discussed in more detail in elsewhere in the comments, were almost universally critical. The purpose and need statement indeed became a long-standing debate, and in the end the Corps adopted a statement substantially similar to that originally advocated by CWA. It rejected comments from other agencies and the public to the contrary. Establishing the range of alternatives in the EIS was no less problematic. Indeed, cooperating agencies could not determine whether CWA would determine the criteria for screening alternatives, or whether the Corps and the cooperating agencies would do so. *See* Ex. 33.

There is evidence suggesting that the Corps is relying upon the guidance of the applicant on several other critical issues. For example, the Corps released documents pursuant to a FOIA request that strongly suggest that the applicant is directly influencing the reports included in the DEIS. In the spring of 2003, the Corps contacted Garrad Hassan and Partners Limited to prepare a report that would "provide an overview of the state-of-the-art of the development of offshore wind farms, specifically in relation to the site environment." That report is attached as appendix

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[58] APNS requested to meet with the Corps on this serious issue on several occasions throughout the process, including two occasions in the last few months. Ex. 31. The Corps refused to do so under the curious, if not inexplicable logic, that doing so would violate the "attorney client" privilege.

3F to the DEIS. The purpose of the review was "to gather key project and site parameters, primarily for comparison to those at the Horseshoe Shoal project, Nantucket, which is currently being assessed by Corps." Ex. 34.

In July, Garrad Hassan emailed its draft of the report to the Corps requesting comments and to ask how many copies the Corps and CWA would need. Craig Olmstead, CWA's Vice President of Project Development, was carbon copied on that same email. Ex. 35. None of the cooperating agencies were provided with the draft, however. The Corps responded to the draft, stating, "The first person that I had read the report misunderstood the very last sentence in the conclusion. If you have not yet mailed out the paper copy, please wait while I get some additional reactions." Ex. 36. In a follow-up email, the Corps recommended that the final sentence of the conclusion be deleted and asked to have a paper copy to the Corps and one to CWA. Garrad Hassan removed the sentence and issued the final report.

The sentence that apparently provoked such confusion and concern stated, "The survey has been aimed at providing a benchmark for the environmental assessment of the proposed Horseshoe Shoal site at Nantucket Sound. *To that extent, it is evident that Horseshoe Shoal is, in most regards, as least as technically onerous as the majority of projects now being developed.*" Ex. 37 (emphasis added to deleted sentence). With that sentence deleted, the final report conveyed only three conclusions: 1) that a total of 23 wind farm projects are likely or certain to come into operation in the next 2 to 3 years; 2) for each offshore project, the key project features and site characteristics have been identified; and 3) the survey was aimed at providing a benchmark for the review of the Horseshoe Shoal site. The Corps had deleted the only sentence that provided any analysis of how the proposed project compared to other wind farms.

Given that Mr. Olmstead was the only person carbon copied on the initial email, and that the deleted sentence was far from confusing, it seems likely that the final sentence was deleted at the request of the applicant because the applicant did not like the substance of the conclusion. APNS asked the Corps to release other documents concerning this issue to give the Corps an opportunity to allay its concerns. Ex. 38. The Corps has not responded to APNS's letter.

Regardless of whether Mr. Olmstead was the party who requested the deletion, his inclusion in these discussions is simply inappropriate. Although NEPA regulations allow an applicant to submit information that the agency can incorporate into an EIS, it does not permit the consultative role that the Corps appears to have embraced. *See* 40 C.F.R. § 1506.5(b) and 33 C.F.R. 326 Appendix (B). It is the Corps that should be reviewing documents and then distributing to the interagency team. To the extent that CWA has been included on *any* interagency correspondence,

pre-decisional or not, that correspondence must be made public and released under the FOIA. CWA is not an agency, but a private party.

Nor is the Garrad Hassan report the only instance of such inappropriate collusion. In October of 2003, EPA/Region 1 sent an inquiry to the Corps regarding the possibility of evaluating a 100 MW wind facility as an alternative to the much larger CWA project. Ex. 39. The interagency team was copied on the email, but ESS and CWA were not. FWS raised the same question, again with the interagency team only. Ex. 40.

Rather than responding to the EPA and FWS inquiry, the Corps apparently decided to refer the email to CWA's lawyer. This critical question, which potentially could change the scope of the EIS and the range of facilities to be considered, was not a question the Corps decided to answer for itself. Not surprisingly, CWA responded quickly, explaining that the change in scope would not suit CWA's commercial objectives, and therefore should not be made. CWA also assisted the Corps by providing (misleading and outdated) legal support for its position to retain the higher range of energy generation facilities so that further analysis would be unnecessary. Ex. 41.

Yet another example involves the critically important bird impact studies. Throughout the permit application review, one of the most consistent themes has been the potentially significant adverse effects of the project in avian species. Expert agencies have repeatedly insisted that readily available data be gathered and easily conducted studies undertaken.[59] CWA has repeatedly refused to conduct these studies or gather this information.

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[59] From the beginning of the process, CWA has peddled the view that avian risks are small and bird use is low for the Horseshoe Shoal area. *See* CWA ENF. Commentors on the ENF filed by CWA pointed out the deficiencies of the studies conducted by CWA. For example, the Massachusetts Division of Fisheries and Wildlife stated that CWA's initial determinations were based on "inadequate or no data at all." FWS explained that, contrary to the assertions in the ENF, the proposed project requires "a vigorous analysis of daily and seasonal temporal patterns of bird activity, weather conditions, lighting conditions, and whether any features or operational characteristics of the wind turbines individually or in aggregate create or induce hazards to migratory birds." Massachusetts Audubon Society stated that the ENF presented "an extremely sketchy outline." Dr. Ian Nisbet, an expert on avian species in the Sound also objected to the ENF, repeatedly citing the need for "fuller and more precise information" to assess the potential risks to various species. *See* APNS letter of March 13, 2003, entitled *Analysis of Legal and Scientific Deficiencies in the Analysis of Adverse Impacts to Birds and Bird Habitat Caused by the Proposed Cape Wind Energy Plant* for an early discussion of deficiencies.

In an effort to justify its stance, CWA submitted yet another legal analysis misconstruing NEPA and seeking to justify an inadequate EIS. On January 5, 2005, Dennis Duffy of CWA sent a letter to the Corps attempting to explain why it was not necessary for CWA to conduct any further avian studies. Ex. 42. In his letter, Duffy argued that no further study was needed because NEPA no longer required applicants to conduct "worst case scenario" analyses. Of course, this is true. The NEPA "worst case scenario" analysis was removed years ago. What Mr. Duffy was attempting to obfuscate, however, is the provision that actually does apply. Under this provision, the applicant must fill data gaps where the overall cost of obtaining important missing information is not exorbitant. Whether the costs of obtaining the missing data are exorbitant depends on the scope of the project, the magnitude of the potential harm, experience with the type of proposed development and other factors. But of course, Mr. Duffy did not want even to get to that analysis for an $800 million project under which the private developers stand to profit by an estimated $75 million per year. To avoid that issue, CWA's lawyer manufactured an argument about a provision that no one suggests applies in the NEPA context.

As demonstrated by the release of the DEIS, even without the data, the Corps apparently accepted the applicant's position on this issue. As a result, the necessary studies were not prepared, and CWA's insider status appears to have once again had an effect on the Corps' review process.

These are only three examples of the Corps' failure to govern the applicant's role in the review of this project to ensure the objectivity and integrity of the NEPA analysis. Each of these instances is of critical importance to the legal sufficiency of the NEPA review. The fact that such violations of fundamental NEPA compliance rules for separation of the applicant from key aspects of agency-decision-making occurred on these major EIS compliance points can only raise questions as to how many other instances of improper applicant involvement have occurred directly with the Corps, not to mention behind the scenes through CWA's hand-picked permit advocate ESS, the EIS consultant.

Little has changed in the ensuing three years. Despite repeated agency criticisms and expert requests for additional studies, three-year studies, radar studies, CWA has avoided doing the bare minimum needed to answer questions regarding potential avian impacts. The deficiencies in the data are something even the Corps acknowledged this fall, when it asked Massachusetts Audubon Society to develop a course of study of seaducks and a radar study of bird movement in the Sound. Soon after Mass. Audubon developed its proposal, CWA announced that it refused to do any additional work on avian issues.

The Corps' failure to follow proper procedures and to manage the relationship between the ESS, CWA, and the action agency, therefore, has resulted in compromises on some of the most important issues in the environmental review of this precedent-setting project. As discussed in the remainder of these comments, the result is an EIS that does not satisfy NEPA or serve as the basis for an objective, legally sufficient evaluation of this proposal. Clearly, the public has *no faith* in this DEIS.

B. The DEIS Is Not Objective and Impartial.

It is the bedrock principle of NEPA that an EIS must be utterly objective and unbiased. It must avoid predetermined conclusions or interpretation, and the evidence designed to promote a particular result. *See e.g., Carmel-by-the-Sea v. United States Dep't of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997). Instead, it must serve as an impartial basis for informing the decision-maker of the advantages and disadvantages of a federal action. *See e.g., Wisconsin v. Weinberger,* 745 F.2d 412, 426- 27 (7th Cir. 1984) (recognizing that NEPA's purpose "will not be fully achieved if decision makers are predisposed to favor a particular outcome because of an agency's investment in the project" and that "[s]uch a predisposition can result once a commitment of resources to a project is undertaken...." *Washington County, North Carolina v. U.S. Dept. of Navy*, 317 F. Supp. 2d 626, 631 (E.D.N.C. 2004) ("Under NEPA, before making a decision that will affect the environment, an agency must take into account the effects of its action on the environment, providing notice and opportunity to be heard, and fair and impartial consideration.").

The DEIS flies in the face of this fundamental NEPA requirement. From the very beginning of the document, it treats CWA's proposal as a foregone conclusion. The efforts to downplay detrimental effects and overstate benefits is most obvious in Section 3 of the DEIS on Alternatives and Section 5 on Environmental Consequences. The technical analyses are equally flawed. As discussed in detail in these comments, on virtually every important issue the DEIS authors push the discussion in favor of permit issuance, even when the available information does not support that result.

These comments describe the inherent bias of the DEIS in great detail. For purposes of this discussion, however, a few illustrations suffice to frame the detailed technical analyses which follow. This problem begins with the DEIS Executive Summary. Time and again throughout this discussion, the authors of the Summary treat the project as a foregone conclusion. Repeatedly, the Summary speaks of what

the project "will" do and the purported benefits that it "will" produce.[60] The prospect of the permit denial, that is the only lawful result, is never even hinted at in the result-oriented Executive Summary.[61]

This problem is carried over to the discussion of alternatives. This chapter of the EIS oozes with result-oriented and biased analysis, an inevitable outcome of the improperly narrow purpose and need statement. In addition, however, the problem is clear in the manner through which other forms of energy projects are ruled out. The DEIS sets a standard of 424 MW as the capacity size to judge other forms of power projects. It does so, even though it is clear that the proposed project will produce only approximately 170 MW. By using 424 MW for other classes of projects, however, the DEIS drafters are able to rule them out as impracticable or having too many adverse effects. That conclusion would not necessarily hold, however, if a true comparison were invoked between 170 MW plants. This kind of biased, pro-applicant analysis pervades the entire document and renders it invalid under NEPA.

C. The Corps Violated NEPA by Not Preparing a Programmatic EIS.

The Corps should have prepared a programmatic review of offshore wind energy before reviewing this site-specific request. This review has been handicapped from the start by the lack of information available regarding the United States' offshore wind energy resources. At this time, there are a number of proposals for offshore wind farms. In addition to CWA's proposed development, there are plans by Winergy to develop various sites, a plan by the Long Island Power Authority to develop a site of the coast of Long Island, and proposals to develop along the New Jersey Shore. Indeed, the Governor of New Jersey, Richard J. Codey, was so concerned with the proposed development, that he signed an executive order enacting a 15-month moratorium on funding the development of, or granting the permits to construct windmill farms off the coast of New Jersey. Ex. 43. Congressman Pallone

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[60] For example, the DEIS states that the proposed project "will displace an equivalent amount of energy from the next available more expensive fossil fuel fired units," DEIS, at 1-21; it "will reduce the cost of compliance with the [RSPs]", *id.* at 1-22; it "could have a cumulative beneficial effect of public health," *id.*; it "would have a positive economic and fiscal impact on the mainland cities," *id.*; and it "would also have economic benefits at the national level," *id.*

[61] Another example is the absurd characterization throughout the EIS of this wind energy plant as a "wind park." Industrialization of the Sound does not result in the creation of a "park" for wind. This is an energy project that will desecrate an area that indeed qualifies in its natural form for park or sanctuary status.

similarly introduced legislation calling for an offshore- wind energy moratorium for mid-atlantic states. Ex. 44. Many are encouraging Governor Romney to do the same.

As APNS has noted in previous correspondence, when a new resource development program is emerging, a programmatic EIS is needed. *See Kleppe v. Sierra Club*, 427 U.S. 390, 400 (1976) (noting that it is appropriate to conduct a programmatic EIS for a new leasing program of national scope that will have significant environmental consequences); *Foundation on Economic Trends v. Heckler*, 756 F.2d 143 (D.C. Cir. 1985) (development of a new technology with unknown environmental consequences is the type of action in which programmatic considerations under NEPA are particularly important); *National Resources Defense Council v. Morton*, 458 F.2d 827 (D.C. Cir. 1972) (NEPA requires a far-ranging study of alternative energy resources before the government can begin its offshore oil and gas leasing activities in the Gulf of Mexico).

Regulations also stress the importance of programmatic review. CEQ regulations direct agencies to "prepare statements on broad actions so that they are relevant to policy and are timed to coincide with meaningful points in agency planning and decision-making." 40 C.F.R. §1502.4 (b). The regulations note that it is helpful for agencies to evaluate proposals in one of the following ways:

1. Geographically, including actions occurring in the same general location, such as body of water, region, or metropolitan area.

2. Generically, including actions which have relevant similarities, such as common timing, impacts, alternatives, methods of implementation, media, or subject matter.

3. By stage of technological development including federal or federally assisted research, development or demonstration programs for new technologies which, if applied, could significantly affect the quality of the human environment. Statements shall be prepared on such programs and shall be available before the program has reached a stage of investment or commitment to implementation likely to determine subsequent development or restrict later alternatives.

Id. §1502.4 (c).

This type of resource development is precisely the kind of development for which programmatic review is needed. It is clear that large-scale, wind-generating

turbines are now economically and technically feasible. The purpose and need for the proposed project states that "renewable sources of energy are needed to provide additional power to meet demand and to reduce dependency on non-local, non-renewable energy sources." The Corps' failure to acknowledge that a program exists notwithstanding, a proposal "may exist in fact as well as by agency declaration that one exists." 40 C.F.R. § 1508.23; *see also* Council on Environmental Quality Memorandum to Federal Agencies on Procedures for Improving Environmental Impact Statements (May 16, 1972) ("CEQ Memo on Improving EISs") ("An EIS must be prepared if an agency proposed to implement a specific policy, to adopt a plan for a group of related actions, or to implement a specific statutory program of executive direction.").

In fact, the DEIS actually acknowledges the existence of a new program. In discussing the No-Action alternative, the DEIS states that if the permit is denied, it is likely that commercial development of offshore wind power will not advance significantly. Apparently, the DEIS drafters believe that the future of offshore wind energy hinges in the balance on the Corps' review in this particular case. If the proposed plant receives a permit, other offshore wind plants will follow, according to the DEIS. Undoubtedly, there will be different impacts for different regions of the ocean. Bird studies show that strikes are different in different parts of the country. A decision maker's information needs and the public's interest warrant a broad look at wind energy development on a regional or national basis.

Thus, a programmatic EIS is needed. The value of a programmatic EIS cannot be overstated, given the uncertainty surrounding this technology and its impacts on a wide range of interests and values. Such a review will "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 Federation v. Appalachian Regional Comm'n*, 677 F.2d 883, 888 (D.C. Cir. 1981). In addition, 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*, 481 F.2d at 1087 (quoting CEQ Memo on Improving EISs).

Moreover, as a practical matter, a programmatic EIS will help to streamline the environmental review process. If the COE conducts a programmatic EIS, it will be in a position to "tier" EISs on any site-specific proposals. "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." 40 C.F.R. § 1508.20. "Tiering" refers to the coverage of general matters in broader environmental impact statements (such as national program or policy statements) with subsequent statements or environmental analyses (such as regional or basinwide program statements or ultimately site-specific statements) incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared. *Id* § 1508.28.

If the Corps were to develop a single, comprehensive programmatic EIS, it could take advantage of the tiering provisions of NEPA, create a more efficient and fair process and avoid wasteful duplication of effort by the agency, the applicant and the public. "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." CEQ Memo on Improving EISs, #24C. Doing so requires the site-specific project reviews to be deferred. *See id.* ("This [area-wide] impact statement would be followed by site-specific or project-specific EISs.") Such an approach would have the net effect of streamlining and expediting the overall program review consistent with President Bush's Executive Order 13212. *See* 66 Fed. Reg. 28,357 (May 18, 2001).

The only reason that such as study has not been conducted in this case is because this program is proceeding without Congressional authorization. Offshore wind energy involves major transformation and development of federal lands held in trust for the public. As noted in these comments, even if the Corps has the Section 10 authority to permit the proposed plant, a section 10 permit alone is not sufficient for the applicant to construct the proposed wind plant. Nonetheless, any program committing such substantial portions of the public trust to private use would certainly be subject to programmatic review.

The need for such review for this type of development has been clearly recognized by the Bureau of Land Management ("BLM"), which has just closed its initial comment period on its draft programmatic EIS of onshore wind in December of 2004. The BLM's program stands in stark contrast to the manner in which the Corps is proceeding. The BLM onshore wind energy development program is proceeding in a logical, thorough, and statutorily authorized course of action. It builds on existing regulatory procedures to develop a comprehensive regulatory program for wind energy development on the onshore public lands it administers. The BLM's review is a two-year, programmatic environmental impact study. Until the review is completed, the BLM is adhering to a detailed Interim Wind Energy Development Policy. *See* Instruction Memorandum No. 2003-020 from Kathleen Clarke, Director of the Bureau of Land Management to All Field Officials (October 16, 2002) (available at <http://www.blm.gov/nhp/efoia/wo/fy03/im2003-020.htm>).

In contrast to the Corps' approach, the BLM's regulatory program is firmly based in clear statutory authority. Under Title V of the Federal Land Policy and Management Act of 1976, 43 U.S.C. § 1701 *et seq.*, the BLM is authorized to issue rights-of-way on the federal public lands it administers for "systems for generation, transmission, and distribution of electric energy." 43 U.S.C. § 1761(a)(4). Of course, the BLM also has broad, relevant expertise in multiple uses of the public lands, something that the Corps lacks.

The BLM identified the objectives of the BLM programmatic review: 1) assess the environmental, social, and economic impacts associated with wind energy development on BLM-administered land, and 2) evaluate a number of alternatives to address the question of whether the proposed action presents the best management approach for the BLM to adopt, in terms of mitigating potential impacts and facilitating wind energy development. <http://windeis.anl.gov/documents/dpeis/maintext/execsummary.pdf>. The draft programmatic EIS not surprisingly determined that the best approach to managing wind energy development is a comprehensive one, not an ad hoc approach like the Corps is using. A comprehensive approach to address the impacts associated with wind energy development on BLM-lands,

> would present the best approach for managing wind energy development . . . The proposed Wind Energy Development Program is likely to result in the greatest amount of wind energy development over the next 20 years, at the lowest potential cost to industry. Simultaneously, the proposed action would provide the most comprehensive approach for ensuring that potential adverse impacts are minimized to the greatest extent possible. And, finally, the proposed action is likely to provide the greatest economic benefits to local communities and the region as a whole.

Id.

In its comments on the BLM programmatic review, even the American Wind Energy Association ("AWEA") acknowledged the importance of a programmatic approach:

> *The wind energy industry is pleased that the BLM developed the draft PEIS in order to bring standards and consistency to the BLM's consideration of environmental issues that are similar across all wind energy project proposed on BLM-administered lands in the west U.S.* As BLM officials such as Rebecca

> Watson, Assistant Secretary for Land and Minerals Management at the Department of the Interior, have indicated in the press, wind energy projects would continue to conform to site-specific analyses and public participation processes for individual projects. However, the ability to tier an [EA] off the analyses in the PEIS and the decisions in the resultant Record of Decision (ROD) will allow all involved to focus on any site-specific issues and reduce the need for duplicative reviews for every wind energy project.

Ex. 45. (Emphasis added). AWEA's comment is evidence of the clear advantages of, and legal need for, a similar approach for offshore wind.

A comprehensive approach and programmatic review is, of course, the approach Europe is following as well. As APNS noted in correspondence dated August 27, 2003, the United Kingdom conducted a Strategic Framework for the Offshore Industry and the Strategic Environmental Assessment ("SEA"). The results of their environmental review are available at <http://www.dti.gov.uk/energy/leg_and_reg/consents/future_offshore/index.shtml> and <http://www.og.dti.gov.uk/offshore-wind-sea/process/envreport.htm>. APNS provided a copy of each of these reports to the Corps by letter dated August 27, 2003.

The United Kingdom first developed a comprehensive policy for properly exploiting its coastal wind resources. The approach they adopted is a phased approach through which they evaluate wind resources and site potential from a general perspective telescoping to specific regions. The first study proposed a strategic planning framework as the basis for major expansion of the offshore wind industry and identified: 1) the proposed arrangements for future rounds of development leases; 2) the specific arrangements for the next round under the existing legal framework; 3) the arrangements for a strategic environmental assessment of the three proposed strategic regions; 4) proposed changes to the consents process to address specific issues relevant to offshore renewable energy installations; 5) the provision and regulation of offshore infrastructure for transmitting electricity; and 6) recommendations for a legal framework for future offshore development, to address shortcomings and enable development to take place beyond the limit of territorial waters. *See* <http://www.dti.gov.uk/energy/leg_and_reg/consents/future_offshore/Foreword.pdf>. From that study, the review focused on three strategic areas: Liverpool Bay, Greater Wash, and Thames Estuary.

Even one of CWA's biggest apologists, the Conservation Law Foundation ("CLF"), touts the value of programmatic review for New England energy

development, at least when it is a technology of which it does not generally approve. On May 5, 2004, CLF filed a letter with the Federal Energy Regulatory Commission regarding the potential development of Liquified Natural Gas ("LNG") terminals in New England. In that letter, CLF states the following:

- LNG terminals in New England and across the country have become extremely controversial;
- Siting is a regional issue of great importance and with significant environmental implications;
- LNG projects are very complicated and controversial and the solution lies in a regional evaluation of the merits of adding one or more LNG terminals to New England's energy base and the development of a regional strategic plan for siting prior to approval of any individual facility;
- There is no "coherent strategy for evaluating the merits of one or more [projects] for New England generally, or for any particular community specifically";
- The current "*ad hoc* approach has not been effective and will continue to founder";
- "[T]here may be several tools that can serve as vehicles for such an approach";
- The most appropriate vehicle for such a review is "the development of a programmatic environmental impact statement" under the National Environmental Policy Act, which is used to evaluate "broad actions geographically (*e.g.*, by region) or generically (*e.g.*, common timing, impacts alternatives), and anticipates that connected, cumulative or similar actions should be evaluated in a single EIS"; and
- Such an approach "can then be used to facilitate and expedite the preparation of subsequent project-specific EISs."

Of course, each of this statement applies with equal force to offshore wind energy and, in fact, mirror that which APNS has been arguing since CWA first filed its application, CLF's plainly inconsistent stance notwithstanding.

As these examples demonstrate, preparing a programmatic EIS is the standard way to proceed with an emerging program of this nature. The Corps' approach to this project is entirely inconsistent with the approach taken by federal agencies when confronted with an emerging program, as well as that recommended by the industry itself.

D. The DEIS Does Not Adequately Consider Cumulative Impacts.

Another area in which the DEIS is wholly inadequate is the consideration of cumulative effects. 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 cumulative effects analysis in the DEIS is deficient in at least the following respects:

- *Deficient Scoping*: During the Scoping Phase of the EIS, the Corps should have identified the issues that could cause cumulative effects and required study into those effects. The evaluation should have included other wind plant proposals, as well as technological development.

- *Deficient Geographic Boundaries:* CEQ's guidance states that for a project specific analysis, it is often sufficient to analyze effects in the immediate area of the proposed action, but "when analyzing the contribution of this proposed action to cumulative effects, however, the geographic boundaries of the analysis *almost always should be expanded.*" (Emphasis added.) If this project affects additional applications for new wind farms, the

geographic boundaries would expand to include those areas.

- *Deficient Time Frames*: CEQ's guidance notes that "project specific effects… may combine with the effects of other actions beyond the time frame of the proposed action and result in significant cumulative effects that *must* be considered." (Emphasis added.) It is clear that this project must address the impacts of future projects that are clearly foreseeable.

- *Failure to Identify Other Actions Affecting Resources.* The DEIS states that other project proponents are "responsible for their own impact potential." CEQ guidance states that it is common for analysts to "only include those plans for actions which are funded or for which other NEPA analysis is being prepared. This approach does not meet the letter or intent of CEQ's regulations."

Throughout the EIS, there is documentation of cumulative *actions* occurring in the marine environment, but there is little or no assessment of the cumulative impacts of these *actions*. In each section on cumulative effects, there is a discussion of "other submarine cable, pipeline installations, dredging activities, trawling, pile supported marine structures, and other offshore wind power installations." The DEIS claims that the cumulative impacts have been discussed, when in actuality, cumulative *actions* have been discussed, not the impacts of those actions. The EIS needs to include an in-depth cumulative impact analysis.

By way of contrast, the EIS does contain an actual impact analysis of the impacts from power plant emissions. For example, the DIES states, "although per capita health risks were found to be greatest near the power pants, only 20 percent of the total impacts occurred within 30 miles of the plants since more than 90 percent of affected individuals live beyond a 30-mile radius of the plants." DEIS, at 5-260. Later in the section, it states there are "30 premature deaths from Salem Harbor and 80 premature deaths from Brayton Point; 14,400 asthma attacks form Salem Harbor and 28,900 asthma attacks from Brayton Point; 99,000 daily incidents of upper respiratory symptoms from Salem Harbor and 199,000 daily incidents from Brayton Point."

Although this air quality analysis is incorrect, it is at least an attempt to consider cumulative impacts, quantified and understandable to a decision maker. Not

surprisingly, this cumulative impact analysis was included because it is believed to help CWA make its case. In those many areas where cumulative impacts would weigh against the CWA wind energy plant, they are simply ignored, again confirming the result-oriented nature of the DEIS. It is necessary to have the same level of analysis for the wind turbines and cumulative impacts of other actions occurring in the marine environment.

One of the most obvious deficiencies in the cumulative effects analysis is the failure of the DEIS to consider other offshore wind energy projects. Other such projects are clearly on the horizon, and reasonably foreseeable. A list of these projects is set forth in the discussion on alternatives in these comments. Indeed, the prospect that all of the Nantucket Sound sites would be developed must be analyzed as well. If the Corps authorizes the proposed project for Horseshoe Shoal, development of the other locations can be expected to occur as well.

The impacts caused by offshore wind plants are likely to be far-reaching. Wind energy plants are extraordinarily space-intensive; indeed, CWA's proposed plant will cover approximately 15 percent of the entire Sound. As other plants area permitted, hundreds of miles may be covered with grids of turbines. Commercial and recreational fishing interests, commercial shipping, and recreational boaters heavily use areas wind energy developers will want to develop. If close to shore, energy projects will fall in the middle of the bird migration range. 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 obstable 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. Despite these serious cumulative effects, the DEIS provides no consideration of this subject.

To cite just one example of these projects, the DEIS fails to consider the cumulative affects of the Long Island Power Authority project, proposed at the south coast of Long Island. This project is clearly reasonably foreseeable. Indeed, along with CWA's proposed project, it has been singled out in past, unsuccessful legislation, for a deceptive kind of grandfather clause. Section 321(c) of the 2004 Energy Bill exempted two projects from resubmitting documents if a bill authorizing offshore wind energy (i.e., the Cubin Bill) was passed: the bill exempted any project 1) for which offshore test facilities have been constructed before the date of enactment of this Act or 2) for which a request for proposals has been issued by a public authority.

This provision is clearly targeted to address the CWA proposed project and the Long Island Power Authority project. This provision appears to have been reincorporated into the 2005 energy bill now under consideration. Even though the Long Island project is considered closely linked with the CWA proposal, the DEIS fails to consider the cumulative effects of these two projects.[62]

The analysis of cumulative impacts is one of the essential reasons that the Corps should have developed a programmatic EIS. 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 Federation v. Appalachian Regional 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*, 481 F.2d at 1087 (quoting CEQ Memo on Improving EISs) (emphasis added).

Not only has the Corps failed to address the cumulative impacts associated with future wind energy projects, it has failed even to consider those fairly obvious, "reasonably foreseeable" cumulative impacts directly associated with the proposed project. For example, one apparent issue has to do with the potential cumulative impacts associated with a system upgrade for the NSTAR system. Before CWA can connect its wind plant to the grid, it must first conduct a System Impact Study ("SIS") to ascertain whether the system will require any upgrades to accommodate the new power source. At this time, CWA has not announced whether it has conducted an SIS, what the results are, whether upgrades will be needed, etc. This issue could be quite important. If the SIS indicates that a third 345 KVA transmission line is needed, for example, that would require upgrades the length of the system, resulting in considerable environmental disturbance. Although an upgrade may not be needed, that it might is obviously a reasonably foreseeable cumulative impact associated with the project. As such, the Corps is obligated under NEPA to include an analysis in its document.

Another major problem with the cumulative impacts analysis is the geographic limitations imposed by the Corps. On page 3-1 of the DEIS, the EIS states that the

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[62] As discussed below, that site also must be considered as an alternative, which the DEIS fails to do.

geographic scope is limited to the New England region. The impacts of the proposed project, however, are not necessary regionally limited. Of course, the Corps has implicitly acknowledged this point when it is to its advantage. Thus, the DEIS takes care to mention the "beneficial impacts" that will be enjoyed nationwide in its faulty emissions analysis, but utterly fails to acknowledge the detrimental impacts that will be felt on a regional scope. For example, the proposed project will impact geographically distinct migratory bird populations that travel through the wind plant area. Yet, the DEIS fails to analyze these impacts.

Finally, the Corps fails to consider cumulative effects associated with other past, present or reasonably foreseeable development activities not related to wind energy. Many such projects occur in this region. For example, LNG facility proposals are now under consideration, including a major project in Fall River, Massachusetts. The Corps has a duty to consider the effect of all such projects as well. Until the Corps corrects these major gaps in the cumulative impacts analysis in the DEIS, the document will remains fatally flawed.

E. The DEIS Is Deficient Because It Relies on Incomplete and Inadequate Data.

The data used in the DEIS is inadequate in a number of critical areas, including: avian issues, benthic impacts, noise effects, light impacts on avian and marine species, marine mammal impacts, fishery impacts, NHPA properties, and the impacts associated with the alternative sites, among others. Under CEQ regulations, unless the overall costs of obtaining needed data are exorbitant, data gaps must be filled when the incomplete information is both relevant to reasonably foreseeable significant adverse impacts and essential to a reasoned choice among alternatives. 40 C.F.R. § 1502.22(a). The numerous areas in which these incomplete and inadequate data exists are discussed in detail in Section VI of these comments.

Critical data that are missing from the DEIS concern, for example, reasonably foreseeable significant adverse impacts. An environmental effect is "reasonably foreseeable" if it is "sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision." *Sierra Club v. Marsh*, 976 F.2d 763, 767 (1st Cir. 1992). "Reasonably foreseeable" includes "impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason." 40 C.F.R. § 1502.22(b).

There is no area in the DEIS that more obviously needs additional data than the area of avian impacts. There is simply no dispute on this issue. The FWS, Massachusetts Audubon, Ian Nisbet, the CCC, the expert consultants APNS has hired

to review the DEIS, Safewind and others all agree that more information is needed on winter sea ducks, avian flight behavior, avian response to turbines, avian behavior in bad weather, avian response to lighting, the list goes on. Indeed, it is APNS's understanding that even the Corps has acknowledged the need for additional avian studies, but the applicant has refused to provide such information.

Failure to develop the missing data will result in an invalid EIS. When an agency has determined that more data is needed for an EIS, courts defer to the agency's judgment and require the additional study. Several cases illustrate that when the agency itself acknowledges gaps in the available information, especially when it has a fairly straightforward means to address them, a court may order it to add to the analysis.

For example, the Eighth Circuit held that the Surface Transportation Board could not approve a railroad's proposal to construct a new rail line and improve an existing line for coal transport without examining the reasonably foreseeable effects of increasing the availability of coal on air quality in the project EIS. *Mid States Coalition for Progress v. Surface Transp. Bd.*, 345 F.2d 520 (8th Cir. 2003). The Sierra Club challenged the EIS on the basis of the missing data. *Id.* at 548. Although the project proponents argued that such effects were too speculative, the court disagreed, holding that when the nature of the effect is reasonably foreseeable but its extent is not, the agency may not simply ignore the effect, but instead must provide the incomplete or unavailable information. *Id.* at 549. Critical to its decision was the fact that the Board's scoping comments stated that air quality impacts associated with increased availability and utilization of coal would be evaluated. Interested parties commented on the Board's omission and identified computer models that could be used to forecast the effects of the project on consumption of coal. The court concluded that it would be "irresponsible for the Board to approve a project of this scope without first examining the effects that may occur as a result of the reasonably foreseeable increase in coal consumption." *Id.*

Likewise, the D.C. Circuit found a supplemental EIS examining impacts of snowmobile use in Yellowstone and Grand Teton National Parks inadequate based on the National Park Service's failure to obtain information regarding the impacts of trail grooming on bison. *See Fund for Animals v. Norton*, 294 F. Supp.2d 92 (D.C. Cir. 2003). The Service stated in the EIS that "it is unknown if and to what extent beneficial effects [of trail grooming] outweigh negative effects on bison movement," and that "without trail closures, the agency simply cannot comparatively assess the effects of groomed winter roads on wildlife." *Id.* at 110-111. Despite these conclusions, the Service failed to close a single road for study. When interested parties commented about the absence of data on road closures, the Service responded that "the NPS believes the evidence of whether or not road grooming is affecting

bison distribution and abundance is inconclusive." *Id.* at 111. The court invalidated the EIS, stating that the Service's conclusions "scream[] out for further study," and the Service's failure to follow through with its own recommendation for study renders the EIS "flatly inadequate." *Id.*

Similarly, the U.S. Forest Service's failure to test soils in an area proposed for logging to control Douglas fir bark beetle in certain national forests lead the Eastern District to invalidate the EIS. *See Kettle Range Conservation Group v. United States Forest Service*, 148 F. Supp. 1107 (E.D. Wash. 2001). Although the Forest Service had acknowledged that certain soil conditions might be exacerbated by logging, it failed to do more than estimate the extent of the impact and promise future studies. *Id.* at 1126-27. The court held that the Forest Service should have performed individual, on-ground inspections of soil conditions before finalizing its EIS. *Id.* at 1127.

As these cases demonstrate, where an agency has itself noted the need for additional data, as is the case with the proposed project, courts do not look upon the agency's failure to obtain the data favorably. Nor is there good justification for the Corps to ignore the requests of the FWS. According to NEPA regulations, the lead agency shall use the environmental analyses of the cooperating agencies "to the maximum extent possible." 40 C.F.R. § 1501.6(a)(2). The FWS is the expert agency on the issue of avian species. The Corps has no relevant expertise in this area. To comply with NEPA, the Corps must therefore follow the recommendations provided by the FWS, as well as the other cooperating agencies on their areas of expertise. Until the Corps develops information necessary to fill these data gaps, the DEIS will not satisfy basic NEPA requirements.

F. The DEIS Is Deficient Because It Does Consider the Correct State Boundaries.

The DEIS not only has data gaps that must be filled, there are substantial inaccuracies that have undermined critical parts of the review. As discussed in Section VI., *infra*, the Corps released a document that it knows contains fundamental errors with respect to the federal/state boundary.

Although the federal-state boundary intersects both the preferred alterantive as well as the Tuckernuck Shoal alternative, the Corps failed to reflect this fact in its DEIS. As noted above, NEPA regulations provide that where "incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement." 40 C.F.R. § 1502.22(a). The information on the state boundary was

available in September, far before the DEIS was released. CWA and the Corps were aware of the issue almost *a year* before the DEIS was released. Because of the Corps' failure to take this information into account, the DEIS relies upon alternatives that are simply not viable. The entire DEIS is flawed as a result.

CWA's response is that it will reconfigure the project to avoid state boundaries. To date no change has been made. CWA also claims that such a change does not affect the DEIS. This position is plainly incorrect. Reconfiguration of the project is a critical issue that by CWA's own admission, could mean the difference between a viable and nonviable project. Ex. 20.

Even if the project is configured, the effect of those changes is critical to an accurate DEIS. The project has been carefully dropped into the federal "doughnut hole" in Nantucket Sound. As noted above, extension of the three-mile limit would result in direct applicability of section 404 of the Clean Water Act, which in turn would dictate the need for a dredge and fill permit and, through the 404(b)(1) guidelines, relocation of the project.

In addition, if the reconfiguration could result in a project that causes increased crowding or obstruction of the main and auxiliary shipping channels, increased probability of collisions and pollution incidents, and further intrusion into surrounding anchorage sites. Such a change also could cause significant visual encroachment on the shores of Cape Cod and/or Martha's Vineyard, crowding of popular recreational boating areas to the west of Horseshoe Shoal, and shifting of the project into more current-swept areas where Nantucket Sound begins to narrow to Vineyard Sound. If the applicant instead intends to add more turbines interspersed within the existing grid after dropping the area within the extended Massachusetts boundaries, then the spatial configuration that CWA itself designed will be altered. Placement of additional towers within the same project "footprint" negates the assumptions that formed the basis of the CWA navigational risk assessment. The search and rescue and small boat collision analysis would be invalidated, the probability of a collision or pollution incident would increase along with the attending risk of injury, death and property loss, the ability of fishing vessels and recreational boats to safely transit the site would be further restricted and an outright ban on commercial trawling would likely be assured. These issues are of major concern to all parties, and they are determined by the project design.

In addition, environmental impacts of a reconfigured project will differ. For example, a higher density of turbines could increase the threat to birds. Movement of the turbines to other locations on the edge of the existing proposal could encroach on important avian habitat. Changes to the impacts on the benthic environment also are possible, particularly, as the DEIS notes, in a region filled with unique microhabitats.

Sediment transport may differ: examination of the current charts for Nantucket Sound reveal that current speeds of ebb and flow tides increase in the direction of Vineyard Sound. If reconfiguration of the wind turbine field were to add towers to the southwest corner of the site, which appears to be one of only two options for extending the footprint of the preferred site in order for the project to remain in federal waters, increased challenges related to sediment transport and the stability of benthic environment would need to be addressed. If tower placement were to be extended to the east of the current preferred footprint, questions arise as to navigation impacts on ferry and other traffic, as well as issues posed by installation in the deeper water that occurs there.

Finally, CWA has argued strenuously that it must have a project of the size and scale currently proposed. If this is the case, then CWA must explain why the project remains economically viable if the response to the Commonwealth's clarified boundaries is to drop this segment of the proposed energy plant.

Despite the critical importance of the boundary issue, and all of the questions a change in boundary raises, the DEIS does not even mention the problem, despite the Corps' awareness of this critical fact. Indeed, the Corps chose to ignore the request of the Governor of Massachusetts to resolve this issue before releasing the DEIS so that the document could accurately identify the relevant authorities needed for the public review. The failure of the Corps to acknowledge this issue, and its decision to leave obviously inaccurate information in the DEIS, completely undermines the integrity of this review and violates the fundamental goals of NEPA.

VII. THE ALTERNATIVES ANALYSIS IS INADEQUATE AND FAILS TO SATISFY NEPA AND MEPA

A. The DEIS Purpose and Need Statement Is Narrowly Crafted to Advance the CWA's Profit-Making Goals, Not the Public Interest, and Violates NEPA

The Corps' overly restrictive purpose and need statement compromises the entire review of the CWA project and invalidates this DEIS. The narrow terms of that statement, particularly the limitation of a "utility-scale renewable facility" designed to deliver electricity solely to "the New England grid" are designed to produce a specific result – *i.e.*, approval of the applicant's preferred alternative on Horseshoe Shoal. By impermissibly restricting the purpose and need, the Corps also has limited the review of alternatives to only a very few sites and only one technology. The DEIS fails to consider any technology other than wind in any area other than the immediate vicinity of Nantucket Sound. Such an approach violates NEPA.

The Corps' flawed purpose and need statement not only violates NEPA, it also invalidates the public interest evaluation under section 10 and 33 C.F.R. § 320.4. It is impossible to evaluate the public interest for a project involving public trust lands and a public policy goal as broad as reducing global warming in other than a conclusory fashion when a restrictive purpose and need statement prevents the Corps from considering a full range of alternatives. The Corps has preordained the outcome of the review by imposing limits that are essentially a description of the proposed project itself, rather than the project purpose. The public interest is not served by looking only at the narrow range of alternatives defined by the DEIS purpose and need statement, and the Corps does a disservice to the public on this critically important proposed action by failing to conduct a comprehensive review that looks at all of the reasonable options instead of just those that meet the financial objectives of the developer.

1. The Development of the DEIS Purpose and Need Statement Resulted in an Unduly Restrictive Statement.

The DEIS sets forth the following purpose and need statement: "To provide a utility-scale renewable energy facility providing power to the New England grid" DEIS, at 2-2. The DEIS defines "utility-scale" as follows:

> Based on a review of historical ISO-NE data on proposed/planned interconnection and long-term firm point-to-point transmission service requests to ISO-NE, the energy generating capacity of new utility-scale and regionally-significant energy facility projects that have been permitted on are presently being studied for interconnection with the regional power grid have generating capacities that range between 200 and 1,500 MW.

DEIS, at 2-1, n.3. Thus, based upon this explanation, the Corps set a floor for project-size of 200 MW. Any project, no matter how desirable from an economic, energy or environmental perspective, is ignored by the Corps if it falls below this threshold.

This purpose and need statement violates NEPA because of three limitations that *together* predetermine the outcome of the analysis. By limiting review to: 1) "utility-scale" projects (as defined above); 2) renewable technologies; *and* 3) projects providing power to the New England grid, the Corps has eliminated a number of reasonable alternatives that potentially meet the actual purpose of the CWA project, which is to provide economically-feasible clean power on a regional basis in a manner such that the public interest is served through a net benefit, instead of a net loss.

The restrictions the Corps has imposed in the purpose and need statement are, in combination, designed to describe the proposed project. A valid purpose and need statement should not only encompass CWA's proposal, it also should allow evaluation of other projects that would meet the general goals of this project, as defined from the public interest perspective. Generating clean energy is not an all or nothing endeavor; it is not a choice between CWA's proposed project or no clean energy at all. A wide range of alternatives can and should be considered, but unfortunately the DEIS purpose and need statement has been drafted in a manner that excludes them.

Before discussing the defects in the DEIS purpose and need and setting forth a proper definition of the scope of the alternatives review, this section of the APNS comments describes the procedure followed by the Corps to arrive at the scope statement used in this DEIS. The Corps claims that it "*exercised independent judgment in selecting the purpose and need statement.*" *Id.* The record makes it clear, however, that CWA heavily influenced the drafting of the purpose and need statement. Moreover, the record shows how the Corps systematically and continuously rejected the recommendations from the public, the interagency team, and even its own peer review experts that a broader purpose and need statement should be used. Instead, as the record confirms, CWA defined a statement of purpose and need that would predetermine the conclusion that its preferred site, Nantucket Sound, is the only place that meets the goal of the proposed action. The Corps accepted that approach early in the permit review, and refused to alter its stance despite the near unanimous advice from third parties that it was necessary to do so.

If indeed the Corps did arrive at the conclusion to use this purpose and need statement independently, then it is nonetheless clear that the agency erred in doing so. The purpose and need statement suffers from numerous deficiencies, and the range of alternatives considered is far too limited. The discussion which follows demonstrates both the improper weight the Corps gave to CWA's preferred purpose and need statement and the flaws in the reasoning that have been offered to justify that approach.

a. The record supports the need for broader purpose and need statement.

From the outset of this permit application review, one of the pervasive themes in public comment, interagency team review, and outside expert analysis has been the importance of examining a broad range of alternatives not limited to the applicant's large-scale offshore wind project. For example, on December 21, 2001, U.S. FWS stated,

> Under NEPA, the heart of the DEIR/EIS rests with full evaluation and disclosure of reasonable alternatives to the proposed action. Accordingly, the alternatives analysis for the DEIR/EIS should be expanded to include alternative generation sources, e.g., natural gas, oil, solar, fuel cells, alternative energy capacity, e.g., a 5, 50, or 100 mw project versus the current proposal (420 mw); and alternative energy generating sites in areas served by the New England power grid. The expanded ENF focuses almost exclusively on an offshore wind generation project in Nantucket Sound with a capacity of 420 mw. Since the basic project purpose is to produce electricity, all reasonable generation sources, generation capacities, and generation locations capable of serving the New England power grid should be evaluated.

The Commonwealth of Massachusetts also called for an analysis that was broader than what has been conducted. The EOEA indicated that the EIS/EIR should address alternative feasible technologies for generating 420 MW of electricity, as well as an assessment of alternative locations for the proposed technology. Ex. 46. According to the Commonwealth's Environmental Notification Form, the EIS/EIR should include,

> Clearly, traditional methods of electricity generation are technically feasible alternatives (as evidenced by my recent reviews of several large gas-fired power plants on the Massachusetts mainland). The viability of gas fired electricity production is sufficiently demonstrated so as to warrant inclusion in the alternatives analysis. Note that I am not suggesting it is necessarily appropriate to require selection of a 420 MW gas-fired facility on the mainland as the preferred alternative, simply that it is appropriate to study the environmental impacts of such an alternative during the EIR process. . . .
>
> The EIR should therefore contain a "generic" analysis for a gas-fired mainland power plant with a capacity of 420 MW, to determine such parameters as air emissions, water use, fisheries, avian, visual, and other environmental impacts. The generic discussion should include a coastal gas-fired plant as well as an inland gas-fired plant. For comparative purposes, the EIR should also briefly discuss the impacts of an oil-fired 420 MW plant and a coal-fired 420 MW plant.

> The EIR should also include a discussion of alternative locations for a wind facility. The EIR should contain a screening analysis of other potential sites (these may be located in mountainous areas of western Massachusetts, elsewhere on or off Cape Cod, or in other New England states and adjacent federal waters). The EIR should contain sufficient information to understand why the proponent has chosen Horseshoe Shoals and why other sites were deemed infeasible for this particular project. The EIR should contain any alternatives necessary for CZM to conduct its Consistency Review and to determine coastal dependency. I recommend that the proponent consult with CZM to determine the range of alternatives necessary. The EIR should also include any alternatives deemed necessary for study by the federal government as part of the NEPA review.

Id.

Despite this broad directive, the applicant drafted a purpose and need statement designed to limit the range of alternatives considered to only large-scale wind energy facilities in New England. In fact, the Corps did not even draft its own version, but merely circulated the applicant's proposed statement: "It is our sense that rather than wait for final agency comments on the Wind Farm EIS scoping notice, now is an opportune time to begin working on the basic project purpose and need portions of the EIS. . . ." Ex. 32. After reciting the material from CWA's application, the Corps requested that the cooperating agencies "[p]lease review this project purpose and need statement to ascertain if you feel it serves as an adequate basis for defining the range of alternatives to be analyzed in the EIS. We will be asking the applicant to provide the data that explains the conclusions they have provided." *Id.* The email states in part:

> The proponent's application states that the project's purpose is 'to generate up to 420 MW of clean, renewable wind – generated energy that will be transmitted and distributed to the New England regional power grid, including Cape Cod and the Islands . . .'
>
> With regard to project need the applicant has made the following statements (from the project introduction in the application):
>
> 'The Project will provide numerous benefits to Cape Cod and the Islands through improved air quality conditions, significant reduction of greenhouse gases, the creation of year round jobs,

> the facilitation of technology transfer and reduction in electricity costs to ratepayers. Preliminary energy estimates . . . suggest that production will coincide with the electricity demands of Cape Cod and the Islands. During the Summer months, production will be greatest during the later afternoon and early evening hours when consumption is at its peak. A similar pattern, although less pronounced, is expected for the other seasons. The presence of a large generating source close to the load demands centers on the Cape and Islands would also have the effect of reinforcing the reliability of this regional electric transmission and distribution system.'"

Id.

The response of the interagency team was highly critical. MMS commented:

> The information presented for the project purpose and need, as of now, reads like an advertisement for the Windfarm project. In fact, it almost sounds like an endorsement for the project. This is not the place to present a justification for putting a Windfarm in-place. In fact, some of the items mentioned in the first paragraph are impact-producing factors which will be evaluated in the EIS itself (air quality effects, greenhouse gases, etc.)
>
> The purpose and need statements do not have to be long. In fact, they should be short, concise, and to-the-point. The 3rd paragraph within the quoted portion contains the kind of information that should form the basis for the project purpose statement. It should describe what the applicants want to do, why they want to do it offshore, and at least give some indication of the magnitude of the project.
>
> The need should address what is seen as the need for the power generated by the proposal, either based on a shortfall in local supplies, or in the fact that power is expensive in the area and this would make it available to customers for less, or to more customers who can't afford it now.
>
> The proceeding task of identifying and scoping out the alternatives should be carried out with caution. It is important to remember that the range of alternatives and the purpose and need statement are relative to each other, The purpose and need should

> not be modified such as to be so narrowly defined that one alternative, an endorsement of the project, is the only alternative beside the no-action presented.

Ex. 47.

The CCC commented:

> Commission staff believe that this statement of project purpose is too specific to allow a reasonable range of alternatives to be studied under the EIS.
>
> As all reasonable alternatives examined in detail in the EIS must meet the defined project purpose, Commission staff believe that a more general statement is appropriate. There, we would recommend that the statement be edited to state that the project's purpose is 'to generate clean, renewable energy to be transmitted and distributed to the New England regional power grid.' We believe that this more clearly states the underlying purpose to which the agencies reviewing this application are responding.

Ex. 48.

The Massachusetts Coastal Zone Management Office likewise agreed with MMS, and suggested a purpose and need statement: "The purpose project is to generate electricity from renewable sources, specificly (sic) wind, for power to meet demand and to reduce dependency on non-local, non-renewable energy sources. Wind energy is particularly appropriate as a renewable energy source because it is non-polluting, resulting in significant air-quality and public health benefits." Ex. 49.

The U.S. FWS commented:

> The range of alternatives in the EIS will clearly be affected by the manner in which the project purpose and need are defined. The Corps should define the project purpose and need more broadly than the applicant's stated purpose. We believe the project purpose should be defined as the production of electricity for use in the New England power grid. Under this broader project purpose, the alternatives in the EIS would need to include all reasonable generation capacity, not just a 420 mw-sized

> facility, and generation locations encompassing the entire New England Power grid, not just the Cape Cod area.

Ex. 50.

EPA stated similarly:

> Framing an appropriate purpose and need statement is a key element in the development of a range of alternatives for analysis, as the alternatives flow directly from it. The proponent's application states that the project's purpose is 'to generate up to 420 MW of clean, renewable wind-generated energy that will be transmitted and distributed to the New England regional power grid, including Cape Cod and the Islands . . . .' While we think the applicant's proposed purpose statement is a good starting point, we recommend it be modified to make it less constraining for the purposes of the NEPA analysis and determining the range of alternatives to be investigated in the DEIS/DEIR. As a starting point, we suggest that the purpose statement be modified by striking the words 'clean' (as it is somewhat vague and open to interpretation) and 'wind-generated' (too limiting) and the phase 'including Cape Cod and the Islands . . .' (as a geographic aspect is implied in the New England Power Grid component of the statement). Finally, we suggest that specific reference to a particular size for the project be dropped from the purpose statement and that it be replaced with language descriptive of a commercially viable renewable energy facility. With these changes, the basic project purpose statement would read, 'The project's purpose is to develop a commercially viable renewable energy facility that will generate electricity distributed to the New England regional power grid."

Ex. 51.

All of these concerns were raised early in the process, well before the Corps had arrived at a decision on the purpose and need statement. There is no evidence in the record of any party other than CWA arguing for a limited DEIS scope. Unfortunately, as described in the next section, while this uniform expression of concern over a narrowly focused DEIS was emerging from third parties, CWA was hard at work behind the scenes to push the Corps in the opposite direction. It is nothing short of astonishing that, despite these strong and unified objections from

interagency team members that the Corps persisted in a statement of purpose and need 003920 singularly focused on CWA's profit-making goals.

b. CWA's campaign to limit the purpose and need statement.

Throughout the period leading up to the Corps' decision on purpose and need, CWA took advantage of its "insider role" within the Corps' decision-making apparatus to argue for a DEIS scope that would lead to its desired result. CWA's objective was clear: eliminate any alternative that could result in a project that was outside of Nantucket Sound or smaller than the massive facility that would maximize the company's profits.

CWA's intent to constrain the Corps' review was apparent from the outset. In its November 2001 permit application, prepared by ESS (the Corps' EIS contractor), CWA focused narrowly on a large-scale project on Horseshoe Shoal and nothing else. For example, in the application, CWA stated that the purpose of the project is "to generate up to 420 MW of clean, renewable wind-generated energy that will be transmitted and distributed to the New England regional power grid, including Cape Cod and the Islands." Ex. 52.

CWA followed up on April 16, 2002 in its scoping comments, stating that the scope of reasonable alternatives "should be based on the Applicant's stated purpose of the project - *i.e.*, to install and operate a commercial scale (*i.e.*, 420 MW) merchant electrical generating facility located in New England utilizing renewable wind energy as its fuel source." Ex 53. In its view, "the Applicant's stated purpose properly reflects the actual and well-established purpose of the timely development of a substantial amount (420 MW) of clean and renewable wind energy (and *not* nuclear or fossil fuel energy or an amount unable to make a substantial regional contribution), a purpose which is entirely inconsistent with well-established public policy objectives." *Id.*

ESS further attempted to support CWA's position in its April 19, 2002 comments. In that letter, ESS explained that "[i]n order to define, or to put into context what is considered a 'commercial' scale project and why a 420 MW project is being proposed, CWA has explained that such a project would need to be connected to a primary transmission facility. . . ." Ex. 54. Apparently, because the average size of projects being connected to ISO New England are approximately 520MW, CWA's project somehow has to be 420 MW. ESS then explains that to have any significant impact on the need for increased fuel diversity, a commercial scale facility is necessary. *Id.* ESS further helpfully explains that for a project to be economically viable, the revenues must exceed project costs. Citing high infrastructure costs

(transmission lines, interconnection cables between turbines, electric service platform cables to landfall, upland cabling, riser station as the NSTAR interconnect, permitting costs, and financing costs), ESS concludes that the proposed size is needed for the project to be profitable. *Id.* Of course, ESS does not explain why the 100 MW LIPA project, which almost certainly has all of the same costs, would also be profitable.

CWA did not limit its advocacy for a narrow purpose and need to these statements. Throughout the deliberations of the interagency team, CWA remained insistent on the same end result. As has recently become public knowledge, CWA also engaged in a backdoor legal discussion with the action agency to argue that the Corps had no choice other than to accept the applicant's position on purpose and need.

On March 10, 2002, for example, CWA's law firm submitted to the Corps a legal analysis arguing that the amount of data needed for the review of alternatives was not extensive and that is was appropriate to consider only the preferred and no-action alternatives, or at most the preferred and no-action alternatives with variations on the preferred alternative. Ex. 55.[63] Neither CWA nor the Corps made this legal analysis available to any other party, including the interagency team.

Not long after receiving this memorandum, the Corps appeared at a meeting of the Massachusetts Technology Collaborative (MTC) on March 12, 2003, to explain the status of the permit review. At this time, the Corps was relying upon a purpose and need statement for a DEIS that would evaluate a "commercial scale renewable energy facility providing power to the New England grid." Ex. 56. The Corps noted that ISO-NE was using a 200-1500 MW standard (a fact refuted later in these comments) and that for other projects, such as highways and shopping malls, the Corps relied upon a test where the scale of alternatives would be limited to +/-20% of the applicant's proposal. In fact, in the March 2003 public meeting hosted by MTC, the Corps illustrated the +/-20% standard, by citing a comparison between a strip mall and a shopping mall. *Id.* As discussed below, the Corps appears to have followed this arbitrary formula in setting the purpose and need standard.

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[63] This same theory emerged in an unsuccessful bill introduced in the U.S. House of Representatives. In that bill, NEPA analysis of so-called "alternative energy" projects could consider only two alternatives: no action and the applicant's preferred action. This bill emerged shortly after APNS uncovered the CWA legal communications to the Corps and challenged the analysis. It would appear that, having realized its legal theory was incorrect and its efforts to secretly influence the Corps had been uncovered, CWA or its advocates entered into a lobbying campaign to alter NEPA itself. Fortunately, this effort to "gut" NEPA under the guise of "green energy" failed to pass Congress. Current drafts of the anticipated House energy bill for the current Congress appears to include this environmentally harmful provision again.

CWA followed its March 10, 2002, legal opinion and the May 12 MTC meeting with another secret legal opinion submitted to the Corps on September 23, 2003, this time prepared by the developer's in-house counsel. In this letter, CWA argued that an alternatives analysis is "*properly limited by reference to the stated business objectives of the commercial applicant, including its objectives as to business strategy, commercial scale and economic viability.*" Ex. 41 (emphasis added). CWA asserted that the Corps' review "should be determined with reference to CWA's stated purpose of undertaking a major renewable energy project with the indicated economies of scale and other practical attributes consistent with a viable commercial venture in the competitive energy markets." *Id.* Again, neither CWA nor the Corps released this legal opinion to any other party.

Not long after receiving this legal opinion, the Corps announced that it would hold a public meeting on October 29, 2003, to announce its selected purpose and need statement and alternatives. In advance of this meeting, two interagency team members again raised concerns about the limited scope of the DEIS alternatives.

On October 15, 2003, EPA sent an inquiry to the Corps regarding the possibility of evaluating a 100 MW wind facility as an alternative to the much larger CWA project. Ex. 39. FWS raised the same question. Ex. 40. The advantage of considering a smaller scale facility was that it would open a broader range of options, many of which would avoid the serious adverse impacts and controversy associated with the Nantucket Sound location.

Rather than responding to the EPA and FWS inquiry, *the Corps simply referred the email to CWA's lawyer*, who responded:

> A 100 mw facility would be too far removed from our commercial purpose of constructing a major 420 mw facility, with the economies of scale that would allow a more substantial (*i.e.*, not the smallest possible) contribution to the region's electric supply portfolio and air quality, through sales into New England's competitive energy markets.

Ex. 57. CWA's lawyer also argued that NEPA *required* the Corps to accept the applicant's commercial goals as the basis for defining EIS purpose and need:

> Second, and in any event, a 100 mw facility would be too far removed from our commercial purpose of constructing a major 420 mw facility, with the economies of scale that would allow a more substantial (i.e., not the smallest possible) contribution to the region's electric supply portfolio and air quality, through sales

> into New England's competitive energy markets. It is well settled under NEPA that the business goals of a private applicant should be taken into account and, in the words of Judge Clarence Thomas, "Congress did not expect agencies to determine for the applicant what the goals of the applicant's [commercial] proposal should be."

Id. The Corps never provided an independent response to EPA and FWS on this critical question; it simply allowed the applicant to provide the answer.

During this time, the interagency team was in the process of discussing the purpose and need and alternatives analysis. Of course, the interagency team was not provided with copies of the legal memoranda drafted by the CWA team. In fact, the inter-agency team does not appear to have been aware of the direction the Corps was planning on taking at all. For example, it a letter dated October 9, 2003, the CCC expressed its approval of the "recent more flexible application of the screening criteria for the alternatives analysis portion of the DEIS." Ex. 58. Although the CCC was "concerned that the list of alternatives [was] not developed by any methodological analysis of viable wind sites," it was "encouraged by the consideration of multiple sites as an alternative to a single, large facility." *Id.* The CCC listed a number of alternatives to consider, including the combination of the Boston Harbor and New Bedford site, New Bedford site being considered by the U.S. Coast Guard, smaller facilties at the preferred site, and alternative design configurations, among others. Almost all of the recommended alternatives were ignored by the Corps.

The Corps convened its October 29, 2003 public meeting to announce the selected purpose and need and range of alternatives. Colonel Koning of the Corps announced that the purpose of the proposed action would be "large scale renewable energy facility providing power to the New England grid." He also listed a very limited set of alternatives, all of which are located in the Nantucket Sound region and fit CWA's bill of a massive energy plant. Three of the alternatives are located entirely within Nantucket Sound, the fourth is located almost entirely within Nantucket Sound, the fifth is located just outside Nantucket Sound, south of Tuckernuck Island, and the sixth on the Massachusetts Military Reservation. All six alternatives are basically variations on the applicant's preferred option in terms of scale and location.

In adopting this statement, the Corps fell into line precisely as CWA wished set a project size limit at 200 MW. In doing so, the Corps appears to have followed the arbitrary and unlawful approach announced at the May 12, 2003, MTC meeting of using a project size of ±20% the applicant's proposal. Because the yield of the CWA plant used by the Corps for the DEIS is 170 MW, the 200 MW cut-off seems to be based on no logic other than the 20% formula. Needless to say, such an approach

does not comply with NEPA and, as described below, is at odds with the reality of the electric utility market.

Once again, numerous parties objected to the limited nature of the review in comments at the October 29 meeting and subsequent letters. Despite this strong and consistent call for a broader purpose and need statement, the Corps stuck to its position and proceeded with the narrowly-focused review and range of alternatives advocated by CWA. The result is the limited and defective DEIS now under review.

c. Public release of the CWA legal opinions and the ensuring debate.

Following the October 29 meeting, APNS became very concerned over the direction of the Corps' decision-making process. It became clear that the needs of the applicant, not the public interest, were dictating key decisions. In an effort to determine the degree to which CWA was influencing the permit application review, APNS filed a FOIA request with the Corps on December 10, 2003.[64] The Corps responded on March 3, 2004. The documents released by the Corps included evidence that confirmed APNS' fears, as they revealed for the first time CWA's letters of March 10 and September 23, 2003, and the EPA/FWS/ACOE/CWA email chain from October 2003. Prior to this time, neither the Corps nor CWA made the two legal opinions available to the interagency team or public. Once it was forced to release the CWA legal opinions to APNS, Corps finally made them available to the interagency team as well.

Immediately upon discovering these documents, APNS conducted an independent analysis of the legal authority relied upon by CWA in the company's argument that purpose and need is limited to the applicant's goals. APNS filed its legal analysis with the Corps on April 26, 2004. Unlike CWA, which submitted its letters to only the Corps, APNS sent its legal analysis to the entire interagency team and CWA. The APNS analysis exposed CWA's biased, incomplete presentation of the law, and demonstrated that NEPA requires federal action agencies to take a much broader approach to the formulation of purpose and need and the review of alternatives than argued for by CWA. APNS also obtained the independent peer review of three NEPA experts, who agreed that CWA's legal analysis was wrong.

CWA responded on May 7, 2004 in a letter from its in-house lawyer, the author of the September 23, 2003 letter and the email response to EPA/FWS. CWA's

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[64] These materials are already included in the public record for the review of the proposed project, *see* Ex. 1.

lawyer repeated his earlier position. APNS responded by another detailed memorandum on August 6, 2004, once again discussing the errors in CWA's approach and further amplifying on the requirement for action agencies to exercise independent judgment in defining a purpose and need. APNS included another independent peer review legal analysis, which further refuted the CWA position.

By this time, CWA apparently realized either that its legal theory was wrong from the outset, or that its ploy to slip this issue past the Corps and interagency team had been exposed. As a result, in its next response to APNS on September 9, CWA backed off on its insistence that the Corps had to limit its review to the applicant's commercial goals. APNS responded on October 22, noting for the record that CWA had yielded on its narrow view of the law and that the Corps had done nothing to demonstrate why it was permissible to limit purpose and need to the narrow definition used in the DEIS, regardless of CWA's goals.

Throughout this give-and-take with the applicant, the Corps never responded to APNS. APNS twice requested to meet with the Corps on this subject. Ex. 31. The Corps refused, providing the weak and incorrect excuse that such a meeting would violate its "attorney-client privilege."[65] Ex. 1, 59. It failed to explain to EPA and FWS why a smaller scale project should not be used. Most notably, the Corps failed to explain anywhere in the record how it had arrived at the selected purpose and need through its "independent judgment."

When viewed in its entirety, the evolution of the DEIS purpose and need statement encapsulates the problems with the Corps' processing of this application. The Corps has not only rejected the recommendations of the consulting agencies and DEIS team members, but also the comments offered by the public. No rationale is found in the record for doing so other than the completely unsupported statement on page 2 of the DEIS that the Corps "exercised independent judgment" in selecting a purpose and need statement. The record belies that fact.

The legal consequences of the Corps' failure to manage the DEIS process properly are clear. The D.C. Circuit has stated that when an applicant exercises undue control over a NEPA process, the resulting environmental review is invalidated. In *Communities Against Runway Expansion, Inc. v. Federal Aviation Admin.*, 355 F.3d 678 (D.C. Cir 2004), the D.C. Circuit discussed the CEQ regulations for selecting an EIS contractor. Although the court determined that the contractor selection in that

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[65] Such a concern did nothing to limit communications between CWA and the Corps. Moreover, the fact that an agency can meet with the public to discuss legal issues without violating attorney-client privilege is a fact confirmed daily through the operations of the federal government.

case did not compromise the integrity and objectivity of the environmental review process because the plaintiff had not alleged any substantive flaws in the EIS itself, the D.C. Circuit concluded that where the lead agency does not consistently exercise independent control over the scope, content and development of a NEPA environmental review, the EIS itself will be invalid. *Id.* at 687.

The DEIS process for the CWA proposal is a textbook example of how an action agency can lose control over a NEPA review and allow its decisions to be improperly influenced by an applicant. By yielding to CWA's desired purpose and need statement, the Corps has placed this entire DEIS on the wrong track. The result is evident in the final product, which preordains a project in Nantucket Sound, just as the applicant set out to achieve in its initial application three years ago. The record is devoid of evidence of independent judgment by the Corps on this issue. Even if the Corps could somehow purge the record of the corrupting influence of CWA, the bottom-line is that the purpose and need statement is flawed and the alternatives analysis is impermissibly constrained. Whether because of the improper role of the applicant, reliance upon an incorrect legal theory, or the Corps' own failed logic and inadequate technical analysis, the DEIS violates NEPA on these fundamental requirements and must be withdrawn, revised, and reissued.

2. The Legal Test for a Proper Purpose and Need Statement.

NEPA requires federal agencies to "rigorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14(a). An action agency must first reasonably and fairly define the project's purpose. *Simmons v. United States Army Corps of Eng'rs,* 120 F.3d 664, 666 (7th Cir. 1997) (*citing Citizens Against Burlington, Inc. v. Busey,* 938 F.2d 190, 195-6 (D.C. Cir. 1991)). The starting point for doing so is the agency mandate under the particular statute involved. The D.C. Circuit has stated the following test for drafting a purpose and need statement:

> [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, Inc. v. Busey, 938 F.2d 190, 196 (D.C. Cir. 1991). An agency should therefore approach a purpose and need statement and review of alternatives by "tak[ing] responsibility for defining the objectives of an action and then provide legitimate consideration to alternatives that fall between the obvious

extremes." *Colorado Envtl. Coalition v. Dombeck*, 185 F.3d 1162, 1175 (10th Cir. 1999).[66]

Using this principle as a guide, court decisions regarding purpose and need are very consistent. In the effort to compel the Corps to adopt its narrow view of purpose and need, CWA has relied almost exclusively on *Citizens Against Burlington* for the proposition that agencies "should take into account the needs and goals of the parties involved in the application." CWA argues that this case stands for the proposition that an applicant's economic objectives must control. In fact, that is not a correct reading of *Citizens Against Burlington*, and it ignores an extensive body of other case law, as APNS has explained in detail in its legal analyses of April 26 and August 6, 2004.

Purpose and need is dictated by the scope of the agency's mandate, not an applicant's desires. An applicant's perspective many have a notable effect where the agency mandate is narrow, as it was in the *Citizens Against Burlington* case, (*i.e.*, to ensure "safety, efficiency and utility within the national airspace system," and "to facilitate the establishment of air cargo hubs," while at the same time respecting principles of federalism that restrict the FAA's ability to determine where to build and develop civilian airports). *Id.* at 196-97.

It is not appropriate to give an applicant's goals controlling effect, however, where the agency mandate is broad, such as under the Corps' public interest test in the RHA. In such cases, the evaluation of alternatives is necessarily much broader. Thus, 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." *Van Abbema v. Fornell,* 807 F.2d 633 (7th Cir. 1986); *see also Simmons,* 120 F.3d 664 (relying on *Van Abemma*); *Sierra Club v. Marsh*, 714 F. Supp. 539, 577 (D. Me. 1989) (same). An applicant cannot limit NEPA review by arguing that an alternative is not acceptable because it is not feasible for the applicant itself. *Van Abbema*, 807 F.2d at 638 ("The fact that this applicant does not now own an alternative site is only marginally relevant (if it is relevant at all) to whether feasible alternatives exist to the applicant's proposal."). *See also City of New York v. Dept. of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983) (explaining that "[s]tatutory objectives provide a sensible compromise between unduly narrow objectives an

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[66] The NEPA requirements for purpose and need and alternatives analysis are discussed in detail in APNS' debate with CWA over the controlling law on this issue. That detailed discussion is herein incorporated by reference. The relevant documents are included as exhibits to these comments.

agency might choose to identify to limit consideration of alternatives and hopelessly broad societal objectives that would unduly expand the range of relevant alternatives").

From these cases, one basic principle can be distilled: a purpose and need statement must reflect the general purpose of an action, circumscribed by the scope of the action agency's mandate. Thus, although a project applicant's individual objectives are to be considered, they do not control the purpose and need statement. With a properly drafted purpose and need statement, a wide range of alternatives, even those outside the power of the applicant to achieve, should be considered when the agency mandate is not tightly limited. Failure to use a sufficiently broad statement of purpose and need ultimately shortchanges public review, avoids the consideration of numerous important alternatives, and violates NEPA by forcing ill-informed federal decision-making.

The Corps itself has addressed this issue in the section 404 context. The Corps' guidance on purpose and need indicates that the agency itself must independently determine the purpose of a proposal. Corps Headquarters has directed its regional offices to "determine and evaluate [the issue of practicable alternatives themselves], with no control or direction from the applicant, and without undue deference to the applicant's wishes." *See e.g.*, Memorandum Thru Commander, U.S. Army Engineer Division, Lower Mississippi Valley, Permit Elevation, Plantation Landing Resort, Inc. (Apr. 21, 1989).

In the case of Plantation Landing Resort, the Corps regional office provided too much deference to the applicant's definition of the project's purpose and need, which was to build a "fully-integrated, waterfront, contiguous water-oriented recreational complex." The regional office determined that, although there were alternative sites for components of the project, those sites were not preferable because the applicant owned the land and wanted to realize commercial value from it. Headquarters disagreed and remanded the permit decision to the regional office, explaining that "the Corps, not the applicant, must define the *basic* purpose underlying the applicant's proposed activity." *Id.* (emphasis added). "*Only* if the *Corps, independently* of the applicant, were to determine that the *basic* purposes of the project cannot practicably be accomplished unless the project is built in a 'contiguous,' 'fully integrated,' and entirely 'waterfront' manner would those conditions be relevant to the 404(b)(1) Guidelines' alternative review." *Id.* (emphasis in original).

The Corps reached that result even though the application concerned a situation where the developer owned the land itself and was seeking to undertake a purely private, commercially motivated project. Obviously, the need for a broader

approach to purpose and need is present when public lands and waters are involved for the alleged purpose of achieving a public policy-related energy and environmental goal as is the case with the proposed wind plant.

Under these cases and guidance, the rules that should govern the development of an EIS purpose and need statement are quite clear, and they bear no resemblance to the narrow, self-serving principle articulated by CWA and apparently adopted by the Corps. In preparing a DEIS on this proposed action, the Corps must abide by the following principles:

1) The permit application is filed under section 10, which applies a broad public interest test. Thus, the interests of the applicant, while relevant, have low priority.

2) The Corps defines its public interest test to include a wide range of factors, of which energy is only one. The purpose and need statement must be broad enough to give *equal treatment* to every such factor, including conservation, economics, aesthetics, wetlands, historic properties, fish and wildlife values, floodplain values, land use, navigation, shore erosion and accretion, recreation, water quality, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people. 33 C.F.R. § 320.4(a).

3) The site involves federally-controlled lands and waters for which the applicant does not have, and cannot obtain, any property interest or authorization to use and occupy. This further underscores the need statement for a broad purpose and need not constrained by the applicant.

4) The ostensible goal of the CWA proposal is to address climate change and air pollution problems through clean energy. This goal is far-reaching and not limited geographically or in terms of project size, and therefore necessitates a purpose and need statement that encompasses a range of options.

Based upon these principles, the Corps has violated NEPA in this DEIS. Nowhere in the DEIS or the record has the Corps offered an adequate explanation for how it arrived independently at the three constraining elements of its purpose and need statement (*i.e.*, bigger than 200 MW, renewable energy only, *and* providing

power to the New England grid). Nor has the Corps articulated the grounds upon which it rejected a broader purpose and need statement, one that would truly meet the public interest and dispel much of the controversy associated with CWA's unfortunate choice of project locations.

Failure to explain the basis for defining the purpose and need statement violates NEPA, especially since the Corps argues that it has exercised "independent judgment" for this purpose. *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 52 (1983) (when making a choice, an agency "must cogently explain why it has exercised its discretion in a given manner"). To the contrary, the record indicates that the Corps has yielded to the demands of CWA in reaching the critically important purpose and need decision. As required by *Communities Against Runway Expansion, Inc., supra*, the only course of action that is proper at this time is for the Corps to redefine purpose and need, select a broader range of alternatives, and publish a new DEIS.

3. The DEIS Purpose and Need Statement Is Flawed Because It Relies on Three Constraining Factors Which, Taken Together, Establish an Impermissibly Narrow Scope of Review.

a. Defining purpose and need based on the section 10 public interest test.

When the legal principles set forth above are applied to the facts of the CWA application, the flaws of the DEIS purpose and need statement become obvious. The starting point for the purpose and need analysis is the scope of the action agency's review, as defined by the legal authority that the Corps is applying to make underlying decision. The Corps' RHA legal authority, when viewed from a purpose and need perspective, not only invalidates the statement used in the DEIS but actually confirms the underlying defect in the entire permit review. As discussed above, there is *no legal authority* to authorize this project, and no adequate decision-making framework. This is because the grounds for the Corps' action are in the *navigability context*, not the energy context or OCS lands use and occupancy context. The Corps should have either declined to review this application at the outset, or at least clarified that the application was limited to navigability authorization only and conferred no authority to build the project, address energy concerns, or permit use of the OCS by a private party.

Having failed to limit its review to a navigation permit, and instead allowing this permit application to serve as the potential basis for authorization of the entire project, the Corps must now adhere to the extraordinarily broad public interest test of section 10 and apply that mandate to all aspects of the decision. Under section 10, the

Corps' decision is to be based on the "public interest." This broad test is not constrained by the applicant's specific economic goals, or even the objective of producing electricity. It is, instead, a broad and generalized mandate:

> The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest. Evaluation of the probable impact which the proposed activity may have on the public interest requires a careful weighing of all those factors which become relevant in each particular case . . . . 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.

33 C.F.R. § 320.4(a).

This test does not instruct the Corps regarding the amount of weight to place on each factor or how to balance them, except "carefully." It is essentially a "standardless" test for decision-making. Rodgers, *Environmental Law Air and Water* 205 (1986) ("Here is the Corps' famed 'public interest' review that reads like a parody of standardless administrative choice.") The mission of the Corps under the RHA, therefore, is to apply broad and comprehensive criteria that look at all aspects of the public benefits and impacts of the permit application.

The need to develop a broad purpose and need statement is even more acute in this case, given the nature of the resource to be used (public lands and waters of Nantucket Sound and the public wind resource) and the ostensible environmental goal of the applicant (*i.e.*, addressing the exceedingly broad problem of air pollution and climate change). There is nothing private about this proposal, or the Corps' duty to evaluate it, other than the fact that it is backed by a small group of private investors and to make huge profits. This project is at one end of the spectrum – where the public interest and public nature of the project are at their broadest. At the other end of the spectrum are those projects that involve private purposes (*e.g.*, housing) that occur on private lands. Even in those situations, the Corps itself has dictated that an applicant cannot control purpose and need.

The Corps' NEPA regulations state that the "Corps is neither an opponent nor proponent of the applicant's proposal." 33 C.F.R. Pt. 325, App. B, §§ (9)(b)(5), (4). The regulations also provide that the Corps "will in all cases[] exercise independent judgment in defining the purpose and need for the project from both the applicant's and the public's perspective." *Id.* Indeed, the Corps acknowledges its responsibility to do so in the DEIS. DEIS, at 2-2 – 2-3.

NEPA cases involving the Corps as the permitting agency and the issue of a purpose and need statement support a broad approach. For example, in addressing Corps RHA and Clean Water Act permitting decisions, the Seventh Circuit has stated that the "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." *Van Abbema,* 807 F.2d at 638. Thus, in that case, the applicant's proposal to build a facility to transfer coal from trucks to a barge on the Mississippi River was just one alternative method of achieving the project purpose and need, which was to deliver coal from "mine to utility." Other alternatives must be considered, even if those other methods are outside the control of the applicant or differ significantly from the applicant's proposal.

A First Circuit district court reached the same conclusion in *Sierra Club v. Marsh*, 714 F.Supp. 539 (D. Me. 1989) where the court stated that a "project's principal goals must override the stated preferences of the applicant for purposes of NEPA's 'reasonable alternatives' analysis." *Id.* at 577. Thus, the Corps could not restrict its evaluation of alternatives to those considered acceptable to the applicant, but rather had to consider alternatives that were considerably smaller than those proposed and desired by the applicant.

In *Simmons,* 120 F.3d 664, the Seventh Circuit addressed the Corps' review of a proposal to build a dam and reservoir. Although the Corps argued that "[the municipality] is the proposer and will construct the project, [and] the Corps must accept its definition," the court rejected that argument, explaining that an "obvious way for an agency to slip past the strictures of NEPA is to contrive a purpose so slender as to define competing 'reasonable alternatives' out of consideration (and even out of existence)." *Id.* at 666. *See also Hoosier Envtl. Council, Inc. v. United States Army Corps of Eng'rs*, 105 F. Supp. 2d 953 (S.D. Ind. 2000) (upholding the Corps' analysis after reaffirming the *Van Abbema* ruling); *Stop the Pipeline v. White*, 233 F. Supp. 2d 957 (S.D. Ohio 2002) (affirming the Corps' broad definition of the purpose of the project because it considered numerous alternatives such as transportation by barge, rail and truck, which were at odds with the applicant's preferred approach). In all of these cases, the Corps' mandate fell under the RHA

and/or the Clean Water Act, which also applies a public interest test. Thus, those decisions are directly applicable to the type of review the Corps is conducting here.

Against this legal backdrop, three problems with the Corps' purpose and need statement become readily apparent. Despite changes in verbiage, the purpose and need in the DEIS is effectively the same as that prescribed by CWA: 1) a large-scale (200 MW or larger),[67] 2) renewable energy project, 3) in New England. Under a properly applied public interest purpose, there is no basis for these limitations. The 200 MW floor for a "utility-scale" project is arbitrary; the limitation to New England has no rational relationship to the problem CWA claims it is trying to address or the public interest applied by the Corps; and the limitation to renewable energy sources rules out a wide range of reasonable alternatives and flies in the face of Massachusetts' own recommendations at the outset of the permit application review. While it *may* be possible to restrict one of these three criteria when the other two are expanded, *i.e.*, restricting the geographic region when the power source is not limited to renewables and project size is not limited, linking all three factors violates NEPA. The flaws in each of these constraints on the purpose and need statement are discussed separately below.

b. Three key flaws in the DEIS purpose and need.

(i) "Utility-Scale" does not equate to 200 MW.

The Corps has limited the universe of acceptable alternatives by looking only at extremely large-scale projects. Wind energy plants occupy large geographic areas, as do other forms of renewable energy. Thus, if the Corps only considers massive size renewable energy projects in New England, it drastically limits the options.[68]

As described above, CWA argued that smaller projects, even those that would still be deemed "utility-scale," should not be considered. The Corps adopted this approach, explaining that "the energy generating capacity of new utility-scale and regionally significant energy facility projects that have been permitted or are presently being studied for interconnection with the regional power grid have generating

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[67] Even this amount fails to equate with the 424MW plant CWA has proposed, considering the limitations and intermittent nature of using wind as a source of energy.

[68] As discussed below, the Corps has failed to even abide by its own test. While it has set forth a criterion of providing power *to the New England grid*, the Corps in fact only considered projects physically located *in New England*. By doing so, even with its 200 MW limit, the Corps ruled a wide range of alternatives that fit its purpose and need statement.

capacities that range between 200 and 1,500 MW." DEIS, at 2-1 n.3. This explanation, however, bears no semblance to the reality of the electric utility market in New England, project finance considerations, or even the history of projects permitted or under consideration in New England.

In point of fact, "utility scale" in the New England power market is considerably less that 200MW. ISO New England requires a minimum of 5 MW in order to get Capacity Credit for a plant (ISO-NE OP-14). *See* <http://www.iso-ne.com/smd/operating_procedures/>. FERC, in its Large Generator Interconnection Order 2003-A, requires a minimum 20 MW threshold. *See* <http://www.ferc.gov/industries/electric/indus-act/gi/stnd-gen/order2003-a.pdf>. The American Wind Energy Association has accepted this threshold and has accordingly recently filed a proposed Grid Code (standard) to FERC for interconnecting wind projects of 20 MW or more. *See* <http://www.awea.org/policy/gridcode.html>.

Numerous examples abound in the New England power market that confirm that 200 MW is far too large as a standard for "utility scale." The 2004 ISO New England CELT report, for example, lists *228 electric energy resources greater than 5 MW and under 200 MW that provide power to the New England grid. See* <http://www.iso-ne.com/Historical_Data/CELT_Report/2004_CELT_Report/>. As shown in the following table, almost 100 are 20 MW or less, and these collectively account for approximately 1,000 MW of capacity.

FIGURE 7: ISO NEW ENGLAND RESOURCES 5MW TO 20MW

					NET		PRIMARY FUEL		ALTERNATE FUEL			
				UNIT	CAPABILITY - MW		ENERGY	TRANSP.	ENERGY	TRANSP.		COMMERCIAL
SYSTEM-SUB	ID	STATION NAME	STATE	TYPE	SUMMER	WINTER	SOURCE	METHOD	SOURCE	METHOD	NUM.	IN-SERVICE
PMLP	612	WATERS RIVER JET 1	MA	GT	14.00	20.00	DFO	TK	NG	PL	1678	12/1/1971
FPL	569	SKELTON	ME	HW	19.42	19.70	WAT				1505	1/1/1948
CPS	476	MERC	ME	ST	18.81	18.81	MSW	TK			10338	5/1/1987
CMEEC	515	NORWICH JET	CT	GT	15.26	18.80	DFO	TK			581	9/1/1972
USGEN	465	DEERFIELD 2/LWR DRFIELD	MA	HD	18.74	18.74	WAT				6047	1/1/1912
CMEEC		US NAVAL SUBMARINE BASE	CT	ST	18.50	18.50	RFO	TK	NG	PL		1/1/1966
PPLEP	616	WEST ENFIELD	ME	HD	11.41	18.22	WAT				10255	5/1/1988
NU-PSNH	464	LOST NATION	NH	GT	14.07	18.08	DFO	TK			2362	9/1/1969
NU-PSNH	559	SCHILLER CT 1	NH	GT	17.00	18.00	JF	TK	NG	PL	2367	11/1/1970
EXELON	466	L STREET JET	MA	GT	11.85	17.50	DFO	TK			1587	9/1/1966
FPL	755	BONNY EAGLE/W. BUXTON	ME	HD	17.50	17.50	WAT				1482	1/1/1910
NU-PSNH	327	AMOSKEAG	NH	HD	17.50	17.50	WAT				2354	1/1/1922
CPS	2426	UNITED AMERICAN HYDRO-NEW	ME	HD	15.66	17.15	WAT				54148	3/1/1989
FGE	538	PINETREE POWER	MA	ST	16.62	17.13	WDS	TK			54620	11/1/1992
NRG-Norwalk	521	NORWALK HARBOR 10 (3)	CT	GT	11.93	17.13	DFO	TK			548	10/1/1996
FPL	367	CAPE GT 4	ME	GT	12.98	17.06	DFO	TK			1484	1/1/1970
NU-CLP	562	SECREC-PRESTON	CT	ST	16.01	16.95	MSW	TK	DFO	TK	1176	1/1/1992
FPL	432	HARRIS 1	ME	HW	16.79	16.78	WAT				1492	1/1/1954
MNE-MAE	10347	KENDALL STEAM 1	MA	ST	18.00	16.44	RFO	TK	NG	PL	1595	1/1/1950
VELCO	774	LOWER LAMOILLE COMPOSITE	VT	HW	15.80	16.10	WAT				3711	1/1/1948
AES	429	GREENVILLE	ME	ST	15.86	16.08	WDS	TK	DFO	TK	54852	3/1/1987
NU-PSNH	337	BETHLEHEM	NH	ST	15.75	15.70	WDS	TK			50208	12/1/1986
NU-PSNH	357	BRIDGEWATER	NH	ST	15.75	15.55	WDS	TK			10290	9/1/1987
FPL	621	WILLIAMS	ME	HD	14.90	14.90	WAT				1510	1/1/1939
PSEG	341	BRIDGEPORT HARBOR 4	CT	GT	9.92	14.72	JF	TK			568	10/1/1967
CPS	487	MILLER HYDRO	ME	HD	18.60	14.57	WAT				50278	4/1/1984
VELCO	549	RUTLAND 5 GT	VT	GT	10.07	14.48	DFO	TK	RFO	TK	3723	1/1/1962
NU-PSNH	618	WHITEFIELD PWR and LGT	NH	ST	14.38	14.40	WDS	TK			10839	4/1/1988

NU-PSNH	436	HEMPHILL 1	NH	ST	14.13	14.30	WDS	TK			10838	12/1/1987
VELCO	329	ASCUTNEY GT	VT	GT	9.83	14.24	DFO	TK			3708	11/1/1961
NU-PSNH	570	SMITH	NH	HD	11.32	14.18	WAT				2368	1/1/1948
USGEN	457	LAWRENCE HYDRO	MA	HD	9.40	14.10	WAT				50545	11/1/1981
EXELON	418	FRAMINGHAM JET 2	MA	GT	10.05	14.05	DFO	TK			1586	9/1/1969
NU-PSNH	768	GARVINS/HOOKSETT	NH	HD	14.00	14.00	WAT				2357	1/1/1902
USGEN	393	DEERFIELD 5	MA	HD	13.99	13.99	WAT				1620	10/1/1974
EXELON	417	FRAMINGHAM JET 1	MA	GT	9.79	13.84	DFO	TK			1586	9/1/1969
CNE	542	REGIONAL WASTE SYSTEMS	ME	ST	13.70	13.70	MSW	TK	DFO	TK	50225	8/1/1988
CPS	532	PEJEPSCOT	ME	HD	10.21	13.55	WAT				50758	11/1/1987
VELCO-GMP	426	GORGE 1 DIESEL	VT	IC	8.03	13.49	DFO	TK			3735	1/1/1965
FPL	617	WESTON	ME	HD	13.20	13.20	WAT				1509	1/1/1920
NU-CLP	462	LISBON RESOURCE RECOVERY	CT	ST	12.96	13.04	MSW	TK			54758	1/1/1996
BEM	916	Great Lakes - Berlin	NH	HD	13.00	13.00	WAT				54639	4/1/1965
USGEN	473	MCINDOES	NH	HD	13.00	13.00	WAT				6483	1/1/1931
EXELON	419	FRAMINGHAM JET 3	MA	GT	9.37	12.87	DFO	TK			1586	9/1/1969
NU-PSNH	767	SES CONCORD	NH	ST	12.52	12.76	MSW	TK	DFO	TK	50873	5/1/1989
NU-CLP	356	BRISTOL REFUSE	CT	ST	13.20	12.74	MSW	TK	DFO	TK	50648	5/1/1988
EXELON	503	MYSTIC JET	MA	GT	8.32	12.47	DFO	TK			1588	6/1/1969
USGEN	451	JOHNSTON LANDFILL	RI	IC	12.00	12.00	LFG				50365	2/1/1990
FPL	440	HIRAM	ME	HD	11.60	11.60	WAT				1493	1/1/1917
SEI-NGC	412	FALLS VILLAGE	CT	HD	9.76	11.00	WAT				560	1/1/1914
CPS	1107	SOMERSET	ME	ST	10.60	10.60	WDS				802	12/1/1982
BEM	539	PONTOOK HYDRO	NH	HD	7.07	10.16	WAT				50741	12/1/1986
USGEN	413	FIFE BROOK	MA	HD	9.90	9.90	WAT				8004	10/1/1974
FPL	761	SHAWMUT	ME	HD	9.50	9.50	WAT				1504	1/1/1913
VELCO	783	HIGHGATE FALLS	VT	HW	9.08	9.34	WAT				6618	1/1/1980
NU-PSNH	330	AYERS ISLAND	NH	HD	9.08	9.08	WAT				2355	1/1/1925
HGE	438	HOLYOKE 8/CABOT 8	MA	ST	8.70	9.00	RFO	RR	NG	PL	9864	1/1/1949
NU		FEDERAL PAPER BOARD	CT	ST	9.00	9.00	DFO	TK				5/9/1999
PPLEP	405	ELLSWORTH HYDRO	ME	HW	9.11	8.82	WAT				1469	1/1/1919
CPS	475	MEDWAY DIESELS 1-4	ME	IC	7.95	8.65	DFO	TK			1474	5/1/1999
CPS	332	BAR HARBOR DIESELS 1-4	ME	IC	7.90	8.60	DFO	TK			1466	1/1/1960

SEI-NGC	362	BULLS BRIDGE	CT	HD	8.40	8.40	WAT				541	1/1/1903
MNE-MAE	1030	OAK BLUFFS	MA	IC	8.00	8.25	DFO	TK			1597	1/1/1970
NU-CLP	544	RAINBOW	CT	HD	8.20	8.20	WAT				559	1/1/1980
FPL	369	CATARACT EAST	ME	HD	8.00	8.00	WAT				695	1/1/1937
VELCO	346	BOLTON FALLS	VT	HD	7.80	7.80	WAT				7056	1/1/1980
VELCO	410	ESSEX 19 HYDRO	VT	HD	7.80	7.80	WAT				3737	1/1/1917
USGEN	354	BRAYTON DIESELS 1-4	MA	IC	7.61	7.55	DFO	TK			1619	3/1/1967
FPL	460	LOCKWOOD	ME	HD	7.50	7.50	WAT				10066	12/1/1984
VELCO	622	WINOOSKI 1	VT	HD	7.30	7.30	WAT				54355	4/1/1993
NU-CLP	389	DERBY DAM	CT	HD	7.05	7.05	WAT				10063	3/1/1989
FPL	787	LEWISTON CANAL COMPOSITE	ME	HD	-	6.94	WAT				1487	1/1/1920
NU-CLP	623	WALLINGFORD REFUSE	CT	ST	6.35	6.90	MSW	TK	DFO	TK	50664	3/1/1989
FPL	331	AZISCOHOS HYDRO	ME	HD	6.81	6.81	WAT				50999	7/1/1988
VELCO	541	PROCTOR	VT	HD	6.65	6.65	WAT				6450	1/1/1980
NU-PSNH	401	EASTMAN FALLS	NH	HD	6.47	6.47	WAT				2356	1/1/1912
NGRID		AMERICAN OPTICAL	MA	ST	6.40	6.40	NG	PL				1/1/1938
USGEN	567	SHERMAN	MA	HW	6.08	6.24	WAT				6012	12/1/1926
HGE	437	HOLYOKE 6/CABOT 6	MA	ST	8.76	6.00	RFO	RR	NG	PL	9864	1/1/1949
NU-WMECO	2425	SPRINGFIELD REFUSE-NEW	MA	ST	6.00	6.00	MSW	TK	DFO	TK	8100	9/1/1988
VELCO	775	MIDDLEBURY COMPOSITE	VT	HW	6.65	6.00	WAT				3716	1/1/1917
VELCO	2432	HUNTINGTON FALLS-NEW	VT	HD	4.37	5.76	WAT				50713	11/1/1988
NU		MONSANTO	MA	ST	5.70	5.70	BIT					5/9/1999
VELCO	2430	BELDENS-NEW	VT	HD	4.58	5.70	WAT				6451	1/1/1980
FGE		FITCHBURG OPERATING COMPANY	MA	ST	5.50	5.50	DFO	TK				2/1/1996
MNE-MAE	1031	WEST TISBURY	MA	IC	5.50	5.50	DFO	TK			6049	1/1/1975
NRG-Montville	492	MONTVILLE 10 AND 11	CT	IC	5.30	5.35	DFO	TK			546	1/1/1967
VELCO	776	N. RUTLAND COMPOSITE	VT	HW	5.20	5.30	WAT				3714	1/1/1980
TMLP	1432	GRS-FALL RIVER	MA	IC	5.13	5.28	LFG				55589	8/1/2000
HLPD	2470	CHERRY 12	MA	IC	5.00	5.00	DFO	TK	NG	PL	9038	1/1/1951
NGRID-MEC	2462	PLAINVILLE GEN QF U5	MA	IC	5.00	5.00	LFG					3/24/2003
VELCO	2431	DODGE FALLS-NEW	VT	HD	5.00	5.00	WAT				10526	11/1/1990
Totals					**978.46**	**1,071.61**						

And as shown in Figure 7, there are 135 power sources listed by ISO-New England that are greater than 20MW but less than 200MW. Clearly, 'utility scale' can mean well under 200MW.

FIGURE 8: ISO NEW ENGLAND RESOURCES 20MW< AND <200MW

					NET		PRIMARY FUEL		ALTERNATE FUEL			
				UNIT	CAPABILITY - MW		ENERGY	TRANSP.	ENERGY	TRANSP.		COMMERCIAL
SYSTEM-SUB	ASSET ID AND STATION NAME		STATE	TYPE	SUMMER	WINTER	SOURCE	METHOD	SOURCE	METHOD	EIA PLANT NO.	IN-SERVICE
HQE	1288	BUCKSPORT ENERGY 4	ME	CC	164.76	193.13	NG	PL	DFO	TK	50243	12/1/2000
USGEN	496	MOORE	NH	HW	183.77	183.24	WAT				2351	1/1/1956
NU-CLP	594	AES THAMES	CT	ST	181.00	182.15	BIT	DFO	TK		10675	12/1/1989
CEN-DPA	1005	DIGHTON POWER 1	MA	CC	142.50	180.14	NG	PL			55026	5/1/1999
ENGC-EKT	326	ALTRESCO	MA	CC	141.04	173.00	NG	PL	DFO	TK	50002	9/1/1990
NRG-NORWALK	520	NORWALK HARBOR 2	CT	ST	168.00	172.00	RFO	WA			548	1/1/1963
ANP-MPLP	486	MILFORD POWER	MA	CC	149.00	170.73	NG	PL			54805	1/1/1994
MNE-MAE	1672	KENDALL CT	MA	GT	153.50	167.50	NG				1595	12/18/2002
USGEN	323	MANCHESTER 9/9A CC	RI	CC	142.00	165.00	NG	PL	DFO	WA	3236	11/14/1995
USGEN	322	MANCHESTER 11/11A CC	RI	CC	141.91	164.91	NG	PL	DFO	WA	3236	10/1/1995
NRG-NORWALK	519	NORWALK HARBOR 1	CT	ST	162.00	164.00	RFO	WA			548	1/1/1960
USGEN	380	COMERFORD	NH	HW	161.43	162.34	WAT				2349	1/1/1930
USGEN	321	MANCHESTER 10/10A CC	RI	CC	137.53	160.53	NG	PL	DFO	WA	3236	11/15/1995
PSEG	339	BRIDGEPORT HARBOR 2	CT	ST	130.49	157.68	RFO	WA			568	8/1/1961
CEN	1083	ANDROSCOGGIN ENERGY CENTER	ME	CC	127.90	155.60	NG	PL	DFO	TK	55031	4/1/2000
USGEN	553	SALEM HARBOR 3	MA	ST	142.64	149.91	BIT	WA	RFO	WA	1626	8/1/1958
SEI-HWP	498	MT TOM	MA	ST	145.11	146.98	BIT	RR			1606	6/1/1960
NRG-MIDDLETOWN	480	MIDDLETOWN 2	CT	ST	117.00	120.00	RFO	WA	NG	PL	562	1/1/1958
MMWEC	1185	STONY BROOK GT1A	MA	CC	104.00	119.00	DFO	TK	NG	PL	6081	11/1/1981
MMWEC	1187	STONY BROOK GT1C	MA	CC	104.00	119.00	DFO	TK	NG	PL	6081	11/1/1981
FPL	641	YARMOUTH 3	ME	ST	115.51	118.33	RFO	WA			1507	7/1/1965
MMWEC	1186	STONY BROOK GT1B	MA	CC	100.00	116.00	DFO	TK	NG	PL	6081	11/1/1981
NU-PSNH	489	MERRIMACK 1	NH	ST	112.50	114.00	BIT	RR			2364	12/1/1960
TMLP	375	CLEARY 9/9A CC	MA	CC	105.00	110.00	RFO	TK	NG	PL	1682	12/1/1975
NRG-DEVON	390	DEVON 7	CT	ST	107.00	109.00	RFO	WA	NG	PL	544	1/1/1956

NRG-DEVON	391	DEVON 8	CT	ST	106.84	109.00	RFO	WA	NG	PL	544	1/1/1958
NRG	577	SOMERSET 6	MA	ST	105.60	108.50	BIT	WA			1613	7/1/1959
CEEI	633	WEST SPRINGFIELD 3	MA	ST	101.18	100.09	RFO	RR	NG	PL	1642	1/1/1957
BELD	540	POTTER 2 CC	MA	CC	75.51	93.51	NG	PL	DFO	TK	1660	3/1/1977
SET	461	LOWELL POWER	MA	CC	75.50	87.50	NG	PL	DFO	TK	54586	3/11/1993
MMWEC	583	STONY BROOK 2A	MA	GT	67.40	87.40	DFO	TK			6081	11/1/1982
MMWEC	584	STONY BROOK 2B	MA	GT	65.30	85.30	DFO	TK			6081	11/1/1982
USGEN	551	SALEM HARBOR 1	MA	ST	81.99	83.99	BIT	WA	RFO	WA	1626	1/1/1952
NRG-MONTVILLE	493	MONTVILLE 5	CT	ST	81.00	81.59	RFO	WA	NG	PL	546	1/1/1954
USGEN	552	SALEM HARBOR 2	MA	ST	80.00	78.60	BIT	WA	RFO	WA	1626	1/1/1952
CPS	345	MEAD	ME	ST	75.00	75.00	MSW	WDS	TK		10491	2/1/1990
BEM	424	GREAT LAKES - MILLINOCKET	ME	HW	67.00	70.00	WAT				55830	3/1/1987
NSTAR-BECO	472	M STREET JET	MA	GT	50.00	68.10	JF	TK			10176	1/1/1978
NSTAR-CES	388	DARTMOUTH POWER	MA	CC	61.80	67.88	NG	PL	DFO	TK	52026	5/1/1992
EPME	531	PAWTUCKET POWER	RI	CC	63.14	66.45	NG	PL	DFO	TK	54056	2/1/1991
SEI-NGC	766	CABOT/TURNERS FALLS	MA	HD	65.20	65.20	WAT				1629	1/1/1905
EXELON	625	WEST MEDWAY JET 1	MA	GT	39.42	63.67	DFO	TK	NG	PL	1592	7/1/1970
UI	349	BRIDGEPORT RESCO	CT	ST	58.71	58.74	MSW	TK			50883	4/1/1988
EPME	324	CDECCA	CT	CC	51.69	57.77	NG	PL	DFO	TK	54663	11/1/1988
EXELON	627	WEST MEDWAY JET 3	MA	GT	35.44	55.84	DFO	TK	NG	PL	1592	7/1/1970
FPL	639	YARMOUTH 1	ME	ST	52.25	53.50	RFO	WA			1507	1/1/1957
FPL	640	YARMOUTH 2	ME	ST	52.27	53.19	RFO	WA			1507	1/1/1958
VELCO-BURLINGTON	474	J C MCNEIL	VT	ST	52.00	53.00	WDS	TK	NG	PL	589	2/1/1984
EXELON	626	WEST MEDWAY JET 2	MA	GT	34.73	52.93	DFO	TK	NG	PL	1592	3/1/1971
PPLEP	1380	PPL WALLINGFORD UNIT 5	CT	GT	39.92	50.92	NG	PL			55517	7/31/2001
NSTAR-CES	563	SEMASS 1	MA	ST	46.18	50.74	MSW	TK			50290	10/1/1988
PPLEP	1378	PPL WALLINGFORD UNIT 3	CT	GT	44.88	49.77	NG	PL			55517	7/31/2001
NU-PSNH	557	SCHILLER 5	NH	ST	47.24	49.60	BIT	WA	RFO	WA	2367	5/1/1955
PPLEP	1377	PPL WALLINGFORD UNIT 2	CT	GT	38.49	49.49	NG	PL			55517	7/31/2001
AES	591	S.D. WARREN-WESTBROOK	ME	ST	40.94	49.10	WDS	TK	DFO	TK	50447	11/1/1997
PPLEP	1376	PPL WALLINGFORD UNIT 1	CT	GT	44.50	48.94	NG	PL			55517	7/31/2001
NU-PSNH	558	SCHILLER 6	NH	ST	47.94	48.58	BIT	WA	RFO	WA	2367	7/1/1957
USGEN	335	BELLOWS FALLS	VT	HD	48.54	48.54	WAT				3745	1/1/1928
NU-PSNH	556	SCHILLER 4	NH	ST	47.50	48.00	BIT	WA	RFO	WA	2367	4/1/1952

003920

SEI-CRRA	574	SO. MEADOW 13	CT	GT	38.32	47.92	JF	WA			563	8/1/1970
SEI-CRRA	573	SO. MEADOW 12	CT	GT	37.70	47.87	JF	WA			563	8/1/1970
CEEI	1693	WEST SPRINGFIELD GT-1	MA	CC	37.81	47.81	NG	PL			1642	6/7/2002
CEEI	1694	WEST SPRINGFIELD GT-2	MA	CC	37.70	47.70	NG	PL			1642	6/7/2002
VELCO	336	BERLIN 1 GT	VT	GT	35.49	47.65	JF	TK			3734	1/1/1972
PPLEP	1379	PPL WALLINGFORD UNIT 4	CT	GT	42.18	47.46	NG	PL			55517	7/31/2001
SEI-CRRA	575	SO. MEADOW 14	CT	GT	37.35	47.35	JF	WA			563	8/1/1970
SEI-CRRA	572	SO. MEADOW 11	CT	GT	35.78	46.92	JF	WA			563	8/1/1970
ENE	590	BORALEX STRATTON ENERGY	ME	ST	45.02	45.50	WDS	TK	DFO	TK	50650	9/1/1989
PMLP	613	WATERS RIVER JET 2	MA	GT	29.16	44.46	DFO	TK	NG	PL	1678	4/1/1991
SEI-NGC	566	SHEPAUG	CT	HW	41.51	42.56	WAT				552	1/1/1955
NRG-DEVON	399	DEVON 13	CT	GT	33.33	42.33	JF	PL	NG	TK	544	10/1/1996
USGEN	620	WILDER	VT	HW	41.16	41.38	WAT				2353	1/1/1950
USGEN	527	OGDEN-MARTIN 1	MA	ST	40.94	41.06	MSW	TK			50661	6/1/1989
NRG-DEVON	400	DEVON 14	CT	GT	29.62	40.19	JF	PL	NG	TK	544	10/1/1996
USGEN	624	WMI MILLBURY 1	MA	ST	39.73	39.98	MSW	TK			50878	9/1/1987
NRG-DEVON	397	DEVON 11	CT	GT	30.05	39.57	JF	PL	NG	TK	544	10/1/1996
NRG-DEVON	398	DEVON 12	CT	GT	29.82	39.03	JF	PL	NG	TK	544	10/1/1996
NU-CLP	392	DEXTER	CT	CC	38.00	39.00	NG	PL	DFO	TK		5/1/1990
USGEN	435	HARRIMAN	VT	HW	40.40	38.62	WAT				3746	1/1/1924
FPL	433	HARRIS 2	ME	HW	34.95	34.86	WAT				1492	1/1/1954
ENE	463	AEI LIVERMORE	ME	ST	34.74	34.62	WDS	TK			10354	10/1/1992
FPL	434	HARRIS 3	ME	HW	34.21	34.16	WAT				1492	1/1/1953
FPL	471	MASON 5	ME	ST	-	33.23	RFO	TK			1496	1/1/1955
FPL	328	GULF ISLAND COMPOSITE	ME	HW	32.97	32.97	WAT				1480	1/1/1926
CPS	1108	CHAMPION	ME	ST	32.70	32.70	WDS	TK			55180	8/1/1988
FPL	470	MASON 4	ME	ST	-	32.67	RFO	TK			1496	1/1/1952
CMEEC		PFIZER #1	CT	ST	32.50	32.50	RFO	TK				1/1/1948
FPL	469	MASON 3	ME	ST	-	31.66	RFO	TK			1496	1/1/1952
HGE	769	HADLEY FALLS 1&2	MA	HD	31.50	31.50	WAT				1605	1/1/1983
USGEN	546	RESCO SAUGUS	MA	ST	30.58	31.00	MSW	TK			50880	11/1/1985
SEI-CRRA	379	COBBLE MOUNTAIN	MA	HW	30.86	30.60	WAT				1630	1/1/1923
NU-CLP	581	SO. MEADOW 6	CT	ST	27.11	30.44	MSW	TK			563	11/1/1987
FPL	637	WYMAN HYDRO 2	ME	HW	29.87	29.87	WAT				1511	1/1/1931

NU-CLP	580	SO. MEADOW 5	CT	ST	25.60	29.23	MSW	TK			563	11/1/1987
USGEN	547	RESCO NO. ANDOVER	MA	ST	28.31	29.08	MSW	TK			50877	8/1/1985
SEI-NGC	739	ROCKY RIVER	CT	PS	29.17	29.01	WAT				539	1/1/1928
SEI-NGC	587	STEVENSON	CT	HW	28.31	28.90	WAT				553	1/1/1919
FPL	495	MONTY	ME	HD	22.83	28.00	WAT				805	1/1/1980
FPL	636	WYMAN HYDRO 1	ME	HW	27.36	27.36	WAT				1511	1/1/1930
SET	1188	LOWELL COGENERATION PLANT	MA	CC	25.00	27.25	NG	PL	DFO	TK	10802	10/21/1988
VELCO	565	SHELDON SPRINGS	VT	HD	14.82	26.38	WAT				10494	5/1/1988
TMLP	376	CLEARY 8	MA	ST	26.00	26.00	RFO	TK			1682	1/1/1966
FPL	638	WYMAN HYDRO 3	ME	HW	25.73	25.73	WAT				1511	1/1/1940
AES	411	EXETER	CT	ST	26.00	25.66	TDF	TK	DFO	TK	50736	12/1/1991
INDCK	445	INDECK WEST ENFIELD	ME	ST	21.24	24.80	WDS	TK			10766	11/1/1987
USGEN	599	VERNON	VT	HD	24.39	24.39	WAT				2352	1/1/1909
NSTAR-CES	564	SEMASS 2	MA	ST	20.85	24.32	MSW	TK			50290	5/1/1993
NU		PRATT & WHITNEY (UTC)	CT	GT	23.80	23.80	NG	PL				4/1/1992
NRG	372	COS COB 12	CT	GT	18.44	23.34	JF	TK			542	1/1/1969
NRG	371	COS COB 11	CT	GT	18.24	23.23	JF	TK			542	1/1/1969
NRG	579	SOMERSET JET 2	MA	GT	18.30	23.00	JF	TK			1613	5/1/1971
VELCO	363	BURLINGTON GT	VT	GT	19.71	22.96	DFO	TK			3754	7/1/1971
NRG	370	COS COB 10	CT	GT	17.88	22.78	JF	TK			542	9/1/1969
MNE-MAE	452	KENDALL JET 1	MA	GT	17.48	22.48	JF	TK			1595	9/24/1970
PPLEP	534	PENOBSCOT RIVER HYDRO	ME	HD	22.07	22.07	WAT				55031	1/1/1911
NRG-MIDDLETOWN	478	MIDDLETOWN 10	CT	GT	17.12	22.02	JF	TK			562	1/1/1966
CEEI	630	WEST SPRINGFIELD 10	MA	GT	17.22	22.00	JF	TK			1642	1/1/1968
SEI	1114	MADISON COMPOSITE	ME	HD	22.00	22.00	WAT				7469	7/1/1999
NU-PSNH	382	MERRIMACK CT1	NH	GT	16.83	21.68	JF	TK			2364	7/1/1969
NU-PSNH	383	MERRIMACK CT2	NH	GT	16.80	21.30	JF	TK			2364	8/1/1968
NRG	355	BRANFORD 10	CT	GT	16.17	21.28	JF	TK			540	1/1/1969
CPS	536	PERC-ORRINGTON 1	ME	ST	20.85	21.16	MSW	TK			50051	1/1/1988
NU-PSNH	619	WHITE LAKE JET	NH	GT	16.21	21.16	JF	TK			2369	8/1/1968
CEEI	395	DOREEN	MA	GT	16.60	21.10	JF	TK			1631	1/1/1969
CEEI	628	WOODLAND ROAD	MA	GT	16.42	21.00	JF	TK			1643	7/1/1969
NU-PSNH	592	TAMWORTH	NH	ST	21.00	21.00	WDS	TK			50739	1/1/1988
NRG	595	TORRINGTON TERMINAL 10	CT	GT	15.85	20.96	JF	TK			565	8/1/1967

003820

SEI-NGC	596	TUNNEL 10	CT	GT	15.89	20.76	JF	TK			557	1/1/1969
FPL	368	CAPE GT 5	ME	GT	16.20	20.65	DFO	TK			1484	1/1/1970
MNE-MAE	453	KENDALL JET 2	MA	GT	15.61	20.61	JF	TK			1595	3/31/1972
VELCO	2433	RYEGATE 1-NEW	VT	ST	20.50	20.60	WDS	TK			51026	11/1/1992
NRG	420	FRANKLIN DRIVE 10	CT	GT	15.42	20.53	JF	TK			561	11/1/1968
MNE-MAE	10348	KENDALL STEAM 2	MA	ST	21.00	20.47	RFO	TK	NG	PL	1595	1/1/1950
MNE-MAE	10349	KENDALL STEAM 3	MA	ST	24.00	20.41	RFO	TK	NG	PL	1595	1/1/1950
FPL	358	BRUNSWICK	ME	HD	20.20	20.20	WAT				1483	3/1/1982

003920

It also is incorrect to assert that 200MW is representative of the "utility scale" projects being developed in New England. If one looks at project under development in New England and New York today, many smaller size project are on tap, as shown Figure 9. Figure 9 summarizes the cataloguing of wind sites, terrestrial and maritime, in New England and New York that are developed, partially developed or have been proposed for development by various public and private enterprises. As this Figure shows, the CWA project is an aberration, not the norm. It is by far the largest such project, and only one other facilty (Flat Rock) comes close.

FIGURE 9 ONSHORE AND OFFSHORE PROJECTS IN NEW ENGLAND

PROJECT	CAPACITY (MW)	OWNER	POWER PURCHASER	STATUS	LOCATE
Massachusetts					
Holyoke	0.25	Holyoke G&E	Holyoke G&E	Existing	Land
Hull	0.66	Hull Municipal LP	Hull Municipal LP	Existing	Land
Hull	3.00	Hull Municipal LP	Hull Municipal LP	Expansion	Land
Princeton	0.32	Princeton MLD	Princeton MLD	Existing	Land
Princeton	3.00	Princeton MLD	Princeton MLD	Expansion	Land
Hoosac	30.00	Enxco	Merchant	Planned	Land
Brodie Mtn	15.00	Berkshire Wind	n/a	Planned	Land
Davis Bank		Winergy	Merchant	Planned	Ocean
Nantucket Shoals		Winergy	Merchant	Planned	Ocean
Famouth WTG		Winergy	Merchant	Planned	Ocean
Gloucester WTG		Winergy	Merchant	Planned	Ocean
Truro WTG		Winergy	Merchant	Planned	Ocean
Cape Wind	420.00	CWA	Merchant	Planned	Ocean
Maine					
Madawska	0.05	Larry Beaulieu	Maine Public Power	Existing	Land
Orland	0.05	Endless Energy	G.Allen & Sons	Existing	Land
Mars Hill	45.00	UPC Wind	n/a	Planned	Land
Redington Mtn	52.00	Endless Energy	Various Ski Resorts	Planned	Land
Vermont					
Searsburg	6.00	GMP	GMP	Existing	Land
Searsburg	35.00	GMP/Enxco	GMP	Expansion	Land
Little Mtn Equinox	9.00	Catamount	n/a	Planned	Land

East Haven	6.00	Matthew Rubin	Merchant	Planned	Land
East Haven	75.00	Matthew Rubin	Merchant	Expansion	Land
Glebe Mtn	50.00	Catamount	n/a	Planned	Land
Hardscrabble Mtn	30.00	UPC Wind	n/a	Planned	Land
Lowell Mtn	18.00	Enxco/VPPSA	VPPSA	Planned	Land
Kirby Mtn		ENXCO		Planned	Land
New York					
Madison Wind Power	11.55	PG&E National	Merchant	Existing	Land
Weathersfield	6.60	CHI Energy	Niagara Mohawk	Existing	Land
Fenner Wind Power	30.00	CHI Energy	NYPP	Existing	Land
Calverton	0.05	LIPA	LIPA	Existing	Land
South Holt	0.05	LIPA	LIPA	Planned	Land
Flat Rock	300.00	Zilkha	n/a	Planned	Land
Prattsburgh Windfarm	75.00	UPC Wind	n/a	Planned	Land
Ostego County	40.50	n/a	n/a	Planned	Land
Sardinia	45.00	n/a	n/a	Planned	Land
York Wind Power	35.00	n/a	n/a	Planned	Land
Chautauqua	51.00	n/a	n/a	Planned	Land

It is apparent from Figure 9 that the definition of "utility scale" is substantially less than the 200MW minimum proposed by the Corps. In Massachusetts municipal utilities are buying power from wind turbines as small as 0.25MW. In Maine an investor owned utility, Maine Public Power, is purchasing 0.05 MW from a private developer and in New York the Niagara Mohawk Power Company, a subsidiary of Westboro, Massachusetts based National Grid, is purchasing 6.60 MW from a private developer.

The lack of justification for limiting purpose and need to ultra-large projects is perhaps best summed up by one of CWA's biggest apologists, CLF. On May 5, 2004, CLF wrote to FERC to promote the use of a programmatic EIS for natural gas development in New England. Ex. 60. As discussed above, such an approach also is needed for wind energy. APNS made note of this fact in a letter to the Corps, quoting from the CLF letter and making the obvious connection to the need for a programmatic review of wind energy. Ex. 61.

CLF responded by attempting to distinguish its position on natural gas and wind. Ex. 62. In that letter, CLF explained that to meet the Massachusetts Renewable Portfolio Standard (MARPS) *small, mid-sized and* large-scale projects

will be needed. As APNS explained in its reply letter, this is precisely the reason why this DEIS cannot be limited to projects over 200 MW. Ex. 63. Small and mid-size projects are equally important to address climate change, and there is no basis for arbitrarily using a 200 MW cutoff.

Based on the foregoing discussion, a far more logical project size limit that is still "utility-scale" must be used. Project sizes of 20 MW would seem appropriate based on ISO New England requirements, whose acceptance would seem a primary consideration for a new power plant. This is, after all, the limitation used by the American Wind Energy Association. Moreover, sites of this size could be collected together to create a significant wind project for the region.

There are three advantages to this approach. First, more sites would qualify as alternative sites. Second, smaller projects can most often be connected into the grid at a local substation and thereby result in far less upgrading of transmission infrastructure. Third, they can be located closer to where there is a clear need for electricity.

This position is supported by the expert opinion offered by the "peer review" group established by the Corps. The purpose of this group was to: 1) "Provide a written analysis of the state of the art for offshore wind addressing whether and how the construction and operation is affected by water depth and wave conditions;" 2) "Assess what advances are anticipated in this area in the next 2-3 years." Ex. 34. (page 1 of Garrad Hassan report). Although the Corps set up this team to obtain outside advice, it nonetheless rejected such opinions when they conflicted with CWA's desired result.

As noted above, the issue of facility size was discussed among the cooperating agencies for some time. FWS and CCC both objected to the manner in which the purpose and need statement had been framed. FWS noted in December 2002 that the Corps' proposed use of "commercial scale" was inappropriate in the context of renewable energy. One year later, the Corps had still not bothered to address this comment. As a result, FWS again stated:

> My concerns remain essentially the same as those I expressed verbally at the meeting and in my November 13, 2002 Memorandum to you. I believe the alternatives screening process we discussed on November 25 is fundamentally flawed because as it is currently structured, it is essentially a strawman analysis to justify the applicant's proposals in Nantucket Sound. On one hand, the Corps is defining the project purpose to be a commercial scale renewable energy project providing power to

> the New England grid. On the other hand, the Corps is defining commercial scale to be within ± 20% of the applicant's 420 mw proposal and/or in the range of 200-1500 mw corresponding to recent ISO-NE projects. . . . [W]hat constitutes a commercial-scale facility should be determined by the type of technology involved.

Ex. 64.

The CCC experienced the same non-responsive attitude from the Corps. In December 2002, CCC noted for the record:

> Finally, we would refer to the presentation given by Mr. Bruce Bailey describing the Long Island Power Authority's alternative study, that used a commercially viable capacity of 100 MW as their preliminary screening criteria. This size is in sharp contrast to the current 200 to 1,500 MW capacity of the preliminary screening criteria used for the DEIS on Cape Wind's project. Mr. Bailey's presentation reinforced our belief that the capacity range needs to be tailored to renewable energy generators rather than the range typical of connections to the ISO-New England grid to date.

Ex. 65.

In October of the next year, the CCC had to repeat its concerns: "It is perhaps more appropriate for the range of facilities under consideration to be based on what is economically feasible for renewable facilities, rather than what has historically been connected to ISO-New England's grid." In addition, the CCC complained:

> [T]he Peer Review Summary noted that "there are many cases where the logic used to reach these conclusions is either flawed or is stretching reality" and that it "has the appearance of being written by advocates for the project rather than the CORPS." The aim of the EIS is to provide unbiased and objective information, and as such, even the appearance of a conflict or subjectivity can severely undermine the integrity of the process. It is currently unclear to what extent the Peer Reviewers comments will be embraced, but our hope is that the Corps is able to remedy the situation by presenting a balanced view of the complex information available.

Ex. 66.

When a more appropriate definition of commercial scale is used, numerous alternative sites become available. Those sites are entirely consistent with CLF's observation that small and medium-scale projects are needed to meet the MARPS. Figure 10 includes examples of such sites that would be available when the 200 MW-scale limitation is not used:

FIGURE 10: AVAILIABLE SITES

PROJECT	CAPACITY	AREA	OWNER	PURCHASER	STATUS	LOCATION
Massachusetts						
Hoosac	30 MW	48 Sq. Mi.	Enxco	Merchant	Planned	Land
Brodie Mtn	15 MW	n/a	Berkshire Wind Power/MTC	Merchant	Planned	Land
Maine						
Mars Hill	45 MW	n/a	UPC Wind Partners	Merchant	Planned	Land
Redington Mtn	52 MW	n/a	Endless Energy		Planned	Land
Vermont						
Searsburg	35 MW	35 Sq. Mi.	GMP/Enxco	Various Ski Resorts	Expansion	
East Haven	6 MW	n/a	Matther Rubin	Merchant	Planned	Land
East Haven	75 MW	n/a	Matther Rubin	Merchant	Expansion	Land
Glebe Mtn	50 MW	n/a	Catamount Energy	Merchant	Planned	Land
Hardscrabble Mtn	30 MW	n/a	UPC Wind Partners	Merchant	Planned	Land
Kirby Mtn	n/a	n/a	Enxco	Merchant	Planned	Land
New York						
Jones Beach	241 MW	16 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Plum Island	12 MW	207 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Smith Point	205 MW	27 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Fire Island	227 MW	13 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Hampton	295 MW	17 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Flat Rock	300 MW	n/a	Zikha Renewable Energy	Merchant	Planned	Land
Prattsburgh Windfarm	75 MW	n/a	UPC Wind Partners	Merchant	Planned	Land
Ostego County	40.5 MW	n/a	n/a	Merchant	Planned	Land
Sardinia	45 MW	n/a	n/a	Merchant	Planned	Land
York Wind Power	35 MW	n/a	n/a	Merchant	Planned	Land
Chautauqua	51 MW	n/a	Jasper Energy	Merchant	Planned	Land

By way of summary, whether at the behest of the private applicant or on its own accord, the Corps improperly limited the DEIS scope to projects that are 200 MW or larger in size.[69] In doing so, it has rejected, without explanation, the comments of the public, the interagency team, and the Corps' own peer review group. The 200 MW limit is invalid because: 1) it does not equate with what constitutes "utility-scale" renewable power projects; 2) the Corps is incorrect in claiming the ISO-NE track record has a cut-off at 200 MW; 3) even if the 200 MW were correctly drawn from ISO-NE activity, there is no valid basis to use such a limit considering the statutory authority under which the Corps is acting; 4) considering small and medium-sized projects advances the purported objective of this project (clean energy, reducing global warning threats); and 5) there are other reasonable, smaller-scale but commercially viable, alternatives available that are vastly preferable from an environmental and public interest perspective.

(ii) There is no basis upon which to limit the purpose and need to New England.

The Corps' inappropriate decision to limit the purpose and need to utility-scale facilities is particularly problematic when the geographic scope is limited to New England. Limiting both the acceptable geographic region to New England *and* using the Corps' definition of utility-scale fundamentally disregards the nature of renewables and regional restrictions. Utility-scale, renewable projects require space, and space is at a premium in New England.

Nowhere in the record is any explanation given for the limitation to New England. The closest the Corps comes to providing such a justification is through its discussion of the requirement in the MARPS that power be provided to the New England grid to receive the credits allowed under that state law. While this may be a limiting factor in the MARPS, there is no reason that the Corps is limited to the standards of Massachusetts law.[70] The applicant has applied to the Corps for a section 10 permit for a purpose that can be met in other states with other laws that provide similar incentives. This fact is evident in the multiple offshore wind projects

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[69] As discussed in these comments, NEPA also requires the consideration of "partial alternatives." Thus, even if 200 MW is the goal, it does not follow that such a project needs to be located in one location. Smaller-scale projects can be used to meet this goal on a cumulative basis.

[70] As discussed in these comments, even it the New England limitation is accepted based on the MARPS, the Corps has misapplied that test. MARPS does not require the project to be located *in* New England. It only requires that the power be provided to the New England grid. Several sites are available outside of New England for this purpose.

proposed for the coasts of New York, New Jersey, Maryland and Virginia, all of which have similar laws to provide incentives for such projects. *See* <http://www.awea.org/policy/rpsbrief.html>; <http://renewableenergyaccess.com/rea/news/story?id=22559>; <http://www.dps.state.ny.us/03e0188.htm>; <http://www.njcep.com/srec/faq.php>; <http://www.ies.ncsu.edu/dsire/library/includes/incentive2.cfm?Incentive_Code=MD05R&state=MD&CurrentPageID=1>; <http://www.evomarkets.com/rec/index.php?xp1=3&mk=3>. The DEIS attempts to justify this geographic limitation by reference to the MARPS, but that is a false constraint. CWA picks the MARPS because it is the one that best justifies Nantucket Sound. The Corps decision to use only the MARPS as a limiting factor is arbitrary and plays no role other than to further CWA's objectives.

Renewable Portfolio Standards have been adopted by eight New England and Eastern Seaboard States to encourage the rapid development of clean energy sources. The eight states are: Maine, Massachusetts, Connecticut, New York, Pennsylvania, New Jersey and Maryland. The percentage minimum requirements are unique to each state. Additionally, the RPS requirements vary by state, but consistently all include wind power and, where states have a tiered RPS program, wind power is in the first tier. Tiered programs segment newer cleaner energies and their enabling technologies into a first tier --with higher incremental annual percentage minimum requirements than second tier renewable energies.

The RPS 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. These multi-states agreements are in various stages of development. Pennsylvania and New Jersey are permitted to purchase any PJM generated resources. Connecticut is allowing purchase of generated energy from Regional ISOs, New York, Delaware and the PJM. The NEPOOL consortium of states are developing interstate standards. Besides interstate energy purchases, states also facilitate compliance through mechanisms including: purchasing, trading, or banking compliance credits and the payment of ACPs -- Alternative Compliance Payments. ACP payments may range from $.0514 per Kw/HR in Massachusetts to $.02 Kw/Hr in Maryland (annual reviews, escalations, etc.) As states review their RPS, they clearly are developing rules and legislation trends that promote interstate generation exchange, trading systems, and ACP's.

Nor can it be argued that looking only at New England makes sense due to site availability. There are relatively few sites inside New England that are suitable for such a massive project (a number of which have nonetheless been improperly ignored in the DEIS). Just outside New England, however, several acceptable locations are available. In New York, for example, sites are under consideration in Chataqua and

along the south coast of Long Island. Western New York, while not as close to New England, has prime sites in Madison, Weathersfield, Ostego County and Flat Rock.

As pointed out above, at least one of these sites – the Long Island project location – is actually closer to the applicant's preferred Nantucket Sound site than alternatives screened for this DEIS, yet it was not even considered simply because it is outside of New England.[71]

The most obvious reason that a New England-only approach is an arbitrary constraint on purpose and need is the fact that the air pollution problems caused by fossil fuels and global warming are widespread in nature. These problems are not limited to New England. Air emissions contributing to global warming are not caused only by New England sources, and they certainly cannot be solved by looking only at Nantucket Sound or New England. These problems are regional, if not national and international in scope. The CWA project's contribution to addressing these problems is, as discussed in these comments, overstated, and those benefits, such as they are, can be readily achieved in other locations where the negative impacts are much, much smaller.

This point is illustrated perfectly by the fact that a regulatory control effort already is underway on a regional basis to address the very climate change/greenhouse gas problem this project proposal theoretically is intended to address. In 2001, the New England states, together with the Canadian Maritime Provinces, agreed on a goal of reducing greenhouse gas emissions by 10% by 2020. These efforts merged with a similar program for New York, New Jersey and Delaware in 2003 to create the "Regional Greenhouse Gas Initiative" ("RGGI"). That organization has defined its efforts on a truly "regional" basis not just New England, and intends to issue a plan for the first stage of a regional greenhouse gas control program by 2005. *See* <http://www.rggi.org/>.

The existence of this program is further evidence that a New England-only focus is too narrow. The states with the greatest stake in the regional greenhouse gas problem have defined the area within which action is necessary to address the global

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[71] Another reason that is likely involved is that these developers seem to have followed a *de facto* land rush mentality under which each has "staked out" its respective offshore wind energy turf. Each developer is letting the other pursue the sites it has identified for its own purposes. This is a clear example of the problems associated with the Corps' complete denial that there is a property rights issue inherent in the use of offshore wind for private development purposes and the failure to conduct a programmatic EIS. Competitive bidding, including for conservation purposes, should be involved for all of these sites.

warming problem, and that area includes parts of Canada and the mid-atlantic States. Nor surprisingly, as discussed above, there are reasonable wind energy sites within this region, but they are ignored by the DEIS because of its myopic focus on the applicant's own "backyard."

(iii) The clean energy goal of this project is not limited to renewable power plants.

Not only has the Corps unduly restricted the purpose and need statement by limiting it to "utility-scale" projects in New England, the Corps added another limitation which is, in effect, the nail in the coffin for all other alternatives: the restriction to renewable energy projects only. There are other energy projects that provide these same benefits to the public; moreover, many of these projects provide these benefits to the public at less cost to the public. Given the public stewardship role of the Corps, it is clear that this NEPA review must consider some of these projects as alternatives to the CWA project.

4. The Legally Sufficient Purpose and Need Statement.

The broader approach to purpose and need discussed in this section offers multiple benefits over the narrow, result-oriented analysis used by CWA and the Corps. The most obvious benefit is that the more expansive approach complies with NEPA. In addition, it provides for a broader analysis that promotes clean energy by not just looking at the most profitable, but most problematic, option of an extremely large-scale wind project in Nantucket Sound. Instead, it considers a wide range of alternatives with fewer conflicts. This approach is also more efficient, because it could allow for the selection of other sites or could serve as the basis for "tiering" NEPA analysis of subsequent projects. Finally, it enables the Corps to meet its broad, statutory public interest mandate under section 10, without imposing artificial constraints that further the private business objectives of the applicant but rule out a wide range of more advantageous choices that better serve the public.

Based upon these considerations, the Corps must reject the current purpose and need statement and prepare a supplemental EIS. The Corps should, as a threshold matter, decide what it is really looking at in this proposed action. The only reasonable approach is one under which true "utility-scale" projects are considered, without the 200 MW limit, the New England-based limitation, or the requirement for reliance solely on renewable technology. A broader regional approach should be adopted based upon where such projects are actually under consideration and are feasible; *i.e.* Canada to Virginia, or where the greenhouse gas effort is used addressed through the RGGI (Canada to Delaware). Thus, the purpose and need for this proposed action should be:

> To provide a feasible utility-scale clean energy project (*i.e.*, greater than 20 MW) within the Northeast and Mid-Atlantic region, [or, the region encompassed within RGGI] for which the public interest advantages outweigh the costs to the public interest.

Failure to revise the DEIS to follow this analytical approach will result in a clear violation of NEPA and put the Corps in a position where it is unable to make an informed public interest determination. Specific alternatives overlooked by the Corps are discussed in the next section.

B. NEPA Requires Evaluation of a Reasonable Range of Alternatives.

Once an action agency defines an appropriate purpose and need statement, the next step is to define the range of reasonable alternatives. Many of the problems with this DEIS flow from the improperly defined purpose and need statement. The Corps has, however, additionally adopted an incorrect position on the range of alternatives to be considered, consistent with that advocated by CWA. The numerous and fundamental defects in the applicant's position on alternatives is set forth in our previous correspondence on this issue.[72] For purposes of critiquing the DEIS, the requirements of NEPA for alternative analysis in a context such as the CWA proposal are summarized below.

NEPA requires federal agencies to take a "hard look" at the impacts of their actions. "The sweep of NEPA is extraordinarily broad, compelling consideration of any and all types of environmental impact of federal action." *Calvert Cliffs Coordinating Comm. v. AEC*, 449 F.2d 1109, 1122 (D.C. Cir. 1971). Special care and detailed analysis are particularly important where a new technology is involved: "NEPA thus stands as landmark legislation, requiring federal agencies to consider the environmental effects of major federal actions, empowering the public to scrutinize this consideration, and revealing a special concern about the environmental effects of a new technology." *Found. on Econ. Trends v. Heckler*, 756 F.2d 143, 147 (D.C. Cir.

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[72] By way of summary, CWA has confused NEPA case law on purpose and need with NEPA case law on alternatives. This has caused CWA to advance the faulty view that alternatives also must adhere to the basic economic goals of the applicant. Other flaws in CWA's legal interpretation of the alternatives requirement of NEPA are as follows: 1) CWA argues that this proposal is entirely private, despite its proposed use of public lands and public subsidies; 2) CWA ignores precedent that holds that cutting-edge technologies or new proposed uses of resources require more searching environmental review; and 3) CWA ignores precedent that calls for the consideration of partial solutions to the general goal of a proposed action.

1985). Extra care is needed to "ensure that the bold words and vigorous spirit of NEPA are not similarly lost or misdirected in the brisk frontiers of science." *Id.* at 145.

At the "heart" of NEPA is the analysis of alternatives. *Andrus v. Sierra Club*, 442 U.S. 347, 358 (1979). NEPA regulations require federal agencies to "[r]igorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. §1502.14 (a). It is imperative that the consideration of alternatives "sharply defin[e] the issues and provide[e] a clear basis of choice among options by decision makers and the public." *Id.* § 1502.14. Reasonable alternatives are "those that are *practical or feasible* from the technical and economic stand point of the applicant, rather than simply desirable from the standpoint of the applicant." Forty Questions, 46 Fed. Reg. 18026 (emphasis added). An EIS "shall inform decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.14. As discussed below, the Corps has violated all of these principles in selecting the unduly narrow range of alternatives considered in this DEIS.

1. The Corps' Screening Criteria Are Tailored to Fit Horseshoe Shoal, Not Define Reasonable Alternatives, and Have Caused Reasonable Alternatives To Be Rejected.

The Corps began its evaluation of alternatives under the CWA-favorable purpose and need by establishing so-called "screening criteria." The purpose of these criteria was ostensibly to eliminate possible sites for "utility-scale" renewable energy projects to deliver power to the New England grid that presented serious defects such that they were impractical to consider further. Like the purpose and need statement, however, in reality these screening criteria appear to have been designed to justify a specific result (validate Horseshoe Shoal as the preferred site) rather than objectively evaluate all reasonable options. Not surprisingly, the result of applying these screening criteria was to focus the DEIS solely on Nantucket Sound. For example,

- **Wind class of class 4 or better.** The Corps selected this feature of the Horseshoe Shoal site because it believed that today's wind technology requires class 4 wind to enable a wind project to be commercially feasible. While admittedly class 4 or 5 may provide better financial results for the developer, there are wind projects that are being developed with wind class 3 as well. For example, Greenfield, MA and Princeton, MA projects both fit this category.

- **Water Depth (offshore sites only): < 50 feet**. The Corps selected 50 feet because this is a feature of the Horseshoe Shoal site and because the Corps also believes this depth to be close to the maximum feasible depth for offshore monopile wind farms. Yet, there are projects in Europe that are being developed in waters that exceed 50 feet in depth. For example, the Borkom West, Thornton Bank, Butendick, Nordzee Wind, Q7-WP, and Barrow projects all have water depths considerably greater than 50 feet.[73]

- **Extreme Storm Wave (ESW) < 18 feet.** The Corps selected ESW < 18 feet, because Horseshoe Shoal met this criterion and because the Corps believes that sites with larger ESW's are not technically viable today for offshore wind. Yet, there are projects that are being developed in Europe where the ESW is greater than 18 feet. For example, the Butendick (DE), Arklow Bank, and Robin Grigg projects all have an ESW of approximately 30 feet.[74]

- **Accessibility to Grid Interconnect**. The Corps selected this criterion because Horseshoe Shoal met this criterion and because the Corps believes that any new generation project needs to be located in an area that is readily accessible to the power grid. Accessibility to the grid is important, however, distance from the grid is reflected in plant cost and can be traded off against costs implied by other characteristics (e.g., better wind resource). For example, both the Reddington/Black Nubble, ME and the Skinner/Kibby, ME, may have less favored and more distant interconnections to the grid, but the cost of deployment would be expected to be much less which could be traded against the less favored transmission characteristics.

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[73] *See* Garrad Hassan and Partners, Ltd., *Review of Offshore Wind Farm Project Features,* July 30, 2003.

[74] *Id.*

- **No legal restrictions** to use of the site. The Corps selected this criterion because the Horseshoe Shoal site met this criterion, and it is an important consideration when siting any large scale power facility. However, like accessibility to the grid, legal restrictions are often reflected in plants costs and can be traded against other site characteristics that may have more favorable cost implications.

Even if one accepts the purpose and need statement used in the DEIS, a properly developed set of screening criteria would not have eliminated all but CWA's proposed target of Nantucket Sound. Instead, a more flexible set of standards should have been used that would account for the different economics associated with differing wind conditions, transmission capacities, different forms of renewable energy and project risk. Screening criteria developed along these lines would have caused the Corps to consider, rather than reject, a number of the other alternative sites.

With respect to project risk, the Corps does not account for the differential risk of onshore wind versus offshore wind. Most of the wind projects in the world are onshore. Onshore technology is an established and reliable technology, whereas offshore technology is much less mature and is still evolving. Onshore plants account for more than 98% of all wind plants in operation today.[75] Operating and installation costs are well understood. Equipment is still being developed for offshore wind power. For example, the 3.7 MW turbines to be used in the proposed project have a relatively small number of units in use in offshore applications today, and those instances would appropriately be regarded as demonstration sites rather than utility scale production sites.[76] Indeed, as stated by Garrad Hassan "...no offshore wind farm project has yet exhibited 'real life' costing."[77]

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[75] According to AWEA, the current installed world capacity from all wind sources today is 39,294MW. (March 25, 2004 press release) There are approximately 500MW of offshore wind power in operation today. *See* Garrad Hassan and Partners, Ltd., *Review of Offshore Wind Farm Project Features,* July 30, 2003.

[76] Correspondence with former European utility executive with extensive experience in the European wind industry.

[77] Garrad Hassad and Partners, Ltd., *supra*. Dr. Mohammed Ali, from GE R&D Central Organization, Global Windpower 2004, Chicago, IL, March 2004 (verbal comment in presentation)

One expert has noted that a major project risk factor that still requires much more study and qualification is the impact of a hurricane on offshore wind structures. Since the majority of experience with offshore wind to date has occurred in the European Union, a 'real life' assessment of the impact of hurricane force winds has yet to be made.

Related, the criteria used by the Corps are applied without regard to trade-offs that exist between different elements of the criteria.[78] For example, land based sites can often be economic with less wind than offshore, yet the same wind class screen is used for both. As an example, consider two identically sized, 100 MW wind farms both having the same wind class, with one wind farm located onshore, and the other offshore, with a transmission link of ten (10) miles. The capital cost for the offshore farm is estimated at $200 million. The land based site with an installed cost of $100 million could afford to construct several hundred miles of transmission connection without exceeding the $200 million budget of the offshore site because of the difference between the costs for undersea transmission ($29 million per 10 mile increment) and rural land based transmission ($2 million per 10 mile increment)[79]. The point of this observation is simply that before eliminating a particular site, the Corps is required to do some preliminary analysis as to how elements within the screening criteria can be traded against one another. If that were done here, several land-based sites would still be under consideration.

The Corps criteria also do not consider the issue of economic viability as relevant. Certainly, no one would argue that the Corps has any responsibility to

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[78] This observation has been made by others. *See, e.g*, letter to Karen Adams (CORPS) dated October 9, 2003, from Margo Fenn, Executive Director, CCC, regarding "EIS Alternatives."

[79] Grid interconnect costs are dramatically higher for offshore as compared to onshore, as shown below:

VOLTAGE KV	TYPE	ENVIRONMENT	$/MILE
115	Overhaead	Suburban	$230,000
115	Overhaead	Rural	$184,000
115	Underground	Suburban-XLPE	$2,300,000
115	Underground	Suburban-HPOF	$5,750,000
115	Submarine	Minimal SR	$2,880,000

Source: Construction Cost Data Bank of major international power design firm

XLPE=	Cross linked polyethylene direct buried
HPOF=	High Pressure Oil Filled paper dielectric
Minimal SR=	Minimal special requirements as to ocean currents, anchor drop protection, etc.

ensure that owners of the wind farm receive a good return on their investment. That is the risk CWA has taken, but it is seeking to fulfill that objective by manipulating the federal review process. Economic viability, however, is not only an interest for private owners. Economics also comes into play in a variety of ways relevant to public interest. First, failed plants or failed companies are not in the public interest.[80] Hence, it would seem appropriate for the Corps to review the developer's financial plan for the project sufficiently to ensure itself that the project is viable. This would seem particularly relevant since there is such a large inventory of projects that, while not bankrupt, are sufficiently non-performing that their owners have turned them over to the bank.[81] Given the importance of economic viability as a public interest issue, coupled with the fact that some credible and respected parties[82] have questioned the project's economic viability that is an appropriate consideration for the Corps. The public has a right to know this information and comment on it especially since a public trust resource is at stake.[83]

A second aspect of economic viability deals with the issue of what happens in the event the plant needs to be removed, either as a result of a premature event or at the end of its useful life. Again, the Corps must ensure itself that the developer has made separate arrangements so that when and if the plant needs to be dismantled there are sufficient funds to do this which were separate from the funds related to building and operating the plant. This type of economic due diligence is in fact a part of the

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[80] The US wind industry suffered a significant setback when a major US supplier went bankrupt in the 1990s. The entire US electric industry was affected negatively by Enron's bankruptcy.

[81] *See* "Exelon to Surrender 7 Mass Plants," *Boston Business Journal*, August 8, 2003. This article chronicles the write-off by one of the nation's largest electric energy companies of seven power plants in Massachusetts, resulting in a write-down of approximately $543,000,000.

[82] Giuffre, Douglas, Jonathan Haughton, and David C. Tuerck, *Free But Costly: An Economic Analysis of a Wind Farm in Nantucket Sound,* published by the Beacon Hill Institute at Suffolk University, March 2004. *See also* "Economic Analysis of the Proposed Coastal Wind Power Plant," Jeff Byron, prepared for the Alliance to Protect Nantucket Sound, Spring 2003. The economic effects are controversial. *See, e.g.*, "Economic Impact Analysis of the Cape Wind Off-Shore Renewable Energy Project," prepared on behalf of Cape Wind Associates by Global Insight, Lexington, MA, April 2, 2003.

[83] In some European countries, economic viability is examined as a part of the permitting process and it is done in a confidential review with the developer. Clearly, this type of review is more than an engineering and environmental review and requires the skills of people who understand energy project financing and the market sufficiently well to assess the credibility of a proposed plan.

permitting process of offshore wind in some European countries, just as the practice of setting aside of decommissioning costs are part of the cost for nuclear power in this country today.

This issue raises the need for the Corps to satisfy itself and the public as to the financial strength of the owner of the wind farm. It is noteworthy that *all* offshore wind plants in the EU have been built as 'balance sheet' plants that require significant recourse to owners.[84] According to Garrad Hassan & Partners Ltd., "No offshore wind farm has yet been financed by a non-recourse or limited-recourse construction loan."[85] This type of financing[86] has been a mainstay of most independent power plants constructed in the US, and as such is a milestone metric indicating the higher degree of risk attributed to this type of activity by the financial community.

Economic review is also relevant so that the Corps can understand the magnitude of the value facilitated by the transfer of the rights to use the proposed site by the developer. This is particularly true with this project, where the developer would be given the rights to build and operate an offshore wind plant based upon a first come, first serve basis, with acquisition costs ($0) that were not competitively determined or that may not reflect the value of the rights so transferred.[87] This is not the case with land based alternatives, where there may be significant site acquisition costs, particularly if the site is privately held. Nantucket Sound cannot be given away to this developer for free, and acquisition costs preferably through competitive bidding, must be provided for.

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[84] *Review of Offshore Windfarm Project Features,* Garrad Hassan and Partners Ltd., July 30, 2003, *supra*. "The projects in Table 1 and 2 [i.e., all operational offshore projects] are, in practically all cases, of a demonstration nature and it is arguable that *none* [our emphasis] should be considered as being a truly commercial development."

[85] *Id.*

[86] Non-recourse financing is financing that is recourse only to the assets of the project, which in general consist of contracts and real estate and equipment. When a project utilizing non-recourse financing fails, a lender's recourse is limited by the assets of the project. In particular, they generally cannot pursue amounts not recovered through liquidation from owners. Home mortgages commonly use non-recourse financing. As such, a home owner who fails to pay his mortgage can lose his home and his equity in his home, but the bank is only entitled to what it recovers from the sale of the home.

[87] While no specific determination has been made as to the lease payment associated with use of such public property, there is discussion today that there would be a lease fee in the order of 2% to 2.5% of receipts similar to fees customary for use of public lands through the Bureau of Land Management. (Marks, Department of the Interior, March 2004).

Finally, an economic review would appear to be highly relevant as one attempts to qualify the alternative sites. According to Garrad Hassan & Partners Ltd., "... in wind power, it is impossible to consider technical and economic issues in isolation."[88] If economic review is not considered as a part of the process, it's hard to see the basis by which the Corps tells the developer there are better sites, unless one concludes that the proposed site is the *only* site that can be developed. Since other wind energy sites are being developed in New England[89], this clearly is not the case.

2. Even Under the Biased, Pro-Applicant Screening Criteria, the Corps Failed to Consider Reasonable Alternatives Due to Errors in Analysis.

The preceding section discusses what legitimate screening criteria under the existing purpose and need statement should include. Even if the screening criteria that are designed to fit Horseshoe Shoal are used, however, the Corps *still* has failed to consider reasonable alternatives, and the DEIS is invalid on this basis as well. Reasonable alternatives were precluded because the Corps: 1) incorrectly construed the purported "transmission bottleneck" for projects located in Maine; 2) relied upon an outdated (2002 vs. 2003) report on electrical transmission in New England; and 3) ignored sites outside New England that would still deliver power to "the New England grid." The alternatives that were unlawfully ignored under each of these categories are considered below.

a. The transmission bottleneck is illusory and improperly deleted the Skinner/Kibby(ME), Redington/Black Nubble(ME) and Searsburg(VT) alternatives.

The Corps alludes to many sites in upper New England and New York that meet adequate criteria as alternative sites. Specifically:

- DEIS Section 3.2.2.6.3 Ability to Serve Regional Needs

  > A number of excellent wind sites exist in the mountainous areas of northern New England and New York. Wind classes five and six can be found in the mountains of northern Maine, New

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[88] Garrad Hassan and Partners, Ltd., *Review of Offshore Wind Farm Project Features,* July 30, 2003, *supra.*

[89] *Interconnection Study Status,* 3/4/2004, ISO New England web site, URL = http://www.iso-ne.com/smd/transmission_planning/New_Interconnections/.

Hampshire, Vermont and New York. However, at this time the existing transmission infrastructure is not sufficient to carry electrical power from northern Maine to the other parts of New England. Location of any electrical generation facility in this area would require the construction of new transmission lines and/or upgrades to existing lines (see Appendix 3-D).

- 3.4 Wind Park Alternative Site Analysis

General areas of high potential (such as mountainous regions of western Massachusetts, New Hampshire, Vermont and Maine, as well as offshore areas) were identified. Potential sites within these general areas were identified by the Applicant, and expanded through interagency meetings, the public scoping process of this EIS, the EIR comment process (including the MTC Stakeholder's process) and additional suggestions received by the Corps.

- 3.4.2.1 Upland

A number of upland sites were identified as potential alternative Wind Park sites warranting further evaluation through the public scoping process and meetings/consultations with the cooperating agencies. Eight of the upland sites were determined to be reasonable and were evaluated against the preliminary screening criteria. Table 3.4 summarizes this evaluation. A discussion of each site is provided below:

- 3.4.2.1.4 Skinner/Kibby Townships, Maine

There is not sufficient surplus electric transmission capacity to transport 200-1,500 MW to load centers throughout the ISO-NE transmission system. A north-south electrical transmission system constraint in northeast Massachusetts effectively "blocks" power generated in Maine and New Hampshire from being distributed to points south (see Appendix 3-D for a more detailed discussion of the transmission "bottleneck" issue).

The same statement is used as one of the criteria to exclude Redington Pond/Black Nubble Mountain, ME. (Section 3.4.2.1.5), and a similar statement is used to exclude the Connecticut Department of Transportation Site (Section 3.4.2.1.7):

> There is not sufficient surplus electric transmission capacity to transport 200-1,500 MW to load centers throughout the ISO-NE transmission. The ISO-NE system is restricted in Connecticut with congestion in southwestern Connecticut due to a transmission system that is not adequate to reliably meet the area's power demand.

- Section 3.4.2.1.9 Summary of Findings and Comparisons of Upland Alternatives

> Several of the sites are constrained by the lack of surplus transmission capacity in the existing infrastructure. Based upon current conditions, it is unlikely that the sites in Maine-Skinner/Kibby and Redington/Black Nubble would be feasible due to the need to improve the transmission infrastructure in order to convey the power to the demand centers (see Appendix 3-D). Other power proposals in Maine have been hampered by this transmission constraint. The north-south constraint near the Maine/New Hampshire border will likely take at least 5-6 years to be resolved, once ISO-NE determines a course of action. These sites are not considered to be feasible in the reasonably foreseeable future.

The Corp consistently refers to Appendix #3-D, and the conclusions drawn within, to eliminate viable land based wind projects from further consideration. The Corp and its consultant apply the term "Transmission Bottleneck" simplistically, and as such use the term in a misleading and technically incorrect manner.

As described by the Corps' consultant in Appendix #3-D, "transmission bottleneck" is used in conjunction with the Maine sites as though one cannot use these sites because one cannot get power 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, the generator in Maine 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. By making this serious error, the Corps has eliminated numerous viable alternatives. The only basis for doing so is, once again, the applicant's manipulative desire to maximize profits to the greatest degree possible and preclude any alternatives other than those that conform to its Nantucket Sound model.

A related fact illuminated in the discussion of the benefits of the proposed CWA plant is that, according to the applicant's view, when the wind blows, power from the wind plant will displace power from fossil plants[90]. This would be true in Maine as well as on Cape Cod. Hence, the only difference one will see between a wind provider in Maine and a wind provider in Southeast Massachusetts is that the plant in Maine gets paid less for the power it produces.

By quantifying the difference in energy charges it becomes clear that, despite the higher transmission cost, the Maine projects remain viable. Figure 11 shows average energy prices for peak and off-peak wholesale power delivered at three locations (New England ISO trading "Hub", Maine, and SE Mass) for May of 2003.[91]

FIGURE 11. WHOLESALE POWER PRICES AT THREE LOCATIONS

	HUB	MAINE	SE MASS
Peak average	55.04	46.15	54.69
Off-peak average	38.38	53.36	38.15

Were one to compare two similar wind plants, one in Southeastern Massachusetts and one in Maine in May of 2003, the wind plant in Maine would have received approximately 16%[92] less money at on-peak times (assuming equal

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[90] Memo from Karlynn S. Cory & Doublas C. Smith [LaCapra Associates] to Dennis Duffy, Cape Wind Associates, dated March 4, 2002.

[91] ISO NE web site, www.iso-ne.com, energy prices from designated delivery points for May 2003, averaged over the peak and off-peak hours.

[92] About half this amount is related to congestion and half to line losses related to the greater difference in difference from generation source to consumption source (generally large urban areas like Boston). One can get an approximation of how much of the difference is related to line loss at

distribution of wind resource over all hours), owing to distance and congestion, and would have received 7% less during off-peak times, primarily related to distance (transmission line losses). This amount is simply a factor that affects the profitability of the project to the investors. Such plants are still economically viable and clearly serve as reasonable alternatives under NEPA. Surely the Corps does not believe that its duty in preparing this EIS is to promote maximum profitability for the applicant. There is no other reason to preclude these alternatives.

There are two additional factors relevant to this discussion that reduce the importance of this price difference. First, land-based wind farms cost significantly less to install than offshore farms ($1,000/KW versus $1,700/MW to $2,000/MW) so fewer dollars are needed on an absolute basis (not to mention that the wind resource at the two large wind sites in Maine is very good, as good as, and in some cases better than, the wind resource at the Horseshoe Shoal site) to realize the same return on investment. Second, a significant percentage of the benefit to investors in the early years (when it is most important) is related to tax incentives (accelerated depreciation, green credits and production tax credit). Because of this, it is possible that the return on investment from a wind plant in Maine is actually greater than for a wind plant in Nantucket Sound.

b. Reliance on the outdated transmission report improperly deleted City of Greenfield, Hoosac Mountain and CT DOT site alternatives.

The Corps relies heavily on its arguments in Appendix 3-D, in an effort to justify exclusion of upland based alternative sites. The document referenced in that Appendix on numerous occasions is the NEPOOL Regional Transmission Expansion Plan ("RTEP02") that was approved by the ISO-NE Board of Directors on November 2, 2002, and by the participants at the annual meeting in June 2003. First, nowhere in that document is there a statement by the ISO that this "bottleneck" in the transmission is such that it will prevent the development of a power plant in Maine. In fact, "the bottleneck" is not even one of the more critical areas of concern to the ISO, since the ISO has directed most of its attention to transmission issues in Connecticut and in northern Vermont.

Second, RTEP02 is an outdated report. Since the issuance of RTEP02, ISO-NE staff and participants have continued to address transmission issues throughout New England. Each quarter ISO-NE publishes an updated transmission project

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peak times by looking at the differential at off-peak times, since congestion is rare in the off-peak hours.

listing. Since RTEP02 was issued, two new transmission project listings were issued by ISO-NE, one on June 27, 2003, and a second on September 29, 2003. Neither of these were used as a reference by the Corps. *See* <http://www.iso-ne.com/smd/transmission_planning/Regional_Transmission_Expansion_Plan/RTEP_2003/>. A new Regional Transmission Expansion Plan ("RTEP03") was approved and published by the ISO-NE Board of Directors on January 28, 2004. This document was not referenced by the Corps either.

Presented below are excerpts taken from the Executive Summary of RTEP03. As can be seen, a number of changes have occurred since RTEP02. A number of these changes specifically address the "bottleneck" issue. It is worth noting that even in the most recent RTEP, the ISO still has not categorized the "bottleneck" issue as one that would preclude the development of a commercial scale wind project in Maine. The excerpts are as follows:

Northern New England System Assessment and Proposed Solutions

Maine

Transmission planning studies are being conducted to address a number of problems in Maine. The details are provided in the RTEP03 Technical Report Section 6.1, and are grouped by the following Sections: Maine Independence Station Section 396 SPS, MEPCO 345 kV Transmission Corridor Special Protection Systems Performance, BHE Downeast, BHE Ellsworth Area, BHE Northern, CMP-Autotransformer Extended Outage Concern, Western Maine Stability Performance and Maine Voltage Performance and Reactive Requirements. These studies all address important reliability issues.

<u>Recommendation</u>: ISO New England recommends installation of a 115 kV, 50 MVAR capacitor bank at the Crowleys substation, and 38 MVAR of capacitors at various lower voltage locations, to address power factor correction and voltage support issues in the Central Maine Power service territory. ISO New England also recommends that the transmission planning studies now underway be completed.

Maine/New Hampshire Transfers

The Maine-New Hampshire transmission corridor has become very complicated to operate due to complex thermal, voltage, and stability constraints.

Conditionally dependent limits[93] *result in a reliability risk to load during peak-load levels. For example, the loss of a critical generating unit may also result in a decreased transfer limit. This causes potential generating reserve problems for all of New England. System upgrades that mitigate the reliability risk and impact of low Maine to New Hampshire transfer limits due to conditional dependencies should be evaluated. While a number of the RTEP02 recommended projects have been completed, others are still under consideration.*

Further studies have shown that additional improvements can be made in this area. These improvements are expected to cost approximately $39 million, and would decrease the risk of reducing the transfer limit by 450 MW. The upgrades would provide improved voltage control in Maine and better reliability of service to load in Southeast New Hampshire. The RTEP03 Technical Report Section 6.2 provides detailed information on the studies performed.

Recommendation: ISO New England recommends that the following reliability upgrades be approved pending review and finalization of studies: install a 500 MVAR Static VAR Compensator at Deerfield; upgrade Section 391 Loop; install Buxton Breakers; and install second auto-transformer at Deerfield.

New Hampshire

Several ongoing transmission planning studies are being conducted to address a number of problems in New Hampshire. A number of RTEP02 approved projects are also in various stages of development. The details are provided in the RTEP03 Technical Report Section 6.3, and are outlined by the following areas: the Seacoast, Manchester-Nashua, Western New Hampshire, the Lakes Region, and Northern New Hampshire. The RTEP03 Technical Report Section 6.3 provides detailed information on the studies performed.

Recommendation: To address these problems, ISO New England recommends:

- *Completing the RTEP02-approved installation of capacitor banks for voltage support at Ocean Road, Three Rivers, and Madbury;*

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93 Conditionally dependent limits are changes in the physical transfer limits (or amount of power that can be transferred) as a result of varying load levels or generators and transmission equipment that may be out of service at a given time.

- *Completing the RTEP02-approved projects at the Scobie Substation;*

- *Completing specific study work associated with the following improvement projects:*

    - *Closing in the Y138 line;*
    - *Upgrading 115 kV lines between Scobie & Schiller;*
    - *Installing a new Huse Road – Reeds Ferry 115 kV line; and*
    - *Installing an alternate 115 kV feed to Rochester.*

Thus, like so many other areas of the DEIS where the Corps has relied upon the applicant and its consultant, outdated and result-oriented information is used to support a predetermined result. When more recent reports are used, additional alternative sites must be considered.

c. The Corps failed to consider Long Island and eastern New York sites located outside New England that would provide power to the New England grid.

The DEIS is flawed even under its own definition of purpose and need. While it calls for the review of alternatives that would provide power to the New England grid, in fact it considered only project sites physically located *in* New England, rather than those feeding power *into* New England. By doing so, the Corps ignored feasible sites outside of New England that would afford access to RPS credits within New England.

One obvious example is proposed wind project sites off the southern coast of Long Island. A number of developers have identified sites meeting the necessary criteria for development of off-shore wind projects. Once developed, these projects would connect into the New York electric grid at a number of proposed locations on Long Island. Simplistically, power could 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.

As mentioned previously, the RPS 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. Toward this end, Connecticut is allowing purchase of generated energy from Regional ISOs, New York, Deleware and the PJM. This would enable a developer of power from an off-

shore wind facility on the southern coast of Long Island to obtain RPS credits from Connecticut

As this discussion demonstrates, even under the Corps' purpose and need and screening criteria, the DEIS comes up far short on the reasonable alternatives that should have been considered. It is therefore necessary to go back to the EIS drawing board, even under the scenario most favorably construed for the Corps and CWA.

3. The Reasonable Range of Wind Energy Alternatives Under a Valid Purpose and Need Statement.

The NEPA review of this proposed action does not become meaningful until a proper purpose and need statement is developed. Once this is done, the review of the proposed action assumes its proper perspective, and a full range of NEPA alternatives that advances the clean energy goals of the project on a properly-defined regional basis becomes possible.

As discussed in the previous section, the proper purpose and need for this project is as follows:

> To provide a feasible utility-scale clean energy project (*i.e.*, greater than 20 MW) within the Northeast (Canada/United States) and Mid-Atlantic region, for which the public interest advantages outweigh the costs to the public interest.

When this purpose and need statements is applied, a reasonable set of alternatives is identified. These alternatives are presented under the following categories: 1) offshore wind projects; 2) onshore wind projects; 3) clean energy projects that provide substantially similar or better benefits for the public. These alternatives are discussed in the following section. In setting forth these alternatives, it is not the responsibility of APNS to provide a detailed analysis; that is the job of the Corps. Instead, APNS need only demonstrate that these alternatives are reasonable. *See e.g., City of Angoon v. Hodel*, 803 F.2d 1016, 1022 (9th Cir.1986); *Olmsted Citizens for a Better Community v. United States*, 793 F.2d 201, 209 (8th Cir.1986); *River Rd. Alliance, Inc. v. Corps of Eng'rs of United States Army*, 764 F.2d 445, 452-53 (7th Cir.1985) (showing that National Marine had overlooked some plausible alternative site-- and they were not.") APNS meets this obligation in the discussion which follows, and the burden shifts to the Corps to consider these alternatives or explain why the agency has determined that each recommended option is not reasonable.

a. Coastal offshore wind energy sites.

Based on the foregoing considerations, it is clear that there are additional alternative sites that should have been considered by the Corps. Offshore sites for this purpose are presented in Figure 11. These sites are in addition to the sites previously identified and rejected in the DEIS, a number of which should be reevaluated given the new purpose and need statement, and the expanded site selection criteria.

FIGURE 12: CAPACITY AND SIZE OF PLANNED OFF-SHORE WIND PROJECTS

PROJECT	CAPACITY	AREA	OWNER	PURCHASER	STATUS	LOCATION
Massachusetts						
Davis Bank	750 MW	TBD	Winergy	Merchant	Planned	Ocean
New York						
South Coast Long Island	300 MW	TBD	Bald Eagle Power	None - Hydrogen Production	Planned	Ocean
Jones Beach	241 MW	16 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Plum Island	12 MW	207 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Smith Point	205 MW	27 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Fire Island	227 MW	13 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Hampton	295 MW	17 Sq. Mi.	Winergy	Merchant	Planned	Ocean
New Jersey						
Great Egg	439 MW	31 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Asbury Park	353 MW	11 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Five Fathom Bank 1	1206 MW	88 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Five Fathom Bank 2	686 MW	44 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Five Fathom Bank 3	965 MW	60 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Maryland						
Ocean City	> 20 MW	TBD	Windpower, Inc.	Merchant	Planned	Ocean
Isle of Wight	1267 MW	71 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Delaware						
Indian River	1102 MW	67 Sq. Mi.	Winergy	Merchant	Planned	Ocean
Virginia						
Smth Island	540 MW	25 Sq. Mi.	Winergy	Merchant	Planned	Ocean

Presented below are some descriptions of the offshore wind energy sites:

Long Island Power Authority: In April of 2002, LIPA conducted a prelimary assessment of the development potential for offshore wind off the coast of Long Island. The results of its initial study indicated that approximately 5,200MW of power could be generated using 1,733 wind turbines, yielding the equivalent of 77% of the energy needs of Long Island. From that study, LIPA identified one area for

initial development. LIPA issued an RFP for developers to build, own and operate a wind farm off the South Coast of Long Island. The proposal calls for 25 to 50 turbines totaling 100MW to 140MW of capacity. In return LIPA will enter into a 15 to 20-year Power Purchase Agreement with the successful developer. The towers will be a minimum of 2.5 miles offshore in t60 feet of water in an area of excellent wind conditions. The specific site runs from the West End of Jones Beach to the West End of Robert Moses State Park.

Davis Bank, Massachusetts: The proposed Davis Bank wind plant consists of 208 3.5MW wind turbines totaling approximately 748.8MW. This site is located in federal waters, 15 mile off the coast of Massachusetts. The site covers 47 square miles with an average water depth of 5 fathoms.

This site has been selected because of it wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 5, which are economical for wind development. Transmission lines of 115kV are available within close proximity onshore. The average water depth of 5 fathoms allows for standard offshore foundations making the site economical. Most importantly, there is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment. Source: Winergy Web Site

Jones Beach, New York: The proposed Jones Beach wind plant consists of 67 3.5MW wind turbines totaling approximately 241.2MW. This site is located in state waters, 1 mile off the coast of New York. The site covers 16 square miles with an average water depth of 8 fathoms.

This site has been selected because of it wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class High 4, which are economical for wind development. Transmission lines of 115kV are available within close proximity onshore. The average water depth of 8 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Plum Island, New York: The proposed Plum Island wind plant consists of 6 Vestas 2MW Offshore wind turbines totaling 12MW. This site is located in state waters, less than 1 mile off the coast of New York. The site covers 207 acres with an average water depth of 5 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 4, which are economical for wind development. Transmission lines of nearby substation are available within close proximity onshore. The average water depth of 5 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Smith Point, New York: The proposed Smith Point wind plant consists of 57 3.5MW wind turbines totaling approximately 205.2MW. This site is located in state waters, ~1 mile off the coast of New York. The site covers 27 square miles with an average water depth of 10 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class High 4, which are economical for wind development. Transmission lines of 115kV are available within close proximity onshore. The average water depth of 10 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Fire Island, New York: The proposed Fire Island wind plant consists of 63 GE 3.6MW wind turbines totaling 226.8MW. This site is located in state waters, ~1 mile off the coast of New York. The site covers 13 square miles with an average water depth of 8 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 4 to 5, which are economical for wind development. Transmission lines of 115kV are available within close proximity onshore. The average water depth of 8 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Hampton, New York: The proposed Hampton wind plant consists of 82 3.5MW wind turbines totaling approximately 295.2MW. This site is located in state

waters, ~1 mile off the coast of New York. The site covers 17 square miles with an average water depth of 9 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 4 to 5, which are economical for wind development. Transmission lines of 115kV are available within close proximity onshore. The average water depth of 9 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Great Egg, New Jersey: The proposed Great Egg wind plant consists of 122 3.5MW wind turbines totaling approximately 439.2MW. This site is located in federal waters, 6.4 miles off the coast of New Jersey. The site covers 31 square miles with an average water depth of 9 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 4 to 5, which are economical for wind development. Transmission lines of 115 or 230kV are available within close proximity onshore. The average water depth of 9 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Asbury Park, New Jersey: The proposed Asbury Park wind plant consists of 98 3.5MW wind turbines totaling approximately 352.8MW. This site is located in federal waters, 3.5 miles off the coast of New Jersey. The site covers 11 square miles with an average water depth of 8 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 4 to 5, which are economical for wind development. Transmission lines of 230kV are available within close proximity onshore. The average water depth of 8 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Five Fathom Bank 1, New Jersey: The proposed Five Fathom Bank 1 wind plant consists of 335 GE 3.6MW wind turbines totaling 1206MW. This site is located in federal waters, 3.5 miles off the coast of New Jersey. The site covers 88 square miles with an average water depth of less than 10 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 4 to 5, which are economical for wind development. Transmission lines of 115 or 230kV are available within close proximity onshore. The average water depth of less than 10 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Five Fathom Bank 2, New Jersey: The proposed Five Fathom Bank 2 wind plant consists of 196 3.5MW wind turbines totaling 686 MW. This site is located in federal waters, 6 miles off the coast of New Jersey. The site covers 44 square miles with an average water depth of 8 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 4 to 5, which are economical for wind development. Transmission lines of 115 or 230kV are available within close proximity onshore. The average water depth of 8 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Five Fathom Bank 3, New Jersey: The proposed Five Fathom Bank 3 wind plant consists of 268 3.5MW wind turbines totaling approximately 964.8MW. This site is located in federal waters, 6 miles off the coast of New Jersey. The site covers 60 square miles with an average water depth of 8 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 4 to 5, which are economical for wind development. Transmission lines of 115 or 230kV are available within close proximity onshore. The average water depth of 8 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of

these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Isle Of Wight, Maryland: The proposed Isle of Wight wind plant consists of 352 3.5MW wind turbines totaling approximately 1267.2MW. This site is located in federal waters, 3.5 miles off the coast of Maryland. The site covers 71 square miles with an average water depth of less than 10 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 4 to 5, which are economical for wind development. Transmission lines of 115kV are available within close proximity onshore. The average water depth of less than 10 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Indian River, Delaware: The proposed Indian River wind plant consists of 306 3.5MW wind turbines totaling approximately 1101.6MW. This site is located in federal waters, 3.5 miles off the coast of Delaware. The site covers 67 square miles with an average water depth of less than 10 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 5, which are economical for wind development. Transmission lines of 230kV are available within close proximity onshore. The average water depth of less than 10 fathoms allows for standard offshore foundations making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

Smith Island, Virginia: The proposed Smith Island wind plant consists of 150 3.6MW wind turbines totaling approximately 540MW. This site is located in federal waters, 3 miles off the coast of Virginia. The site covers 25.53 square miles with an average water depth of less than 10 fathoms.

This site has been selected because of its wind speeds, proximity to major transmission lines, water depth and the lack of marine mammal activity. This site has wind speeds of class 4 to 5, which are economical for wind development. Transmission lines of 115kV are available within close proximity onshore. The average water depth of less than 10 fathoms allows for standard offshore foundations

making the site economical. There is no currently available documented record of marine mammal activity within the site boundaries. Because this site meets all of these conditions, it is felt this site will prove economically viable and beneficial to the environment.

b. Onshore wind project sites.

In addition to these offshore sites, it is clear that there are additional onshore alternative sites that should have been considered by the Corps. These sites are in addition to the sites previously identified and rejected in the DEIS, a number of which should be reevaluated given the new purpose and needs statement, and the expanded site selection criteria.

Project Name: Hoosac

Size: 30 MW
Location: Florida and Monroe, Massachusetts
Power Purchaser: Merchant

This project is located in a hilly, semi-mountainous area of Western Massachusetts. The proposal is to construct the wind turbines on three miles of ridgelines where very favorable wind conditions exist. The project will be built on private and public leased lands owned by the towns of Florida and Monroe. The project also includes the construction of approximately eight miles of 345KV transmission to interconnect with National Grid Company.

Project Name: Mars Hill

Size: 45 MW
Location: Mars Hill, Maine
Power Purchaser: N/A

The project consisting of fifteen 3MW turbines on monopiles will be located on ridgelines in and about the town of Mars Hill. Mars Hill is in far northern Maine near the New Brunswick border. The town has already approved building permits and the town and the developer are co-applicants for relevant permits to the Maine Department of Environmental Protection. There is a local area need for power; therefore, the project will interconnect with the local grid.

Project Name: Redington Mountain

Size: 52 MW
Location: Carrabasset Valley, Maine
Power Purchaser: Various Ski Resorts

This project is located on Redington and Black Nubble Mountains in the Redington Pond Range in Maine and is 4 miles southwest of the Sugarloaf USA ski area. Thirty tubular towers will support 1.7MW turbines spread out over 220 acres of managed timberland. All interconnections will be local to provide power to the ski areas and the local grid.

Project Name: Searsburg

Size: 6 MW expanding to 41MW
Location: Searsburg, Vermont
Power Purchaser: Green Mountain Power

The original eleven wind turbines on tubular towers capable of producing 6MW went into operation in 1997. The original project by Endless Energy and GMP was partially funded by the Department of Energy and the Electric Power Research Institute to help develop information on cold weather operation of wind turbines. Vermont uses more electrical energy in the winter and the wind blows more consistently in the winter in this area so the project was ideal for such studies. The turbines max output is achieved at 29 mph wind speed.

Project Name: East Haven

Size: 6 MW expanding to 78 MW
Location: East Haven, Vermont
Power Purchaser: Lyndonville Electric Department

The initial development in this wind farm is a 4 by 1.5MW array. The site is an abandoned USAF radar facility on top of East Mountain. Plans are also being formulated to expand via an additional 46 turbines to a total of 78MW.

Project Name: Glebe Mountain

Size: 50 MW
Location: Londonderry, Vermont
Power Purchaser: Central Vermont Public Service

Catamount Energy is proposing to construct a 27-tower 50MW Vestas turbine line on the top ridgeline of Glebe Mountain. The land is leased private land that has been heavily logged in the past. Interconnection will be by way of a 34.5KV sub transmission line to a CVPS substation in South Londonderry. The project developers have already committed to establishing a decommissioning fund.

Project Name: Hardscrabble Mountain

Size: 30MW
Location: Sheffield, Vermont
Power Purchaser: N/A

This is an early stage proposal for 10 wind turbines at 5MW each. The proposal calls for the utilization of a ridgeline on Hardscrabble Mountain in an area that has seen extensive logging. Wind studies are now underway. The initial assessment of the wind resource is that it is moderate.

Project Name: Flat Rock

Size: 300 MW
Location: Tug Hill, New York (Lewis County)
Power Purchaser: Niagara Mohawk Power Corporation

This project consists of 181-turbine array at 1.65MW each. The site is 12,000 acres of pasture and feed stock farmland at elevations ranging from 1600 to 1800 feet. The land to be used for the project is leased private land. The wind resource is characterized as excellent. The developers will construct 10.3 miles of 230KV single circuit overhead transmission to interconnect with Niagara Mohawk Power Corporation.

Project Name: Prattsburgh Windfarm

Size: 75 MW
Location: Prattsburgh, New York
Power Purchaser: New York State Electric and Gas (NYSEG)

Twenty-five 3MW monopole structures will make up this 75MW project. The site is spread over 1800 acres of ridgelines and farmland. All the land is leased private land. Interconnection to NYSEG will be at 34.5KV by way of 28 miles of underground collection and tie cables terminating at a NYSEG substation in Italy, NY.

4. Projects That Provide Substantially Similar or Better Benefits to the Public.

In addition to these wind energy sites, there are a variety of "conventional" prototypical energy projects that might provide benefits similar or better as compared to the CWA project. This category includes a variety of alternative technologies, including microturbines, reciprocating engines, fuel cells, photovoltaics, several types of biomass plants, upgrades to or replacement of existing fossil fueled generating plants, and demand side management programs.

There are three different prototypical project types that could be built today that should be considered by the Corps. These are:

Distributed Generation

- A group of distributed plants consisting of 398 small (615 kW) combined heating and power systems that would be sited at different locations in New England; (DG#1)
- A group of distributed plants consisting of 29 (7 MW) reciprocating engines to be sited at different locations in New England. (DG#2)

Biomass

- A plant consisting of two mid-size (100MW) direct fired biomass generation systems (BIO#1);
- A plant consisting of two mid-size (150MW) biomass gasification electric generation systems (BIO#2);
- The retrofitting of two large coal fired generating plants with the capability of co-firing a fuel blend of 15% biomass (105 MW of biomass) and 85% coal (BIO#3);

Replacement of existing plants with state-of-the-art gas fired, combined cycle, generating units

- Replacement of the Canal Electric Plant (Canal)
- Replacement of the Brayton Point Plant (Brayton)

Demand Side Management (DSM)

- A large distributed DSM plant based on efficiency technologies (DSM).

Each of these project types will be considered separately. In doing so, it is important to keep in mind the analysis set forth at the outset of these comments regarding the purported benefits of this project. As APNS has shown, an accurate analysis conducted in the context of the existing air quality regulatory regime demonstrates that this project will have minimal, if not non-existent, benefits. In this sense, *all* of the prototypical projects discussed in this section would result in far greater public interest benefits. This is the compelling, and legally correct, analysis that must be made.

To demonstrate further, however, the inefficiencies and public costs of the CWA energy plant, the discussion which follows is based upon the applicant's claim of public health benefits, even though clearly wrong. As this discussion shows, even using this approach which gives the benefit of the doubt to the applicant, the CWA project cannot be justified compared to these alternative projects.

Prototypical projects were selected such that each had the capability of producing at least the same or greater number of MWH to the system, the same or greater differential emissions to the system (NOx, SOx, and CO_2) over the project life (20 years), and each were expected to cost no more than 15% more than the CWA project.

The Beacon Hill Institute (BHI) had previously performed a comprehensive study of the costs and benefits of the CWA project. This discussion is based upon the BHI analysis, even though it does not account for the regulatory context related to air quality and greenhouse gas emissions. It found that, including subsidies and overestimating the alleged benefits of the project, that the proposed wind energy plant was expected to cost approximately $1.2B in present value terms. It also found that the environmental and fossil fuel displacement benefits were approximately $613 million over the next 20 years. That evaluation includes the assumption that clean air benefits would ensue, which as discussed earlier in these comments has not been established. Thus, the CWA project is a net cost to the public.[94] In any case, the following evaluation uses these costs, excluding changes to land valuations and benefits determined by BHI.

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[94] There is nothing strange in the fact of additional new capacity increasing the average costs of energy. This is a natural consequence of the fact that historically the US power system has sought to deploy least cost, adequately reliable resource when new capacity needed to be built.

Upon performing analysis on each of the prototypical plants over a 20-year life, it is clear that many of the projects are better alternatives for ratepayers and tax payers than the CWA project as shown in Figure 14.

FIGURE 14. COMPARISON OF PROTOTYPICAL PROJECTS TO THE CWA PROJECT

COMPARISON OF PROJECTS USING FOUR CRITERIA							
Total Benefits ($MM)		Environmental Benefits ($MM)		Cost ($/MWH)		$ of Emission Reductions/ $ of Cost	
DSM	2080	CANAL	1113	DSM	(73.67)	CANAL	0.79
CANAL	1240	DSM	761	CANAL	(15.27)	BRAYTON	0.39
BRAYTON	1039	CWP	612	BIO #3	1.35	BIO #2	0.34
CWP	612	BRAYTON	516	BRAYTON	4.24	BIO #3	0.32
BIO #2	273	BIO #2	272	BIO #2	6.00	BIO #1	0.22
BIO #3	265	BIO #1	202	BIO #1	16.04	DG #2	0.10
BIO #1	215	BIO #3	92	DG #2	17.15	DSM	0.09
DG #1	80	DG #1	80	DG #1	38.51	DG #1	0.08
DG #2	22	DG #2	22	CWP	48.43	CWP	0.08

In terms of total benefits expected to the system, the proposed project ranks fourth (even using inflated assumptions of benefits). In terms of expected value of emissions reductions and fossil fuel reduction achieved, the proposed project ranks third (again using inflated assumptions). The proposed project ranks last in terms of cost in being the most expensive to the public. Finally the proposed project ranks last in the efficiency with which it produces cleaner air (value of emissions reductions per project dollar invested).

These prototypical projects do not represent unique situations. Rather, each is a fraction of the totality of potential projects of that type in the region. Hence, these are merely illustrative projects to make the point that if public assets are to be committed to projects to provide power while improving environmental and fuel displacement benefits, it is prudent to look at other options that provide benefits similar to the proposed project. This is particularly true given that public inducements are a limited resource.

FIGURE 15. COST-BENEFIT SUMMARY FOR PROTOTYPICAL PROJECTS

	PROJECT DESIGNATOR								
	CWP	DG #1	DG#2	CANAL	BRAYTON	DSM	BIO #1	BIO #2	BIO #3
Costs									
Project	882.4	479.8	218.2	595.9	922.8	755.3	321.0	393.6	32.8
Other	25.6	-	-	-	-	-	-	-	-
Subsidies	280.8	-	-	-	-	251.8	-	-	-
Differential maintenance	-	59.6	12.0	-	-	-	96.7	-	-
Differential fuel	-	-	-	-	392.8	-	-	-	251.6
Total	1188.8	539.4	230.2	595.9	1315.6	1007.0	417.7	393.6	284.4
Benefits									
Non-environmental	-	-	-	126.5	522.5	1319.2	-	1.2	173.4
Differential fuel costs	522.0	35.1	-	643.2	-	665.1	111.5	139.4	-
Emissions reduction	89.6	45.3	22.5	470.1	516.5	95.7	90.9	132.2	91.9
Total	611.6	80.4	22.5	1239.8	1038.9	2080.0	202.4	272.8	265.3
Net cost (Cost-Benefits)	**577.2**	**459.0**	**207.8**	**(643.9)**	**276.7**	**(1073.0)**	**215.3**	**120.8**	**19.1**
Benefit to cost ratio	**0.51**	**0.15**	**0.10**	**2.08**	**0.79**	**2.07**	**0.48**	**0.69**	**0.93**
Cost of electricity ($/MWH)	**48.43**	**38.51**	**17.15**	**(15.27)**	**4.24**	**(73.67)**	**16.04**	**6.00**	**1.35**

All Costs except $/MWH are present value with 10% discount over 20 years. $MWH computed as levelized 20 year cost

The inefficiency and excess cost of this proposal to the public interest is clear when the proposed project is compared to specific projects that offer similar benefits, in the context of the New England power grid, and which have lower or similar costs. This section examines how the proposed project compares to other prototypical project alternatives in terms of total benefits profited, total environmental benefits provided, implied cost of power (incremental $/MWH to the system), and efficiency of providing environmental benefits ($ of environmental benefits per $ of project investment).

A relevant factor is the power context of New England. New England today enjoys one of its highest reserve margins in the history. Briefly, what this means is that except for specific constrained areas within ISO NE (e.g., the Boston

metropolitan area, southwest Connecticut)[95], New England does not need any new power plants of any kind today to meet the demand for power.[96]

Hence, the desire for wind powered energy is not based on a need for power, but on a need to create the same types of benefits that wind power offers. Wind power provides certain environmental benefits as compared to power from fossil fuels. BHI has enumerated these benefits and costs.[97] With regard to the environmental benefits, the wind power project does not produce SOx and NOx, both of which contribute significantly to acid rain. It also reduces CO_2 entering the atmosphere because no fossil fuel is burned to produce energy. The specific benefits it provides are shown in Figure 16. All benefits are quantified in accordance with the method cited by BHI in order to compare specific projects.

FIGURE 16. BENEFITS ASSOCIATED WITH THE PROPOSED PROJECT. (PRESENT VALUE)[98]

BENEFITS	$MM
Fuel saved	522
Capital costs saved	104
Emissions reduced	108
Greater energy independence	11
Total	**744**

There are several costs associated with this project, both those that are direct and can be estimated fairly easily and those that are indirect and require more complex analysis. Figure 17 shows the costs associated with the project.

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[95] *See Electricity Reliability in Northeast Massachusetts/Boston: Planning for 2004 and Beyond,* presentation by ISO New England to Massachusetts General Court, July 14, 2004.

[96] New England has an electric load of approximately 25,000MW and a delivery capacity of approximately 32,000MW, providing in excess of 25% of reserve margin. (*NEPOOL 2004-2013 Forecast Report of Capacity, Loads, Energy and Transmission (2004 CELT Report*), March 2004, (www.iso-ne.com/Historical_Data/CELT_Report/2004_Draft_CELT_Report/2004). When regulated utilities owned all generation, adequate reserve margin was thought to be 17%-18%.

[97] *Free But Costly: An Economic Analysis of a Wind Farm in Nantucket Sound,* by Guiffre, Haughton, and Tuerck, Beacon Hill Institute at Suffolk University, Boston, MA, March 2004.

[98] *Id.*

FIGURE 17. COSTS ASSOCIATED WITH THE PROPOSED CAPE WIND PROJECT. (PRESENT VALUE)[99]

COSTS	$MM
Project itself	888
Grid integration	26
Environmental effects	39
Total	**952**

In addition, according to BHI, public subsidies will be made available in the form of a federal production tax credit with a present value estimated at $98 million, state green credits estimated at a value of $125 million and accelerated depreciation (i.e., deferred taxes) that has a present value effect of approximately $57.8 million.

5. Nonwind Project Alternatives.

a. Evaluation methodology.

Two classes of projects are reviewed for this purpose. First, consideration is given to projects on the supply side that provide at least that amount of energy at approximately the same cost as the proposed project, or which may be smaller but which could be scaled to provide the same amount of energy. Second, demand side projects are examined that reduce the need for that amount of power from the grid.

Projects considered fall into the following general categories:

- Distributed Generation projects
- Biomass projects
- Upgrading of existing power facilities with more efficient equipment
- Demand side management projects

Benefits and costs were evaluated using parameters consistent with that performed by BHI and consistent with their methodology.[100] Specifically, in valuing the effect of reduction in NOx, SOx, and CO_2 this analysis relies upon the same

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[99] *Id.*

[100] *Id.*

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values used by the BHI in its evaluation, and as shown in the table below. These costs are the mid-points on Monte Carlo distributions for a 20 year project life, and do not reflect current valuation of these resources on a traded exchange today.

FIGURE 18. VALUE OF POWER PLANT EMISSIONS REDUCTIONS (PRESENT VALUE)[76]

GAS	COST/TON (IN DOLLARS)
CO_2	6.83
NO_X	1562.20
SO_X	1582.32

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Benefits and costs were viewed on a life cycle basis, where the life cycle assumed for all technologies was 20 years. Since some technologies inherently do not last 20 years, where these are used, differential maintenance costs will be increased for complete redeployment of the technology over the life of the assessment period. A discount rate of 10% was used to bring future costs to present value.

All analysis is performed from the perspective of the public rather than that of a project developer. Accordingly, the cost of power from any particular option is on *an incremental basis* to the current system, as opposed to the cost of the project to a specific user. Finally, and related, a necessary consequence of a public perspective approach is the absence of bias as to who pays a particular cost and who enjoys a particular benefit, as would be the case for a private developer. It is quite possible for a given project to be good for the public, but not good enough to any one developer as to induce anyone to come forward to implement the project. Public subsidies are one means to induce developers to come forward in such cases.

The elements of cost or benefit to the public are as follows:

- Capital costs
- Differential fuel costs
- Differential maintenance costs
- Differential environmental costs
- Other indirect costs
- Subsidies

When the value of a particular element is positive, the public must provide capital for this element, and it is a cost of the project. When the value of a particular

element is negative, the public needs to spend less money for the system as a whole, and is regarded as a benefit.

Some elements are only positive. For example, capital costs are only positive. Other elements, such as differential fuel costs, may be positive or negative. When they are positive, they are costs; when they are negative, they are benefits.

Costs and benefits have been analyzed for each project to determine which of these produce similar benefits as for proposed project and at the same or lesser cost. Prime Directions further computed the added cost to the system in terms of $/MWH generated and in efficiency of generating environmental and fuel displacement benefits. In general, the public interest is best served by adding projects to the system in order of cost, from the least cost to the greatest, particularly when additional power is not needed. It is also in the best public interest that any project with a negative cost would be encouraged regardless of whether additional power was needed, since these are expected to create public benefits. Finally, if environmental and fuel displacement benefits are of prime concern, projects should be encouraged in order of their efficiency in producing these kind of benefits, specifically how many dollars of benefits are created for each dollar invested for each project.

First, some projects analyzed may not be able to provide electricity at a competitive price. Such projects, such as an offshore wind plant for example, would never be built because no investor would come forward with the necessary capital, absent other inducements. Subsidies are monies the public makes available through various mechanisms (e.g., rebates, tax credits, accelerated depreciation, oil depletion allowance) in order to induce an investor to make a desired investment.

Second, this analysis does not consider local indirect benefits (e.g., stimulation of local economy) or indirect costs (e.g., reduction in property values). Most utility scale power projects have significant local indirect benefits and costs, although in our experience it is mostly in the cost column. While it is difficult to quantify these absent detailed studies of the specific project, some generalizations are possible. Projects that take up significant land area (e.g., wind plants) often have significant abutment local costs unless they are far from neighbors.[101] Projects that are isolated and remote (e.g., biomass plants which are typically in rural areas) often have net positive effects for a variety of reasons (e.g., significant increase to local tax base, local employment opportunities). Others like upgrading old plants have mixed

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[101] Although as some wind developers have discovered, opposition is sometimes found even in the most remote areas, when environmental groups have sought to preserve the pristine nature of these remote areas for future generations.

reviews– some neighbors would prefer to have the plant shut down; others appreciate the benefits of a cleaner operation. DSM is perhaps unique as an energy resource in that it rarely generates local opposition.[102] In most cases, DSM is sufficiently unobtrusive that users are unaware of its presence.

If indirect costs were included, these are expected to be greatest in wind plants, much less in plant upgrades (because they are just that – upgrades; also upgrades often result in cleaner plants), and zero to negative in DSM projects and biomass plants because the former are unobtrusive and the latter are often concentrated and remote. Again, because these are project specific and because the comparative projects are prototypical in nature, such benefits and costs are not included in this comparative analysis.

b. Distributed generation.

Distributed generation differs from central plant generation in that small electric generating plants are placed on site to replace power provided by large central generating plants. The term "distributed" refers to the fact that under this strategy, the generation resource is being distributed to the point of use by a consumer.

The rational for distributed generation is simple. It's often less expensive than central plant generation. First, it incurs little distribution cost, since electricity is used on site and doesn't need to be 'distributed' to end users. Second, it is often more efficient. Most often it involves more recent technologies that are just inherently more efficient than older central plant generators. Third, often the waste heat from the generating unit can be used locally for heating and/or air conditioning. A simple comparison of the energy use efficiency between central plants and well placed cogeneration units is telling. The latter typically have an energy use efficiency for delivered electricity of 33%, while the latter have a composite energy use efficiency of 55% to 60%.

Distributed generation historically has not been popular with regulated utilities because it provides the host with an opportunity to avoid what the utility regards as

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102 Interestingly historic opposition to DSM has been a concern that it was a 'give-away' social program. Also, because large industrial and commercial companies receive large and visible DSM grants from time to time, it has been opposed as a way that utilities favor large customers over small customers. In fact, DSM has a very real value to an electric (or gas) system, that benefits all users.

their proper share of electric distribution charges.[103] Indeed, most stand-by rates (rates for customers who have on-site generation) are designed specifically to discourage development of this type of resource as a provider of primary power to a site (as opposed to back-up power which is encouraged).[104] Notwithstanding, because of the significant benefits afforded to site hosts by this technology, it has and continues to make significant in-roads.

Two different prototypical projects are considered that provide the same MWH per year as the proposed wind project. The first example is based on a 7MW reciprocating engine fully controlled for NOx and CO and operating at an 80% capacity factor at an industrial facility would have an all in capital cost of $1075/kW x 7,000kW=$7.53MM. The annual maintenance on the installation at mid range would be $0.008/kWh x 7,000kW x 8,760hrs/yr x 0.80cf=$392,448.

Additionally this plant would generate annual credits in the NOx and Sox marketplace as demonstrated in Figure 19.

FIGURE 19. NO_X AND SO_X CREDITS FOR RECIPROCATING POWER PLANT

	MW H/YR	TONS/MWHR	COST/TON	TONS/YEAR	COST/YEAR
SO_X	49,056*	0.001572978	1,582.32	77	121,839
NO_X	49,056*	0.000488451	1,562.20	24	37,976

In the first example, 29 engines are installed in different locations. In the second example, a combined heat and power system is considered. In this example, roughly 398 reciprocating engines with heat recovery are considered. Heat recovered is used to supplement heating and hot water in the winter and to supplement cooling in the summer months. The results for each project are shown in the Figure 20.

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103 Although in situations where there are critical shortages of power (e.g., downtown NYC) electric utilities often encourage distributed generation for primary power.

104 Utilities are very supportive of using on-site generation to help resolve short term distribution or supply inadequacies, and indeed most are very helpful when customers are installing on-site generation for the purposes of back-up power.

FIGURE 20. COSTS & BENEFITS FOR TWO DISTRIBUTED GENERATION PLANTS

	PROJECTS	
	DG #1	DG #2
MWH for Project Life	28,000,000	28,452,480
Plant Cost		
Equipment/Installation	479.8	218.2
Grid Integration	Included	Included
Differential Maintenance Cost	59.6	12.0
Differential Fuel Cost	(35.1)	-
Value of Changes in emissions		
CO_2	(3.3)	-
SO_X	(32.0)	(17.2)
NO_X	(10.0)	(5.2)
TOTAL COSTS	**459.0**	**207.8**
COST/WMH (levelized)	**38.51**	**17.15**
NOTE: All Costs except COST/WMH are in $MM		

c. Biomass

The term biomass fuel is typically used to describe fuel derived from one of the following: dedicated energy crops (such as hybrid poplar and hybrid willow), forestry residues (material remaining after the forests have been harvested for timber), mill residues from the production of pulp and paper, agriculture residues (stalks and other remaining material after the harvest of crops) and urban wood waste (yard & tree trimmings, wooden pallets, packaging materials, etc.). Biomass generation can be accomplished in a number of ways: through gasification; through direct firing with fluidized bed combustors or stoker furnaces, where biomass fuel can be burned by itself or in combination with coal or refuse; or through the retrofitting of existing coal fired generators.

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 is 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.[105]

According to a report[106] published for the CONEG Policy Research Center involving the Northeast Regional Biomass Program, New England has the potential to annually produce approximately 12 million MWH of power based on available feedstock supplies at less than $3.50 per MMBTU. This represents ~8% of the total electric usage in New England. This available production capability nearly triples if the price for available feedstock increases to $5.00 per MMBtu.

For the purpose of this analysis, three different generation alternatives using biomass as a feedstock we considered:

Co-firing: Co-firing refers to the practice of combining a biomass feedstock (typically 15%) with coal in an existing boiler. Preparation of the biomass feedstock for co-firing with coal can be accomplished with a number of commercially available technologies. While co-firing does not result in increased capacity on the grid, it does provide significant environmental benefits along with a reduction in the use of fossil fuels.

Gasification: Gasification involves the conversion of biomass feedstock into a low/medium BTU content biogas. This biogas is then used as fuel in a combined cycle power plant (combustion turbine generator, exhausting into a heat recovery boiler, to generate steam for processing through a conventional turbine generator). Biogas combined cycle generators can also be used in co-generation applications where steam can be extracted for various process applications.

Direct-fired combustion: Direct-fired combustion refers to the burning of biomass feedstock directly in a boiler. There are a number of commercially available technologies that can be used for this application. The two most common technologies are atmospheric fluidized bed combustors and stationary or traveling grate stoker furnaces. In either technology, the biomass feedstock is burned in the furnace to generate steam that is then used to power a conventional turbine generator.

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105 2002 Annual Energy Outlook, prepared by the Energy Information Administration ("EIA"), Washington, DC.

106 *Securing a Place for Biomass in the Northeast United States: A review of Renewable Energy and Related Policies,* Prepared for: CONEG Policy Research Center, Inc.; Northeast Regional Biomass Program; March 31, 2003; Prepared By: XENERGY and Energetic Management Associates.

There are a number of other technologies that are at either the demonstration or research and development stage. Some of these technologies could be available in 5 to 10 years. None of these are included in this analysis.

Capital costs for biomass powered generators range from $1,300/kW to $1,600/kW installed depending on the technology employed for combustion. Retrofitting existing coal fired facilities with the capability to burn up to 15% biomass feedstock typically cost $150/kW to $200/kW. Co-firing is a fuel substitution option and not a capacity expansion option; therefore these capital costs do not represent an incremental increase in the MW of capacity. Operating and maintenance costs range from $0.0099/kWh to as much as $0.0172/kWh.

Biomass plants are more economic when sited close to a reliable feedstock fuel supply. For these prototypical plant evaluations, we have assumed that these facilities can be sited near feedstock supplies. As mentioned previously, feedstock can be provided from a number of sources. The most common in New England would be energy crops, urban waste, forestry residues, and paper mill residues.

Three alternative installations are considered:

- Two, 100 MW direct fired combustors
- Two, 150 MW biogas fired combined cycle generation units
- Two retrofitted coal units with a 15% (105 MW) co-fired biomass feed stream.

The results for each of these three different prototypical installations are shown in Figure 21.

FIGURE 21. COSTS & BENEFITS OF THREE PROTOTYPICAL BIOMASS PROJECTS

	PROJECT		
	BIO #1	BIO #2	BIO #3
MWH for life of project	31,536,000	47,304,000	33,112,800
Plant Cost	321	393.6	32.8
Grid integration	Included	Included	Included
Differential Maintenance Costs	96.7	(1.2)	(173.4)
Differential Fuel Costs	(111.5)	(139.4)	251.6
Value of changes in emissions			
CO_2	(56.0)	(84.0)	22.1
SO_X	(33.7)	(51.1)	(63.0)
NO_X	(1.2)	3.0	(51.0)
Total costs less subsides	**215.3**	**120.8**	**19.1**
Total costs including subsides	**215.3**	**120.8**	**19.1**
$/MWH (levelized)	**16.04**	**6.00**	**1.35**
All $ except $/MWH are $MM Not 'closed cycle' plants			

d. Upgrading existing power facilities.[107]

Consideration must be given to the costs and benefits of upgrading 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, MA. Both are in close proximity to Cape Cod and are integral parts of the southeast power grid in Massachusetts.

The Canal power plant on the Cape Cod Canal consists of two nominal 580MW conventional oil/gas fired generating units. One unit can be fueled by either residual fuel oil or natural gas, the other is fueled by residual fuel oil only. The year

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107 *See* www.epa.gov/ebtpages/airairpoermissioninventory.html.

2000 operating data for this plant is shown in Figure 22.

FIGURE 22. FY 2000 OPERATING DATA FOR 580MW OIL/GAS CANAL ELECTRIC PLANT

PLANT CAPACITY (MW)	1,164	-
Capacity factor (%)	48.6	-
(MWH)	4,953,813	-
NO_X emissions (Tons)	5,841	0.001179 Tons/MWH
SO_2/SO_X emissions (Tons)	23,848	0.004814 Tons/MWH
CO_2 emissions (Tons)	4,240,199	0.855946 Tons/MWH

If the plant were to be replaced by modern gas fired Combined Cycle generating units of the same capacity as the present plant location there would be significant savings in emissions and substantial savings to consumers.

A typical Combined Cycle Unit has the characteristics shown in Figure 23.

FIGURE 23. OPERATING CHARACTERISTICS FOR TYPICAL COMBINED CYCLE UNIT

TYPICAL COMBINED CYCLE UNIT	
Installed cost ($/KW)	725
Typical capacity factor (%)	68.8
NOX emissions (Tons/MWH)	0.000595
SO2 emissions (Tons/MWH)	0.000020
CO2 emissions (Tons/MWH)	0.468075

Using the 1164 MW of capacity as a base and accounting for the improvement in capacity factor (due to higher efficiency and improved dispatch) the new CC units would have an installed capacity of 822 MW (1164 x (48.6/68.8)). The capital cost of such a plant would be approximately $596MM ($725/KW x 822,000 KW).

For the equivalent plant output of 4,953,813 MWh. the difference in air emissions are shown in Figure 24.

FIGURE 24. REDUCTION IN AIR EMISSIONS RELATED TO UPGRADE TO CANAL ELECTRIC PLANT

	EMISSIONS			MWH	SAVINGS/TON
	Canal Plant	New Plant	Difference		
NO_X	0.001179	0.000595	0.000584	4,953,813	2,893
SO_2	0.004814	0.00002	0.004794	4,953,813	23,749
CO_2	0.855946	0.468075	0.387871	4,953,813	1,921,440

The annual savings generated selling credits for these savings is shown in Figure 25.

FIGURE 25. VALUE OF EMISSIONS CREDITS RELATED TO CANAL ELECTRIC UPGRADE

		MARKET PRICE	SAVINGS ($MM/YR)
GAS	TONS	Cost/Ton	$MM/Year
NO_X	2,893	1,562.20	4.52
SO_2	23,749	1,582.32	37.58
CO_2	1,921,440	6.83	13.12
TOTAL			**55.22**

The Brayton Point generating station in Fall River consists of four generating units. Three of the units are coal fired and one is oil/gas fired. The total installed capacity is 1,515 MW with a 57.8 capacity factor generating 7,670,869 MWh. In performing a similar analysis to that performed on the Canal Plant, the requisite installed capacity would be 1,273 MW at a cost of $762.8MM, and the resultant annual air emission savings would be $60.7MM.

The prototypical scenarios for upgrading each generating station are as follows. In this scenario, each plant would be retired as is and a new gas-fired combined cycle plant would be built on each site. Each facility would be downsized to the load actually served in the market, which would result in plants that were operating much more efficiently at approximately 70% capacity, and much cleaner as

well. The scenarios to be analyzed are shown in Figure 26.

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FIGURE 26: EFFECTS OF UPGRADING TWO EXISTING PLANTS

	CANAL	BRAYTON
MWH for life of project	99,076,260	153,417,384
Plant Cost	595.9	922.8
Differential Maintenance Costs	(126.5)	(522.5)
Differential Fuel Costs	(643.2)	392.8
Value of changes in emissions		
CO_2	(111.7)	184.1
SO_X	(319.9)	(583.2)
NO_X	(38.5)	(117.4)
Total Costs	**(643.9)**	**276.7**
$/MWH (levelized)	**(15.27)**	**4.24**
NOTE: All $ except $/MWH are in $MM		

This option does not include any monies that might have to be paid by the public (similar to subsidies) to persuade current owners to make the noted investments.

e. Demand side management.

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, hence the name. In effect, one uses management of electric demand as a technique for balancing supply and demand.

One broad class of DSM is the installation of passive (does not generate electricity) 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.

Some DSM is geared to reducing the use of energy (e.g., energy efficient lighting). Some is geared to reducing electrical demand (i.e., the rate of use of energy). Some is geared to displacing the use of electricity from periods of high cost

to periods of low cost (e.g., stored cooling). Other measures seek to eliminate usage entirely at times of system peak demand (e.g., demand response programs).

There are several advantages to DSM. One is that it has many variations and sizes and can address many different issues. Second, compared to other alternatives, DSM is comparatively inexpensive. As noted by the Cape Light Compact, "No other investment in electricity resources and infrastructure offers this type of return for the investment."[108] Third, even though a considerable investment has been made in DSM to date, there is still considerable resource available. One reason is that prospective participants are sometimes uncomfortable with the reliability of savings.[109] Finally, DSM is, in general, unobtrusive.

The implementation of DSM is simple. A DSM program administrator (usually the ISO or a distribution utility), acting on behalf of all beneficiaries except the participating customer, pays a participating customer not to consume electricity. Participants may do so in many of the different ways noted above. Most such actions have a direct benefit to the participating customer, so it is unnecessary to pay the entire cost of the DSM measure. Rather all that is required is to pay down the payback on a given measure until it meets the participating customer's marginal investment rate.[110] Despite the DSM that has been performed over the years, it remains an available and considerable resource.[111]

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108 *The Cape Light Compact Energy Efficiency Plan Phase II 2003-2007: Providing Comprehensive Energy Efficiency Services to Cape Cod and Martha's Vineyard Through Municipal Aggregation,* Cape Light Compact, Barnstable, MA, March 28, 2003

109 See the *National Energy Monitoring and Verification Protocols*, published by the US DOE in many languages, which defines a library of savings computations for specific DSM technologies.

110 There are exceptions where DSM payments do equal and sometimes exceed the cost of the investment. This is generally done when participating customers have little or no discretional capital for such investments (e.g., low income groups).

111 The Massachusetts Division of Energy and Resources (DOER) estimates the remaining DSM potential in Massachusetts alone to be approximately 10,000 GWH/year. (*The Remaining DSM Opportunities in Massachusetts,* prepared by RLW Analytics and Shel Feldman Management Consultants, June 7, 2001).

DSM can be compared to new generation for the following reasons:

- To the system operator, whose primary day-to-day job is grid stability (i.e., prevent blackouts) and controlling the supply of electricity to meet the actual demand on a minute-to-minute basis, DSM and generation appear almost identical; this is especially true in a surplus situation.[112]

- DSM is frequently a free resource to the system. This is not obvious, since the ISO or utility generally has to pay someone for DSM. Indeed, many over the years have often regarded DSM as a 'give away' program. But when all system benefits are considered, the cumulative benefits of DSM to the system most often exceed the cost paid by a considerable margin. (This is more obvious when one understands that what DSM does is make the entire system more efficient physically or economically.)

- When DSM does cost the system money (i.e., the costs exceed the benefits), it is most often still less expensive than adding new generation. (New generation almost always costs the system more than existing generation because a properly running market deploys least cost resources first. That doesn't mean the cost of new generation exceeds the benefits to the system, since when the system needs more power, getting more power is also a benefit, even though it costs more money.)

- Finally, DSM can generally be deployed much faster than new generation, although the rate of deployment is often limited. This is an enormous benefit when system shortages occur. While New England as a whole enjoys a

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112 While New England in general enjoys a capacity surplus, there are specific areas which do not such as metropolitan Boston and southeastern Connecticut. *See Electricity Reliability in Northeast Massachusetts/Boston: Planning for 2004 and Beyond,* presentation by ISO New England to Massachusetts General Court, July 14, 2004.

surplus of electric generation (except in some specific areas), this has not always been the case.

There are some additional characteristics of DSM that are not always obvious but that are also important. Among these are:

- Because DSM leverages the participating customer's investment hurdle rate, it generally represents a resource that would otherwise not be made available.[113] True DSM doesn't happen unless the system gives an incentive to the participating customer, and the term DSM subsidy is a misnomer. It appears as a subsidy only because there is a significant dislocation of project benefits from project costs. In truth, the system or utility, representing all other beneficiaries except the participating customer, and the participating customer are joint venture partners, both of whom invest in the project and both of whom receive benefits.

- What matters in program performance is not the participating customer's hurdle rate or the payback of any given project. Rather it is the average hurdle rate of all customers and payback for all projects as a whole. These are often much easier to measure.

- In any given facility, the amount of DSM subsidy as a percentage of project cost need not be large. Almost any amount of DSM subsidy works to produce some level of energy savings to the system in a well designed program. This is because the population of energy cost reduction or cost avoidance is very large, and some project somewhere is always at the margin and can be induced into implementation.

- For any given customer hurdle rate, the value of DSM varies inversely with the marginal retail cost of electricity

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[113] This is not always true. Sometimes, generally in the interest of program simplicity or uniformity, a customer is paid for a measure the participating customer would have implemented anyway. Hence in an evaluation study, people will factor in a 'free rider' effect. In well run programs, this effect is generally relatively small.

to the participating customer (i.e., the lower the retail price, the greater the value). This is one of the reasons (the other is concentration of opportunity) that utility programs have made a priority of DSM in commercial and industrial facilities. Because of their size, they pay less for electricity. Because the DSM is worth more, it is worthwhile often to negotiate to recruit projects, even if it means paying a higher subsidy.

- At any given retail marginal price of electricity, the value of DSM varies inversely with the payback (i.e., the greater the payback as measured in years, the less the value). This is reasonably obvious and is why programs try to focus on fast payback measures first.

- From the system's perspective (as opposed to the participating customer's perspective), the savings from a particular DSM measure as a class does not last forever. This in not because DSM measures do not last for a very long time, which is the proper perspective for the participating customer. Rather it is because buildings are modified for new uses as tenants change, and it is because the market obsoletes older methods of using energy and will naturally substitute more efficient methods over time. So in the long run, the system would receive the benefit from a particular technology without subsidy.

For all of these reasons, DSM is a valuable system resource and is a relevant resource when contemplating outlays of ratepayer money to gain new capacity.

The approach with regard to a DSM prototypical project is to examine a project or projects that have previously been considered, but which are not being implemented, and would therefore require some change in the support they receive. In Massachusetts, the most convenient mechanism would require an increase in the amount of money made available through the system benefits charge[114] on each utility bill.

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[114] The 'system benefits charge' is a specific amount of money that is charged to every customer to support energy efficiency, and today is $2.50/MWH.

The prototypical project examined in this study is an incremental project contemplated by the Cape Light Compact (the "Compact") in its recent energy efficiency plan.[115] In that study, the Compact considered four scenarios for continuing their DSM programs, which they refer to as "Continuation of Existing Programs", "Reduce Load Growth in Half", "Stabilize CO2 Emissions", and "Eliminate New Load Growth." The primary difference between each scenario is the level of the system benefits charge. The "Continuation of Existing Programs" would be a continuation of the $2.50 per MWH that is currently charged. Under the last three, it would be increased to $5.00, $8.90, and $10.80 per MWH used.

Consideration must be given to the likely consequences of expanding the "Reduce Load Growth in Half" scenario to Massachusetts as a whole, rather than limiting it to Cape Cod and Martha's Vineyard, would be indicative of the impact of such a program on the state as a whole.

Briefly, this "Reduce Load Growth in Half" has the characteristics shown in Figure 27 along with how it differs from the "Business as Usual" scenario for a period up to 2015.

FIGURE 27. CHARACTERISTICS OF CLC "REDUCE LOAD GROWTH IN HALF" SCENARIO

	BUSINESS AS USUAL	REDUCED LOAD IN HALF	DIFFERENTIAL PROGRAM
System benefits charge ($/MWH)	2.5	5.0	2.5
Nominal program size ($/MWH)	5.50	11.0	5.50
Program benefits ($MM/year)	78.00	150.00	72.00
MWH at the end of last year	148,600	286,600	138,000
Years required	12	12	12
Rate of increase/year	12,383	23,883	11,500

The Compact expects to achieve a benefit cost ratio of 2.02 with current programs that run from 2003 to 2007. The residential programs are expected to have a payback of 1.86 for their residential programs and 2.2 for their C&I programs. The cost effectiveness of these programs has been assessed in accordance with the total resource cost ("TRC") test required by the Department of Telecommunications and

115 *Cape Light Compact, supra.*

Energy ("DTE").[116] This test is very similar to the approach taken by the other projects in this study, with a few exceptions as follows:

- The discount rates used for time value is 5.2% instead of 10%;
- The life of the costs and benefits are assessed over 12 years instead of 20 years;
- The value of emissions reductions is not specifically valued.

For the purposes here, three adjustments were made to permit a reasonable comparison to the other prototypical projects in this study. First, the numbers were adjusted for the difference in discount rates. Second, the value of emissions reduction were added to the benefits. Finally, numbers for a 12-year period and a 20-year period were provided. As noted in the Compact study, the benefits of their DSM program last well beyond the time period for which they assess costs and benefits. Indeed, the benefits of most DSM last five to ten years after installation, depending on the nature of the DSM.

In addition, for purposes of this study, it is assumed that the cost benefits of the "Business as Usual" program in the remaining seven years are the same as expected in the first five years (2.02), since the former represents an increasing participation with similar projects. However, it was assumed that adding the incremental program reduces the benefit/cost ratio of the combined programs by 25%, since it represents investing in cost effective projects with longer paybacks. Second, we scaled this to the entire state on the assumption that the Cape and Martha's Vineyard represent approximately 3.6% of the electric usage of Massachusetts.

The results, given these adjustments and assumptions, are shown below in figure 28.

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116 The Compact has estimated costs and benefits of their programs in accordance with the TRC test, as required by the DTEDTE in Docket No. DTE-98-100. The TRC test is made from the perspective of the public. As such, the test requires that the cost of each efficiency measure includes both the cost to the Compact and the cost to the participating customer, as well as any other costs associated with installing the measure. The TRC test also requires that the program benefits include non-electric benefits, such as non-electric resource savings (e.g., oil, gas, water), and customer benefits (e.g., reduced operation and maintenance ("O&M" costs, and several societal benefits associated with low-income program.

FIGURE 28: IMPACTS OF EXPANDING DIFFERENTIAL DSM PROGRAM TO ALL MASSACHUSETTS

	12 YEAR	20 YEAR
MWH over project life	23,718,750	37,633,750
Costs		
Program	251.8	251.8
Participant	755.3	755.3
Total costs	1007.00	1007.00
Benefits		
Differential Maintaiance Costs	(1,023.4)	(1,319.2)
Differential Fuel Costs	(519.9)	(665.1)
Value of Reduced Emissions		
CO_2	(43.9)	(50.6)
SO_X	(29.2)	(33.7)
NO_X	(9.9)	(11.4)
Total Benefits	**(1,612.5)**	**(2,068.6)**
Net Cost	**(605.5)**	**(1,061.6)**
Levelized Cost ($/MWH)	**(53.59)**	**(72.89)**
NOTE: All $ except $/MWH are in $MM		

f. Comparison with the proposed project.

How do each of these technologies compare with the CWA wind energy project in terms of benefits and costs? To answer this question, the proposed project was evalutated in the same manner used with other projects. The results of this analysis, are shown in Figure 29.[117]

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117 *Free But Costly*, Beacon Hill Institute, *supra*.

FIGURE 29. SUMMARY OF COSTS AND PUBLIC BENEFITS FROM THE CWA PROJECT

	CWP
MWH for life of project	28,000,000
Plant Cost	
Equipment/Installation	882.4
Grid integration	25.6
Differential Costs	
Maintenance	-
Fuel	(552.0)
Value of change in emissions	
CO_2	(49.8)
SO_X	(30.3)
NO_X	(9.5)
Total costs excluding subsidies	**296.4**
Subsidies	
Production Tax Credit	98
Green Credits	125
Deferred Taxes	57.8
Total costs including subsidies	**577.2**
$/MWH (levelized)	**48.4**
NOTE: All $ except $/MWH are in $MM	

Some comments are in order before the prototypical projects are compared to the proposed project.

First, and as noted earlier in this study, the proper analytical perspective is the public interest, not gain to the developer. The primary difference between a public interest perspective and a private owner's perspective is that the former only looks at overall cost effectiveness, while the latter does that with respect to a specific owner, usually the developer. In particular, a public interest perspective does not consider who has to pay a particular cost or who gets the benefit. It is quite possible for a project to be cost-effective from a public interest perspective but not from a specific owner perspective and vice versa. This is, of course, the primary rationale for providing subsidies from the public.

A public interest perspective is important in this study because, for some of the projects considered, significant public resources will be either lent or given away as an inducement to persuade specific owners to come forward and implement the projects. For example in the case of the proposed CWA project, financial incentives in the form of tax credits, green credits, and tax deferrals having a present value of approximately $280MM will be made available to CWA. In addition, CWA will likely obtain an exclusive license on an area of Nantucket Shoal that is highly valued, and without the benefit to the public of a private auction of these valuable use rights, which is more commonly the case when public resources are offered up to private owners.

Second, and related, it is not unusual for incremental projects to increase the average cost for energy (i.e., increase in $/MWH), as most above would. Indeed, it is more unusual for marginal projects to save the system money as Canal and DSM would be expected to do. The reason for this is that historically the system has been developed by deploying additional generation on a least-cost basis for a given level of desired reliability.[118] Indeed, a similar approach is used in the dispatching of energy on an hourly basis from existing plants, all in an attempt to keep the cost of electricity as low as possible to users.

Third, these projects are comparable to the proposed project in terms of cost and type of benefits created. None cost more than 11% higher than the proposed project. Indeed, most cost much less than the CWA project. All enable MWH to be available to users in the grid on a "utility scale", and all produce environmental benefits in the form of reduced green house gases (i.e., produces cleaner air) and/or in the form of a reduction in the system fossil fuel requirements.

Figure 30 provides a comparison of the prototypical projects to the proposed project using four different criteria. The first comparison is shown in the left-most column and is done on the basis of total expected benefits to the region (again, not taking into account that for the CWA many of the claimed benefits are illusory). The second comparison is shown in the second column and is done on the basis *only* of environmental benefits (i.e., emissions reduction and fossil fuel reduction) to the region. The third comparison is shown in the third column is done on the basis of cost to the region expressed in $/MWH enabled by each project. The final comparison is shown in the fourth column and is done on the basis of how efficient each is at producing cleaner air for the region through emissions reductions. It is expressed in

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[118] This goal was not always achieved, which was one of the motivators, for deregulating the ownership of generation in the electric supply chain.

terms of dollars of emissions reduction benefit created per dollar of project investment.

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FIGURE 30. COMPARISON OF PROTOTYPICAL PROJECTS TO THE CWA PROJECT

COMPARISON OF PROJECTS USING FOUR CRITERIA							
Total Benefits ($MM)		Enviro Benefits ($MM)		Cost ($/MWH)		$ of Emission Reductions/ $ of Cost	
DSM	2080	CANAL	1113	DSM	(73.67)	CANAL	0.79
CANAL	1240	DSM	761	CANAL	(15.27)	BRAYTON	0.39
BRAYTON	1039	CWP	612	BIO #3	1.35	BIO #2	0.34
CWP	612	BRAYTON	516	BRAYTON	4.24	BIO #3	0.32
BIO #2	273	BIO #2	272	BIO #2	6.00	BIO #1	0.22
BIO #3	265	BIO #1	202	BIO #1	16.04	DG #2	0.10
BIO #1	215	BIO #3	92	DG #2	17.15	DSM	0.09
DG #1	80	DG #1	80	DG #1	38.51	DG #1	0.08
DG #2	22	DG #2	22	CWP	48.43	CWP	0.08

With regard to total benefits expected from each project, proposed project ranks 4th ($612MM over a 20 year project life). Three other projects produce greater total benefits to the public. Brayton and Canal each produce approximately twice the total benefits of the proposed project; DSM produces almost three times the benefits of the proposed project.

With regard to environmental benefits (i.e., emission reduction and fossil fuel reduction), the proposed project ranks 3rd, providing $612MM over a 20 year project life. Canal and DSM both rank higher. Canal produces a little less than twice the environmental benefits produced by the proposed project. DSM produces about 20% more environmental benefits the proposed project.

With respect to cost, the proposed project is by far the most costly at approximately $48/MWH added to the system. Two other projects are actually free to the system, in that their savings during the twenty year period exceed their costs by a considerable margin. DSM and Canal actually save the system approximately $74/MWH and $15/MWH enabled. Indeed, all projects except DG#1 (and CWa) are much less expensive than the proposed project.

Finally, the proposed project ranks last along with DG#1 in the efficiency of providing cleaner air as measured by the value of emissions reductions per project dollar invested. The reference Biomass projects return approximately 3-6 times the value of the proposed project for each project dollar invested. DSM delivers approximately 16% more emissions reduction for each project dollar invested. Canal

returns approximately ten times the value of emissions reduction from the proposed project for each project dollar invested.

As this discussion demonstrates, even when the regulatory context that renders the CWA energy plant benefits nonexistent is not considered, this proposed project is the least effective approach to achieving clean power benefits. From a public interest perspective, it is indeed a highly undesirable venture. Considering the negative impact of the CWA proposal to the highly valued ecosystem of Nantucket Sound, this is a permit application that should have been rejected out-of-hand for any purpose other than producing great profit for the CWA entrepreneurs. The DEIS is fatally flawed by failing to consider these other forms of clean energy generation, and by incorrectly overstating the purported benefits of the CWA project.

6. The Corps Is Required to Consider "Partial Alternatives."

NEPA case law holds that an action agency must consider alternatives that would partially meet a project purpose. This principle is particularly relevant in this case where the project purpose is of such broad importance and is justified on the basis of purported region-wide benefits. An early NEPA case articulates this principle well. In *NRDC v. Morton,* 458 F.2d 827, 829 (D.C. Cir. 1972), the court found an EIS to be deficient where the action agency failed to consider alternatives merely because the alternatives did not offer a complete solution to the problem. *See id.* at 830. The case involved a proposed sale of oil and gas leases in the Gulf of Mexico, which was to be part of a multi-agency effort, initiated by the President, to increase American energy supplies. *Id.*

Despite the Secretary of the Interior's arguments that certain alternatives did not warrant consideration because they did not offer a complete solution to the problem the proposed project was designed to address, the D.C. Circuit ruled: "[i]f an alternative would result in supplying only part of the energy that the [proposed action] would yield, then its use might possibly reduce the scope of the lease sale program and thus alleviate a significant portion of the environmental harm attendant on offshore drilling." *Id.* at 186. Because of the scope of the problem to be addressed, partial alternatives were deemed imminently reasonable and had to be considered in the NEPA analysis.

Courts have generally held that alternatives only partially meeting the project's purpose should be considered so long as they are bounded by some notion of feasibility or can otherwise be considered "reasonable." For example, in *NRDC, Inc. v. Callaway,* 524 F.2d 79 (2d Cir. 1975), the Second Circuit held that the Corps failed to comply with NEPA by not adequately considering alternative dumping sites in the ocean and on land for the dumping of polluted dredged spoils in Long Island Sound.

Id. at 81. Applying the approach developed in *Morton,* the court noted that "[a]lthough there is no need to consider alternatives of speculative feasibility . . . the EIS must nevertheless consider such alternatives to the proposed action as may *partially or completely meet the proposal's goal* and it must evaluate their comparative merits." *Id.* at 93 (emphasis added).

Likewise, in *N. Buckhead Civic Ass'n v. Skinner*, 903 F.2d 1533 (11th Cir. 1990), the Eleventh Circuit addressed a Department of Transportation EIS for the development of a multi-lane highway with a median designed to accommodate heavy rail mass transit that failed to consider the "partial" alternative of a heavy rail transit extension *without* a companion multi-lane highway. *Id.* at 1541. Although the plaintiff did not meet its burden of demonstrating that heavy rail transit alone was a "reasonable alternative" to the proposed multi-lane highway, the court affirmed the principle that reasonable partial alternatives must be considered, even if they do not comport with the project sponsor's view of what is a desirable outcome. *Id.* at 1543.

Nor may an action agency disregard an alternative simply because, standing alone, it does not completely satisfy the purpose of the project. In *Davis v. Mineta*, 302 F.3d 1104, 1109 (10th Cir. 2002), plaintiffs challenged an EA submitted by the Federal Highway Administration for construction of a new freeway interchange, new bridge, and widening and extension of an existing highway. The court found that the agency's decision to ignore a number of alternatives because they did not, "standing alone," meet the purpose and need of the project violated NEPA. *Id.* at 1120-22. Partial alternatives that, in conjunction with other measures, would satisfy the purpose of a project must be considered. *See Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries*, 235 F. Supp.2d 1143 (W.D. Wash. 2002) (finding that the Corps must consider alternatives, that in combination of other measures, would contribute to meeting the project purpose of operating and maintaining dams in the Columbia-Snake River inland navigation waterway).

The consideration of partial alternatives is especially important where the action is large in scope and can be addressed by more than one agency. In *City of Alexandria v. Slater*, 198 F.3d 862 (D.C. Cir. 1999), the D.C. Circuit considered whether the Federal Highway Administration (FHWA) adequately reviewed reasonable alternatives to a proposed project involving a twelve-lane bridge. Plaintiffs argued that the agency should have considered a smaller ten-lane bridge. *Id.* at 865. The D.C. Circuit elaborated on *Morton,* by stating:

> within the context of a coordinated effort to solve a problem of national scope, a solution that lies outside of an agency's jurisdiction might be a "reasonable alternative"; so might an alternative within that agency's jurisdiction that solves only a

> portion of the problem, given that other agencies might be able to provide the remainder of the solution.

Id. at 869. Because only the FHWA had responsibility for addressing severe traffic conditions, the alternative of a narrower bridge could be rejected because the discrete project was within the exclusive jurisdiction of one federal agency. *Id.* However, where, as here, the problem of "global warming" is broad in scope, and not only can, but must, be addressed by a number of agencies, including EPA, FERC, the Corps, the Nuclear Regulatory Commission, various state agencies, among others, the consideration of partial alternatives is required.

This well-established NEPA principle is a separate basis upon which the Corps has a duty to consider smaller-scale projects. Even if the same purpose and need statement is used, a wide range of alternatives becomes available when partial solutions are considered. As discussed above, many readily available smaller-scale, but still "utility-scale" project sites exist that fit this model.

In addition, the DEIS fails to consider the option of a pilot project, as is typically employed for such purposes. Governor Romney has, for example, supported locating wind turbines in Boston Harbor, where existing development already exists. Whether on a standalone basis, or as part of a pilot project for eventual offshore development, such an alternative must be evaluated under NEPA. Finally, the DEIS fails to consider the option of establishing two or more smaller projects in various locations, including combined onshore/offshore projects. The use of such an approach provides much needed added flexibility to the siting issues and avoids the "all or nothing" approach foisted upon the Corps by CWA and that served as the fatal flaw in this entire permit application review.

These alternatives are, in fact, vastly preferable to the massive, environmentally and economically harmful alternatives identified by the Corps. They can be located in areas that cause far less damage. In addition, they can be placed in sites where they would much better meet energy supply needs. Finally these types of projects do not generally require significant transmission system upgrade because they can be connected through existing substations. For example, projects of similar size to the initial Searsberg (6MW) or East Haven (6MW) projects in VT would not typically have require significant transmission system overhaul or expansion. For example, the Hull and Princeton project displace power at the end of circuits and therefore alleviate the need to expand the transmission system. The DEIS is fatally flawed ecause of its "all or nothing" approach that serves no purpose other than to cater to the applicant's profit motive.

7. The DEIS Failed to Consider Whether Waiting Until There Is a Regulatory Program in Place or Allowing Deepwater Technology to Become Available Would Better Suit the Public Interest.

If the proposed project were a private project using only private resources, there would be no necessity to assess the need of the project. Clearly, this exceedingly expensive project would be a non-starter. However, the proposed project seeks to exploit the free, long-term use of public lands and more than $300 million in subsidies to make the project sufficiently economically attractive. Because this considerable investment by the public is what makes the proposed project possible, the Corps should have examined seriously the need for the project at this time. The reason to wait, when a particular action is not needed (as is the case here), is that the resource involved may be less expensive in the future when the resource is needed or the environmental risks greatly reduced. Several technologies, which may not be replacements for the proposed project today, may be replacements in the near future.

New England is currently experiencing one of the highest regional reserve margins in the history of the power industry in New England.[119] Based on the latest ISO 2004 (Draft) CELT Report, comfortable reserve margins will be prevalent for many years to come. Hence, the region doesn't need another power plant *of any kind at this time*.[120] There is, however, a stated public goal to encourage the development

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[119] New England has an electric load of approximately 25,000MW and a delivery capacity of approximately 32,000MW, providing in excess of 30% of reserve margin. (*NEPOOL 2004-2013 Forecast Report of Capacity, Loads, Energy and Transmission (2004 CELT Report)*, March 2004, (www.iso-ne.com/Historical_Data/CELT_Report/2004_Draft_CELT_Report/2004). When regulated utilities owned all generation, adequate reserve margin was thought to be 17%-18%.

[120] There are, of course, specific needs for power at different parts of the grid today where demand is brought into balance through locational marginal pricing. However, there are numerous transmission projects scheduled to be implemented in the next several years that will mitigate this. Notwithstanding, in no case except in the case of specific plant or transmission line failure is there a situation of the non-availability of power at *any price*. Also, and related, there will be stress on the system on given days during the year when full capacity is unavailable due to scheduled or unscheduled plant maintenance shutdowns or temporary outages. In such instances, the system operator manages these situations with a combination of demand response and locational marginal pricing.

of renewable power in the region.[121] New England is estimated by some to have adequate developable renewable resources within the context of the need articulated by the definition of its RPS[122]; hence there is not a shortage of wind or renewable potential.[123] For this reason, where there is ambiguity or uncertainty with respect to the need for a particular project, the prospect for strong conflict or adverse impact, or the reasonable foreseeability of more attractive options, prudence dictates that the Corps err in the direction of what most favors the public interest.

Another benefit of allowing other technologies that are rapidly developing to come on line is that they may obviate the need of using sites that are controversial. One such technology is deepwater wind. Many of the problems associated with offshore wind energy sites can be eliminated by moving the projects further offshore. This technology, which is expected to be available in the not-too-distant future, would avoid the intense controversy associated with the proposed proposal. Even if this technology is not currently cost effective, the fact that it will be economically feasible in the reasonably foreseeable future means that this is an alternative that should be considered for purposes of the Corps' public interest test. Nothing under section 10 compels the issuance of a permit for an offshore wind project *now*. The problems with the Nantucket Sound alternatives in particular show that merely waiting a few years for deepwater technology is a clear alternative that better serves the public

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121 Massachusetts General Laws, Chapter 25A, Section 11F (1997) directs the Massachusetts Division of Energy Resources to "establish a renewable energy portfolio standard for all retail electricity suppliers selling electricity to end-use customers in the Commonwealth."

122 Bruce Bailey and Skip Brennan (AWS Truewind LLC) estimate the New England potential for onshore development to be approximately 3,000MW, and the potential for offshore development to be approximately 7,000MW, where offshore sites are sites with a depth less than seventy (70) feet and with a wind resource of wind class 5 or better. This does not take account of any abutment issues that must be resolved to develop these sites. (*Making the Case for Offshore Wind Development in the US: Comparison of Land versus Offshore Potential,* presentation given at the March 2004 Global Windpower 2004 in Chicago, IL.) According to the Massachusetts Technology Collaborative (MTC), the region will need approximately 4,468MW of renewable capacity over the next decade to meet the Renewable Portfolio Standard (RPS). (http://www.mtpc.org/RenewableEnergy/green_power/rps_scenarios.pdf) This amount is less than 50% of the estimated wind potential for *New England alone*. No doubt other renewable resources will share in this portfolio. No doubt renewable energy will be imported from other regions as well.

123 If one looked at the wind resource out as far as 50km, which might very well be accessible within the time frame that New England would need an additional power plant not targeted at specific shortage pockets (e.g., downtown Boston), the wind power that may be available expands almost twenty-fold.

interest than authorizing a project that has such serious negative impacts as this proposal.

The viability of the deepwater alternative for this purpose is described in a recent article featuring GE Wind company representatives, the same company that would provide the turbines for the CWA proposal. GE is collaborating with the Massachusetts Technology Collaborative and the U.S. Department of Energy (named the Offshore Wind Energy Consortium or OWEC), and considering the use of either floating platforms anchored to the sea floor or platforms on stilts in up to 100 feet of water. Despite the promise of deep water technology, CWA President Jim Gordon responded to OWEC's plan to have viable technology by decade-end as "pretty optimistic," asking "how the heck (is OWEC) going to be able to do that without the experience we would bring?"[124] Ex. 67.

Expert parties in both United States[125] and the Economic Union[126] confirm that this deepwater wind technology will be viable within a reasonable timeframe. What is at issue is how quickly deepwater technology will become price competitive. One reasonable guide would be to look at how costs have fallen in the onshore wind industry as it has developed. This is probably a reasonable guide as to how costs will fall in offshore wind. Using this approach, if the costs of this offshore technology were to fall in the coming 20 years comparable to the cost decline in onshore wind over the past 20 years, one would expect deepwater technology to be cost competitive by 2010[127], if not sooner. Clearly, it could be longer. However, one group is

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124 In other contexts, however, Mr. Gordon has stated that the technology it intends to use for the proposed project has been proven in Europe, and that pilot projects and test facilities are not needed in the United States. In addition, it is quite obvious that achieving the experience Mr. Gordon speaks of does not require a massive facility in Nantucket Sound.

125 Musial W. and S. Butterfield, *Future for Offshore Wind Energy in the United States,* National Renewable Energy Laboratory, June 2004.

126 Bulder, BH et al. *Floating Offshore Turbines for Shallow Waters,* sponsored by the Netherlands Agency for Energy and the Environment.

127 The American Wind Energy Association estimates that the cost of on-shore wind has been falling at approximately 8% per year for the past twenty-four years. *See* <www.awea.org/faq/tutorial/wwt>. The California Energy Commission estimates that the cost of on-shore wind has been falling approximately 6.5% per year for the past twenty five years. Private estimates are even higher. *See* <www.energy.ca/gov/wind/overview>. Donald Dodge, for example, estimates the decline over the last twenty-five years to be approximately 22% per year for the past twenty-four years. *See* <(www.telosnet.com/wind/future>.

currently in the initial phases of developing a deepwater wind facility at Moray Firth 20 miles off the coast of Scotland. Once completed, this project would be 1,000 MW, which would be one of the largest in the world. Clearly large companies such as Talisman would not undertake such projects unless they thought they were feasible in the near term.

Similarly, the Corps should also consider the installation of an offshore wave power plant. In a recent study by Global Energy Partners LLC (Nov. 30, 2004), the Cape Cod coast was considered for the installation of an Ocean Power Delivery Pelamis wave energy conversion device pilot project. *See* Global Energy Partners, LLC, *System Level Design, Performance and Costs – Massachusetts State Offshore Wave Power Plant* (Nov. 30, 2004). The pilot scale wave power demonstration plant was estimated to produce and deliver 964 MWh, costing only $5.5 million to build ($4.9 million after the Massachusetts installation tax deduction and Federal 10% tax credit). Two hundred and six devices would be necessary to produce equivalent power to a 100 MW wind plant, using a 40% capacity factor, with total estimated costs of approximately $300 million. The results of the study indicate that offshore wave power compares favorably to wind power.

The report also cites other advantages of the technology, including that with proper siting, it is one of the most environmentally benign ways of producing energy. It additional avoids the substantial impacts to a region's aesthetic values that plague wind energy. Further, because the technology is less intermittent than other renewable technologies, such as solar or wind, the technology offers the possibility of being dispatchable. With these significant advantages, the alternative of delaying for a discreet period of time with this technology is examined is an imminently sensible.

This information qualifies deepwater offshore wind technology and wave technology as reasonable NEPA alternatives. Agencies have in the past considered the public interest advantages associated with taking time to obtain additional information or for technological develop. For example, in *Florida Coalition for Peace and Justice v. Bush*, Civ. A. No. 89-2682-OG, 1990 WL 157934 (D.D.C. 1990), the court rejected plaintiff's argument that NASA should wait until it had obtained more information before launching the Discovery, not because the approach did not qualify as a reasonable alternative, but only because plaintiffs had not met their burden of presenting "sufficient evidence to indicate that the delay alternative deserved more serious consideration." *Id.* at *5. Specifically, the plaintiffs' arguments did not stand up to scrutiny, largely because the problems identified were peculiar to a different shuttle or were already being tested. *Id.* at *4.

Such is clearly not the case here. The options of focusing on deepwater technology or wave technology or for waiting until Congress establishes a regulatory

program are directly relevant to this proposed project. The information that could be gained will apply universally to offshore energy technologies. Indeed, the Corps need look no further than the U.S. Oceans Commission report and the OWEC workshop on deepwater sites to confirm the separate viability of both of these scenarios. Deepwater technology and wave technology are clearly feasible and will likely be applied more extensively in only a few years. In fact, such technologies are all the more reasonable considering that the proposed project review is not even close to being completed, and is likely to require many additional years to complete, with an additional several years to bring the project on-line, in the unlikely event it is even to be approved. At the end of this time, these emerging technologies would be at-hand, and how foolish it would indeed be to sacrifice Nantucket Sound when a vastly preferable alternative course of action is at hand.

Once these technologies are taken into account, a vast array of alternative sites would seem to be available. First, Truewind estimates the wind resource from 20 miles to 50 miles out to be much better than the wind resource available to land sites and to near offshore. Second, some experts suggest that that deepwater technology, when coupled with favorable tax treatment and favorable dispatch ranking, could be price competitive with fossil based power within the next several years. Third, initiation of the first step in the Moray Firth project suggests that other developers believe this technology will be feasible within a few years. Fourth, this study by Global Energy Partners suggests that wave technology will be more cost-effective and less environmentally damaging than even deepwater wind. It would seem reasonable that the Corps would consider areas within the band that is between 20 to 50 miles from the shore since both technologies might be available in the same time window as the proposed project, when all issues are considered. These sites have a much better wind resources, and the sites would be far less controversial.

This course of action is particularly appropriate in the current regulatory climate; a section 10 permit has only marginal relevance to the proposed project (navigational to the project purpose (energy)). Further, in light of the First Circuit's concerns, it would benefit all if the property rights issues were first resolved. Better alternatives are readily at hand, and the Corps should at least forestall further action until an adequate legal program is in place and far more preferable alternatives are available.

8. Consideration of Sanctuary Status.

Under section 10, the Corps must consider conservation values. Nantucket Sound has been identified as one of the few sites in the country worthy of consideration for designation as a National Marine Sanctuary. In 1980, the Commonwealth nominated Nantucket Sound for National Marine Sanctuary status

because of its biological diversity and unique habitat areas. Three years later, the resource evaluation committee of the National Marine Sanctuary Program determined that the resources of Nantucket Sound were such that the Sound again warranted consideration for National Marine Sanctuary status. *See* <http://www.coastalstudies.org/what-we-do/public-policy/nantucket-sound.htm>. The highly respected Center for Coastal Studies has reached the same conclusion in its recently released report. Ex. 8, 9.

The value of this area as a National Marine Sanctuary is confirmed by the status of state waters under Massachusetts law. As already discussed in this document, the Commonwealth designated Nantucket Sound as part of its Marine Ocean Sanctuary system in 1970, protected as the CIOS. M.G.L. c. 132A § 13(c). The MOSA protects ocean sanctuaries "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. To that end, the Commonwealth has prohibited, among other things, "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.

These extraordinary ecological, historic, cultural, and economic values are all at odds with the transformation of the Sound into a private energy plant. Indeed, the very values to be protected under the state sanctuary statute (*e.g.*, the appearance and ecology of the ocean) would be destroyed by this project. Consequently, for the Corps adequately to assess the conservation values associated with this permit application, it is necessary to first allow a study of the national marine sanctuary qualifications of the Sound to occur. The DEIS is deficient because it fails to include an alternative that would defer action on the permit application until such a review is completed or, at the very least, to undertake such a review at this time through the qualified state and federal agencies.

C. The DEIS Alternatives Do Not Satisfy State Law.

The Commonwealth of Massachusetts has a profound interest in the project. It is the only affected state, and alone will bear the brunt of the adverse effects of this project. As a result of this interest, the manner in which the DEIS considers alternatives is of great significance for the Commonwealth.

The interest of Massachusetts in this regard is highlighted by the Corps' own regulations, which provide special deference to the states under section 10. Under the Corps regulations, the Chief of Engineers is required to review and evaluate all permit applications "when there is substantial doubt as to authority, law, regulations, or policies applicable to the proposed activity." 33 C.F.R. § 325.8(c). When a District

Engineer's recommended decision in a given case "is contrary to the written position of the Governor of the state in which the work would be performed," the regulations require referral of the application to the Division Engineer. *Id.* § 325.8(b). Further, if a state were to deny authorization and/or certification for any activity that also requires an RHA permit before the Corps takes final action on the permit application, the district engineer is required to "either immediately deny the Army permit without prejudice or continue processing the application to a conclusion" whereupon he will conclude "by either denying the permit as contrary to the public interest, or denying it without prejudice indicating that except for the other Federal, state or local denial the Army permit could, under appropriate conditions, be issued." 33 C.F.R. § 320.4(j).

The position of Massachusetts on this alternatives analysis is important in three respects. First, under NEPA, the view of the Commonwealth as to whether federal law has been satisfied is especially important.

Second, the DEIS also serves as the Massachusetts DEIR. Thus, the document must pass muster under the Commonwealth's own standards. The Corps' disregard of the Commonwealth's concerns has been surprising. For example, when the Governor of the Commonwealth asked the Corps to delay the release of the DEIS until the boundary issue had been resolved, the Corps' response was that the Corps' jurisdiction remains unchanged so there would be no reason to delay the release of the DEIS. Of course the DEIS is also to serve as the DEIR. In addition, CWA has justified on the project in part on the basis of state law – the RPS. Indeed, the Corps has not even invited all of the necessary state agencies to participate in the review of the proposed project. The Massachusetts Division of Marine Fisheries is not listed as a reviewing agency, despite the fact that it is the *only* agency, state or federal, that has jurisdiction over the fisheries of all of Nantucket Sound.

Finally, the DEIS alternatives analysis must be adequate to allow Massachusetts to apply CZMA standards. As discussed elsewhere in these comments, the DEIS evaluation of alternatives fails on all counts.

VIII. THE DEIS DOES NOT ADEQUATELY CONSIDER TECHCNICAL ISSUES ASSOCIATED WITH OFFSHORE WIND

The DEIS is seriously flawed in the most basic respect because it fails to evaluate the technical risks associated with offshore wind, consider accurately the need for the project, or estimate correctly project performance. These deficiencies are summarized below.

A. Draft EIS Fails To Discuss Offshore Wind Project Technical Risks.

The draft EIS should objectively address the costs, risks and benefits of the proposed Cape Cod Wind project. Unfortunately, the current draft EIS fails to meet this basic requirement. CWA would be the *first* offshore wind farm project in the United States and the world's largest offshore wind project. Only limited data exist on offshore wind construction and operation from a few smaller European offshore wind projects. Surprisingly, the document contains *no* discussion of any operating and safety issues experienced by these European offshore projects or their mitigation strategies. Given the limited offshore history and the much larger scope of the proposed project, it would be prudent to apply more conservative "worst case" assumptions in evaluating the potential environmental impacts than the proponent's anticipated "best case" conditions.

With project water depths ranging from 12-50 feet, *see* DEIS at 4.1.2, the proposed project will be operating in deeper waters than most existing offshore wind farms. Its location should experience greater wind, wave and ice loading than other European offshore wind projects. Unfortunately, Section 4 of the DEIS contains no technical discussion on specifically how these issues are being addressed or mitigated in the project design.

The project will utilize the new GE 3.6 MW turbine design (world's largest) that is in use in only one operating offshore wind farm—the 25.2 MW Arklow project in the Irish Sea that came online in 2004. The proposed project would the first application of the turbine in United States waters and one of its earliest applications worldwide. The EIS should explore the uncertainty about these turbines, their durability and operation, and look to the Arklow project for guidance.

These issues should have led to a more conservative approach in assessing the technical risks associated with the project.

B. The DEIS Overstates Wind Project Need.

In Section 2.2, the DEIS states that the purpose and need of the proposed project is to provide an "utility-scale renewable energy facility" that is capable of providing power to the New England grid. While there is much to recommend against the chosen purpose and need statement, the DEIS falls short on providing the supporting independent analysis on the unreasonably narrow project need and statement selected.

The EIS uses the January 2003 La Capra study, *see* Appendix 5.16-B, to support its contention that the proposed project is required to meet both generation capacity and renewable energy requirements in the New England Powerpool. This

contention is false. While it is the case that New England will eventually need new capacity generation to cover projected unit retirements and new load growth, wind will not necessarily play a major role in meeting these needs, as suggested in section 5.15.4. Because wind is intermittent and unreliable, the New England ISO assigns wind only a very small proportional capacity credit on the order of 10 percent of a wind project's nameplate capacity. For the proposed project, its capacity credit would be less than 50 MW. Given its minimal capacity credit, the proposed project will likely neither displace nor delay any new conventional generating capacity construction.

The real project need would be to contribute towards the mandated minimum renewable energy requirements in Massachusetts and Connecticut. Both states have renewable portfolio standards that guarantee a portion of their energy needs will be provided by renewable energy projects. Currently, these renewable energy dictates are being met through biomass and landfill gas projects. Both states have received applications to qualify additional renewable projects. These projects include one New York wind project (Fenner-30 MW) and several biomass projects (Schiller-50 MW, McNeil-50 MW, EcoPower- 21 MW, Borlex- 80 MW, GenPower-80 MW).[128] These projects have received preliminary approval and if implemented would exceed the renewable energy dictates through the next 10 years. With the proposed project, the pool of potential competing renewable energy projects increases. With the potential supply outstripping demand, it is likely that the renewable energy credit values would decrease and several proposed renewable projects will never be built. In summary, the renewable energy demand in New England would still be met without the proposed project. The proposed project may displace other renewable energy projects competing for the limited available market share.

C. The DEIS Assumes Performance That Was Not Independently Validated, and Public Wind Data Suggests Performance Overstated.

The DEIS is expected to weigh the project impacts against its anticipated benefits. The two largest stated project benefits—a claimed $25 million in reduced power costs and $53 million in public health benefits—are directly proportional to the assumed facility power output – i.e., 1,489,200 MWh. To quantify benefits, the DEIS relied exclusively upon the project proponents' own power output estimates and studies while making no attempt independently to validate their claims. Given that

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128 A full listing of qualified projects and those that have received preliminary concept approval are listed at <http://www.mass.gov/doer/rps/advisory.htm>.

little incentive exists for the developer to provide a conservative power output estimate (with the result that the project would yield smaller benefits with the same project impacts), it is essential for the Corps to scrutinize these estimates to assure that the project benefits are not overstated.

In this regard, CWA project 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 farms. 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 2.6% for 2002; and the more recent Madison, New York wind project at 19.2 % in 2003. No evidence was provided to support the claim for a 35-50 percent better performance than the Hull, Massachusetts project located along the Massachusetts coastline that may have somewhat similar prevailing offshore wind and icing conditions.

The national average net capacity factor for 137 reporting land-based wind farms on the EIA Form 906 was 26.9% in 2003, Ex. 68. Although turbine technology has improved, that improvement alone cannot justify a significantly higher performance. For example, for large wind projects coming online after 2000 that use the current modern technology, the national average capacity factor was just 26.7 percent.

While there are no U.S. offshore wind facilities, such facilities exist in Europe. The Danish offshore wind turbine performance in 2003 averaged only 29.4%[129] and 31.9% for the first 11 months in 2004, Ex. 69. The Danish project most similar to the proposed project—the 160 MW Horns Rev wind plant in the North Sea- averaged only 24.1% capacity factor in the first 11 month of 2004.

The existing operating data from both U.S. onshore and European offshore projects are unable to support the use of an average project capacity factor above 30 percent. Unfortunately, the EIS contains no onsite wind tower data to confirm the developer's much higher power output estimate.

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[129] Danish offshore wind turbine projects that receive governmental assistance are required to report their generation to the government. These data are reported for 423 MW of offshore Danish wind projects that are available at <http://www.ens.dk/graphics/ENS_StatistikogData/statistik/EnergiData/Vindregister/AnlaegProdTilNettet20041220.xls>.

A review of data regarding Massachusetts offshore wind confirms this conclusion. To develop an independent estimate, public wind data were collected for the period August 1, 2002 to July 31, 2003 from the nearest reporting NOAA station (No. 44018 located 30 miles east of Nantucket and Southeast of Cape Cod). This site reports average wind speed every 10 minutes and has over 52,000 readings for the 12-month period. The NOAA monitoring dataset was increased by 13 percent to replicate the 8.89 m/s average annual wind speed for the turbine elevation and location that was reported in section 4.1 of the EIS. The performance curves for the GE 3.6 MW turbine were applied to the wind speed dataset to develop gross power output estimates for every 10-minute period and then aggregated to derive the maximum gross project power output of 1,262,900 MWh for the 12-month period, *See* Ex. 70.

To develop a net project output, the maximum gross power output estimates must be adjusted to reflect losses from planned and unplanned turbine outages and transmission losses. For this calculation, an offshore turbine availability of 95 percent, transmission losses of 3 percent, and a 9.7 percent forced outage rate from icing, blade fouling, array losses and cold temperatures were assumed. Given the current Danish offshore operating experience and their documented problems, these availability and forced outage rate estimates are likely conservative. Accounting for these losses, the project net generation was reduced to 1,050,900 MWh for an equivalent capacity factor of 25.6 percent. This performance is 29 percent less than the developer used in the benefit calculations.

If the lower average annual wind speed estimate contained in the New England wind map for the project area was used (8.5 m/s @ 70 m elevation), the net output would be even less (963,800 MWh or 23.5% capacity factor). Thus, wind data from NOAA Station 44018 supports a 23.5-25.6% capacity factor.

CWA erected a 20 meter high monitoring station on the project site to collect wind speed data. For the period between September 5, 2003 and December 10, 2004 the readings were posted on its website and downloaded by the Beacon Hill Institute. Overall nearly 120,000 wind speed datapoints were collected. The dataset collected contains numerous no readings and was missing readings for the first 22 days in 2004. Overall, the monitoring station provided wind speed data for 90 percent the time period.

Three adjustments were made to the dataset. First, the wind speed data was increased by 21 percent to reflect the difference between the proposed turbine height (75 m) and the monitoring station height (20 m). Second, the large January 2004 data gap was filled in using December 2003 data given the similarities in wind speeds between the months as shown in the NOAA data, *see* Ex. 70. Finally, missing data

for short time periods (less than 30 minutes) were filled in using wind speed data just before and after the data gap. Based upon these adjustments, the annual average wind speed for the site was 9.13 m/s (versus the 8.89 m/s used in the DEIS).

Applying the GE turbine performance curves to the 2004 adjusted wind speed dataset resulted in an estimated project maximum output before losses of 1,737,816 MWh. Making the same adjustments for turbine availability, transmission losses and forced outage losses as outlined above, the net project output after losses was calculated to be 1,406,495 MWh for an average capacity factor of 34.3%, *see* Ex. 71.

If the wind speed dataset was adjusted to reflect the 8.89 m/s average wind speed identified in the DEIS, the calculated project output would be reduced to 1,294,257 MWh (31.6% capacity factor), *see* Ex. 72. Alternatively, if the 8.5 m/s average wind speed identified in the New England map was used, the project output would have been even less—1,192,992 MWh (29.1% capacity factor), *see* Ex. 73. In summary, the public wind data sets also support a lower power project output than currently used in the DEIS.

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 percent (1,025,000-1,230,000 MWh) should have been used to calculate wind project impacts—not 36 percent (1,489,200 MWh).

D. The DEIS Overestimates Power Cost Reduction Benefits

The DEIS suggests that one of the largest benefits of the proposed project would be a $25 million annual savings for New England customers. *See* DEIS, at 5.16.4.2. This estimate was based upon a March 2002 LaCapra study described in Appendix 5.16-B. Unfortunately the study is described in such broad detail and contained no supporting documentation as to make a full analysis possible. However, the analysis is built upon an overly optimistic power output (1,486,000 MWh) and the assumption that the wind project output would have significant effect on marginal costs during peak demand prices. As discussed above, a review of the wind data and operating experience suggests that the proposed project output would be far less than assumed in the analysis. In addition, the project output during the high cost peaking summer demand periods was often minimal to none at all. The combination of these factors suggests that the March 2002 LaCapra study significantly overstated the "annual savings."

Second, the simplified analysis does not reflect the net costs since it excludes the large subsidies being paid by the taxpayers and ratepayers that offset these "annual savings." The LaCapra calculations exclude the taxpayer subsidized federal tax

credits, the ratepayer subsidized renewable energy credits, state subsidized corporate tax exemption and local tax exemptions.

Finally, the LaCapra study assumes that the proposed project will displace marginal grid power. As discussed earlier, the project will more likely be competing against other renewable energy sources for the limited set-aside renewable energy market. If the proposed project is built, it is likely that some New England biomass projects would not be built. The "savings" calculation should the cost of wind against a similar level of biomass production costs. Under such an evaluation, the CWA project fails.

IX. CONCLUSION AND RECOMMENDATIONS

These extensive comments establish beyond a doubt that the proposed wind energy plant is destined for defeat. It is the wrong project, at the wrong time, in the wrong place, and it has been reviewed under a clearly insufficient and illegal permitting process. The promise of offshore wind energy is unfortunately being held captive by the whims of one zealous developer intent on constructing the world's largest offshore wind energy project in Nantucket Sound, an area highly valued for its ecological, recreational, aesthetic and historic values. The applicant's single-minded focus to develop this one site, combined with Corps' failure to direct the review of the process properly, has resulted in major public controversy, legal dispute, and conflict between what should be compatible public policy goals – i.e., the need to promote properly-sited renewable energy and establish comprehensive systems of ocean governance that protect special places like Nantucket Sound.

As established in these comments, it is clear that offshore wind energy development cannot proceed without Congress first taking the steps to authorize such projects. The key to correcting this problem is for the federal government to take full command of this issue and steer it in the right direction. By taking the necessary actions now, the federal government can develop a truly innovative program and make a significant stride forward in developing a national, environmentally-sound energy policy. If this is not done, the future of offshore wind energy will be jeopardized by this fight over the fate of Nantucket Sound, which will undoubtedly last for years and require a massive expenditure of private and public resources. Perpetuation of this controversy is in no one's best interest.

There are numerous sites that most agree would facilitate the development of offshore wind in a way that serves the public's (and not just the developer's) interest. While the review of the proposed project will remain mired in public controversy because of the applicant's refusal to consider other locations, APNS and numerous other parties support expeditiously promoting environmentally sound energy

solutions, including but not limited to onshore and offshore wind. A critical component of that plan is, of course, first obtaining the proper authorization and process from Congress for those activities not explicitly authorized, and then assisting the responsible agency in determining where such renewable projects least conflict with ecological, recreational, economic and aesthetic resources and are economically viable.

Not only is Congressional authorization a prerequisite to offshore wind energy development, it is clear that this particular project cannot be permitted. These DEIS comments establish, on multiple levels, the reasons why the project is against the public interest. In addition to the layers of legal and technical deficiencies, the public and political opposition is overwhelming. Such strong opposition, sustained (and growing) over such a long period of time, clearly signals that the process is flawed and the proposed energy plant ill-sited; it is time to look to a new approach.

If the Corps chooses not to deny this permit application outright, as it should considering the insurmountable legal, political and technical issues, it will continue to slog through an increasingly complex and contentious permit review. Foremost, the Corps will have to issue a supplemental EIS for further public review.[130] Even before the end of this comment period, numerous parties have called for a supplemental EIS.[131] As part of this process, the Corps must remove ESS from the role of EIS contractor, develop a new list of contractors from which a selection can be made (after consulting with the interagency team), and develop an MOU to ensure that CWA is separated from EIS policy and legal issues.

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[130] The Corps must undertake a supplemental EIS in this case. CEQ regulations require an agency to prepare an supplemental EIS when: "(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." 40 C.F.R. § 1502.9(c)(i),(ii). This section "creates a duty on the part of the agency to prepare a supplemental EIS if substantial changes from any of the proposed alternatives are made and the changes are relevant to environmental concerns." *Dubois v. USDA*, 102 F.3d 1273, 1292 (1996).

An SEIS should also be prepared if the agency determines NEPA is furthered by the supplement. 40 C.F.R. § 1502.9(c)(2). Moreover, "an additional alternative that has not been disseminated previously in a draft EIS may be adopted in a final EIS, without further public comment, only if it is 'qualitatively within the spectrum of alternatives that were discussed' in the prior draft; otherwise a supplemental draft is needed." *Dubois,* at 1292 (quoting 40 Questions, #29b).

[131] APNS is aware of the following supplemental EIS requests at this time: the CCC, Massachusetts Audubon Society, the Towns of Barnstable and Yarmouth, the Humane Society of the United States, and the Ocean Public Trust Initiative.

In addition, the Corps and CWA must initiate a vast array of related procedures, most of which will lead to the same result of permit denial. These include:

1. ESA consultation;
2. MMPA incidental take authorization process and public review;
3. Section 404 permit application and review;
4. Section 402 permit application and review;
5. MBTA data gathering and take evaluations (leading to permit denial due to unauthorized take);
6. CZMA review, leading to an inconsistency finding;
7. Completion of NHPA compliance, with a correct scope of analysis and emphasis on alternative sites;
8. State boundary clarification, with associated actions to address the provisions of MOSA power project prohibitions;
9. Completion of EFSB process;
10. Completion of CCC process;
11. Completion of the Chapter 91 variance procedure;
12. Resolution of conflicts with sand dredging rights of local governments to Horseshoe Shoal;
13. Resolution of absence of property rights issue, requiring competitive bidding and valuations of project resource use for rents and royalties;
14. Resolution of the navigational servitude issue; and
15. Completion of the System Integration Study process.

This is only a partial list of the key tasks. Taken together, and when supplemented with the other steps discussed in these comments and the extensive

revisions needed under NEPA and MEPA, it is clear that this project at this location has no prospect for success.

CWA and the Corps can continue down the current path leading to years of dispute, expense and ultimate permit denial. A far better course is to begin to explore alternative approaches. Through the CWA debate, a platform has been established to engage all of the interested parties in a consensus-based process designed to arrive at an efficient, but legally sufficient, approach to offshore wind energy development within a sound ocean governance framework. Rather than forge ahead with its narrow, conflict-ridden permitting approach, the Corps should follow the course that so many other agencies have used to facilitate discussions to achieve a consensus result.

With most of the parties in agreement on the ultimate goal, there is an excellent opportunity for such a collaborative process here. In such discussions, Nantucket Sound and similar areas of high conservation value must be off the table. Without the conflict engendered by the effort to exploit such locations, the way would be cleared for an agreed upon process to achieve a place for renewable energy in the context of federal ocean policy. APNS supports this approach and encourages CWA and the Corps tojoin in that common effort.

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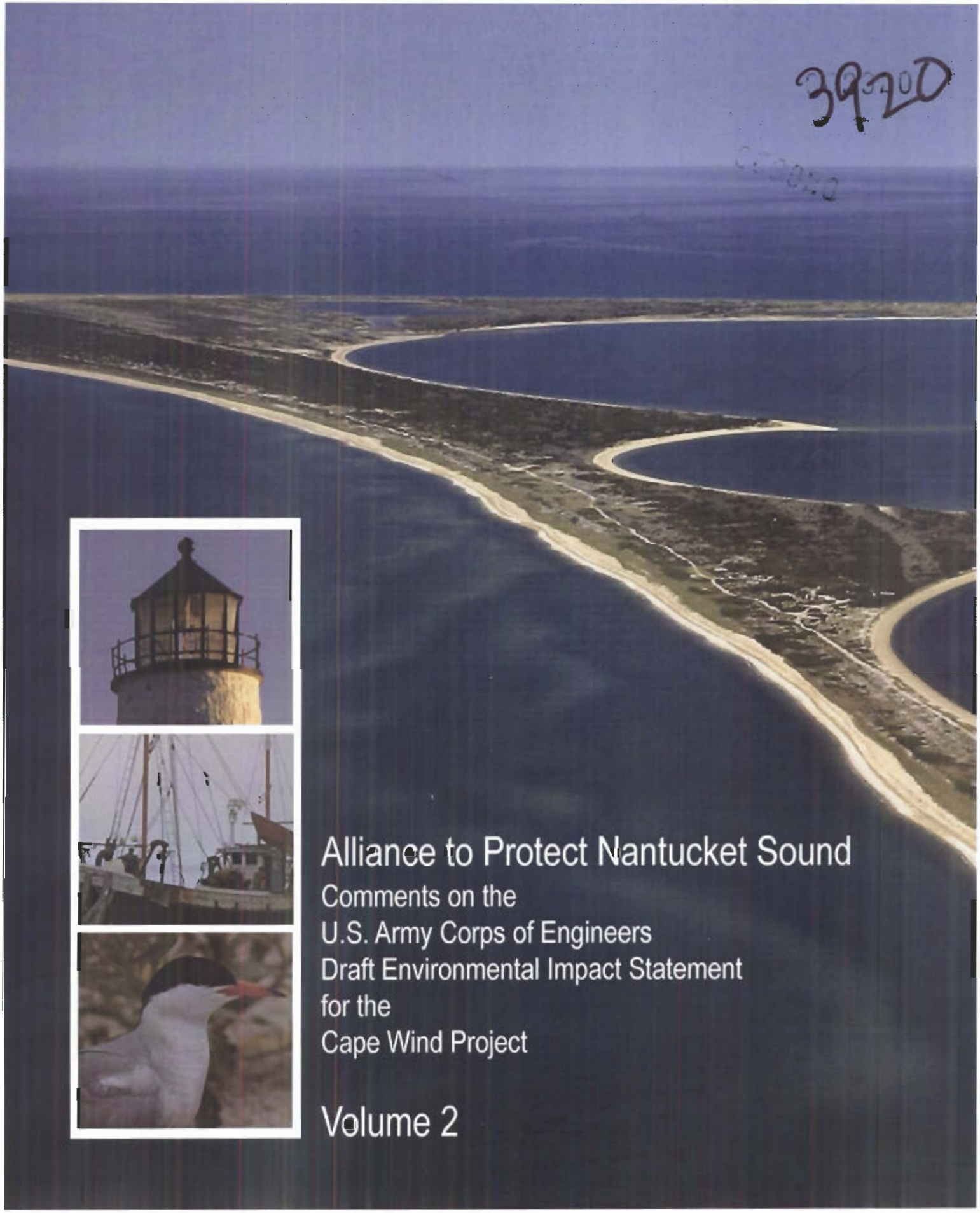

Alliance to Protect Nantucket Sound

Comments on the
U.S. Army Corps of Engineers
Draft Environmental Impact Statement
for the
Cape Wind Project

Volume 2

February 24, 2005

COMMENTS OF THE

ALLIANCE TO PROTECT NANTUCKET SOUND

ON THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE
PROPOSED CAPE WIND ENERGY PLANT

VOLUME II

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CONTENTS

Volume II

003920

I. INTRODUCTION 1

II. COMMENTS ON SUBSTANTIVE TECHNICAL DEFICIENCIES IN THE CAPE WIND DEIS 1

A. Comments on DEIS Section 1 (Executive Summary) 1

B. Comments on DEIS Section 3 (Alternatives Analysis) 1
1. Navigation Comments 1
a. General 1
b. Environmental Resources Review (3.4.3.2.10) 10
c. Environmental Consequences (3.4.3.4.10) 13
2. Protected Avian Species and Avian Resources Comments 14
a. Environmental Resources Review (3.4.3.2.1) 14
b. Environmental Consequences (3.4.3.4.1) 19
3. Geology Comments (Geology and Soils, Mass Military Reservation, Bedrock and Glacial Geology, Seismicity) 22
4. Oceanography Comments 23
a. Environmental Resources Review (3.4.3.2.3) 23
b. Nantucket Sound 24
c. South of Tuckernuck Island 25
d. New Bedford/Horseshoe Shoal 26
5. Protected Marine Species Comments 26
a. Environmental Resources Review (3.4.3.2.4) 26
b. Environmental Consequences (3.4.3.4.4) 27
6. Fisheries Comments 31
a. Environmental Resources Review (3.4.3.2.5) 31
b. Environmental Consequences (3.4.3.4.5) 32
7. Benthos Comments (3.4.3.2.6) 33
8. Aviation Comments 42
a. Environmental Resources Review (3.4.3.2.8) 42
b. Environmental Consequences (3.4.3.4.8) 50
9. Telecommunications Comments 53
a. Environmental Resources Review 53
b. Environmental Consequences 53
10. Aesthetics/Landscape/Visual Comments 55
a. Environmental Resources Review (3.4.3.2.12) 55
b. Environmental Consequences (3.4.3.4.12) 56
11. Recreation Comments 57
a. Environmental Resources Review (3.4.3.2.13) 57

b. Environmental Consequences (3.4.3.4.13) 57
12. Water Quality and Water Resources Comments (3.4.3.2.15) 59
13. Electrical and Magnetic Fields (EMF) Comments (3.4.3.2.16) 59
14. Safety Comments 60
a. Environmental Resources Review (3.4.3.2.18) 60
b. Environmental Consequences (3.4.3.4.18) 62
15. Engineering Comments (3.4.3.3.1) 64
16. Economic Comments (3.4.3.3.2) 64
17. Summary of Detailed Analysis of Alternatives Comments (3.4.3.5) 64
18. Comments on Comparison of Nantucket Sound Alternatives (3.4.4) 65

C. Comments on DEIS Section 4 (Project Description of Applicant's Proposed Action) 66
1. Wind Park Description Comments 67
2. Construction and Operation & Maintenance Comments 73
3. Spill Risk Comments 76
4. SPCC Plan Comments 93
5. Security Comments 94
6. Safety Comments 94

D. Comments on DEIS Section 5 (Environmental Resources and Consequences for the Applicant's Proposed Alternative) 95
1. Geology and Sediment Conditions Comments (5.1) 95
2. Physical Oceanographic Conditions Comments (5.2) 97
a. Model Simulations of Jet Plow Embedment of Cable System (5.2.2.4) 98
b. Existing Conditions (5.2.3) 101
c. Analysis of Impacts (5.2.4) 102
d. Mitigation (5.2.5) 102
3. Benthic and Shellfish Resources Comments (5.3) 102
4. Finfish Resources and Commercial/Recreational Fisheries Comments (5.4) 137
a. Finfish Resources (5.4.3.2) 139
b. Commercial Fisheries (5.4.3.3) 140
c. Recreational Fisheries (5.4.3.4) 144
d. Essential Fish Habitat Assessment (5.4.4) 147
e. Analysis of Impacts (5.4.5) 147
5. Protected Marine Species Comments (5.5) 151
6. Terrestrial Ecology, Wildlife, and Protected Species Comments (5.6) 158
a. Right-of-Way (ROW) Segment (5.6.3.2) 159

b. Upland Impacts (5.6.4.2.1) 160
c. Bats (5.6.4.2.3) 161
d. Mitigation (5.6.5) 163
7. Avian Resources Comments (5.7) 163
8. Coastal and Freshwater Wetland Resources (Section 5.8) 170
9. Cultural and Recreational Resources and Visual Studies Comments (5.10) 175
10. Noise (5.11) 186
11. Transportation and Navigation Comments (5.12) 188
12. Electrical and Magnetic Fields Comments (5.13) 207
13. Telecommunications Systems Comments (5.14) 208
14. Socioeconomics (5.16) 223
a. General 223
b. Electricity, Rates, and Reliability (5.16.4.2) 224
c. Public Health Benefits and Associated Costs (5.16.4.3) 224
d. Local Economy (5.16.4.4) 225
e. Housing and Coastal Property Values (5.16.4.5) 226
f. Tourism and Recreation (5.16.4.6) 226
g. Fishing (5.16.4.8) 227

E. Comments on DEIS Section 6 (Comprehensive Environmental Monitoring Program) 227
1. Benthos Studies 227
2. Pre-Construction Monitoring Comments (6.1) 228
a. Noise Monitoring 229
b. Biological Monitoring 229
c. Limited Sediment Analysis and Habitat Correlation 235
d. Nematodes in the Analyses 238
3. Construction and Post-Construction Monitoring Comments (6.2) 240

F. Comments on DEIS Section 7 (Regulatory Permitting Authorities and Regulatory Reviews) 242
1. Description of EFSB Proceeding 242
a. The Decision disregards the statutory provisions in the Massachusetts Ocean Sanctuaries Act ("MOSA") that would prohibit cables to offshore generation stations 244
b. The Decision applies a new standard of review for determining the need for the project that is announced for the first time in the Decision itself 246

c. The Decision's formulation of the new standard of review is inconsistent with the Siting Board's statutory mandate 248

d. The Decision's analysis using a previous standard of review is actually the application of another new standard that is not supported by the evidence and relies at least in part on matters outside of the Siting Board's jurisdiction 252

2. Specific Comments on Other Permitting Requirements 257

G. Comments on DEIS Section 9 (MEPA Draft Section 61 Findings (M.G.L.C.30 § 61) 258

H. Comments on DEIS TABLES, FIGURES, APPENDICES 260

1. Table 3-15a: Finfish and Shellfish Resources within the Offshore Alternatives 260
2. Tables 3-16, 3-17 and 3-18 260
3. Table 5.1-2: Suitability of Coring Data 261
4. Table 5.3-1: Summary Statistics for Invertebrate Data 261
5. Table 5.4.5: Summary of Studies on Acoustic Impacts to Fish 261
6. Table 5.11-11 264
7. Tables 5.13.1-8 and 10 265
8. Tables 5.13.9 265
9. Figure 3-26: New Bedford Harbor Superfund Site 265
10. Figure 4-19 266
11. Figure 5.6-1 266
12. Figure 5.8-2. 266
13. Figures 5.8-3 and 5.8-4 266
14. Figure 5.12-2: Aeronautical Navigation Features 266
15. Appendix 3-A: Wind energy as a siting criteria 266
16. Appendix 3-G: Marine Protected Species Descriptions 267

a. Section 1.0 Introduction 267

b. Section 2.1 Humpback whale (Megaptera novaeangliae) 268

c. Section 2.2 Fin whale (Balaenoptera physalus) 269

d. Section 2.3 Northern right whale (*Eubalaena glacialis*) 270

e. Section 2.4 Loggerhead turtle (*Caretta caretta*) 271

f. Section 2.5 Kemp's ridley turtle (*Lepidpchelys kempii*) 272

g. Section 2.6 Leatherback turtle (Dermochelys coriacea) 272

h. Sections 3.1, 4.1, 4.2, and 4.3 (Gray, Harbor, Harp, and Hooded Seals) 273

i. Section 4.4 White-sided dolphin (Lagenorhynchus acutus) 273
j. Section 4.5 Striped dolphin (Stenella coeruleoalba) 273
k. Section 4.6 Common dolphin (Delphinus delphis) 273
l. Section 4.7 Harbor porpoise (Phocoena phocoena) 273
m. Section 4.8 Long-finned pilot whale (Globicephala melas) 274
n. Section 4.9 Minke whale (Balaenoptera acutorostrata) 274

17. Appendix 3-H: Essential Fish Habitat (EFH) Designation Descriptions 275
18. Appendix 5.2-A: Analytical modeling of alternative wind farm sites – Existing Conditions from the Woods Hole Group's studies 275
19. Appendix 5.2-B: Coastal Engineering design parameter analysis Phase I – Preliminary from the Woods Hole Group, March 2004 275
20. Appendix 5.3-A: Benthos Assessment of 2001 276
21. Appendix 5.3-B: Benthic Macroinvertebrate Community Assessment 2002 286
23. Appendix 5.3-C: Lewis Bay Benthos & Shellfish Survey 2003 302
24. Appendix 5.4-C: Essential Fish Habitat Assessment 313
25. Appendix 5.5-A: Marine Biological Assessment for the Cape Wind Project 325

a. Introduction 325
b. Section 1.2 Species Considered 325
c. Figure 1 326
d. Sections 3.2.2 and 3.2.4 Plankton Communities and Finfish 326
e. Section 4.1 The Humpback Whale (*Megaptera novaeangliae)* 326
f. Section 4.2 The Fin Whale (*Balaenoptera physalus*) 328
g. Section 4.3 The North Atlantic Right Whale (*Eubalaena glacialis*) 329
h. Section 4.4 The Loggerhead Turtle (*Caretta caretta*) 331
i. Section 4.5 Kemp's Ridley Turtle (*Lepidochelys kempi*) 332
j. Section 4.6 The Leatherback Turtle (*Dermochelys coriacea*) 332

003920

k. Section 5 Potential Impacts To Protected Species 332
l. Section 5.2.5 Acoustic harassment 335
m. Section 5.2.6 Electromagnetic / Thermal Emissions 339
n. Section 5.2.7 WTGs as Fish Aggregating Devices 339
o. Section 5.2.8 Habitat Shift from Open Ocean Shoals to Structure-Oriented 340
p. Section 5.2.9 Cumulative Impacts 340
q. Section 5.3 Summary / Conclusion of Impacts 342
r. Section 5.4 Management Alternatives for the Potential Impacts of the Proposed Action 342
s. Additional and More Recent Cetacean Literature 342
t. Additional and More Recent Literature on Sea Turtles 344

26. Appendix 5.5-B: Pinniped Assessment for the Cape Wind Project 346
a. Section 2.1 Gray Seal (Halichoerus grypus) 346
b. Section 2.2 Harbor Seal (Phoca vitulina concolor) 347
c. Sections 3.2.9, 3.3, and 3.4 349
d. Literature 349
i. Literature on Seals in the Gulf of Maine and the Western Atlantic 349
ii. Food Habits of Harbor and Gray Seals 350
iii. Seasonal Movements and Foraging Ranges of Harbor and Gray Seals 352
iv. Noise and Disturbance Effects on Harbor and Gray Seals 353

27. Appendix 5.6-A: Terrestrial Ecology Correspondence 354
29. Appendix 5.7-A: Preliminary Avian Risk Assessment (reported by Kerlinger and Hatch) 354
29. Appendix 5.7-E: Radar Studies of Birds 355
30. Appendix 5.7-F: Spring/Summer 2002 Waterbirds Survey for the Cape Wind Energy Project 356
31. Appendix 5.11-A: Noise Report 356
32. Appendix 5.12-A: U.S. Coast Guard Correspondence 366
33. Appendix 5.12-B: Navigation Risk Assessment 367
34. Appendix 5.12-C: FAA Determination 367

EXHIBITS

REFERENCES

I. INTRODUCTION

This section sets forth specific comments, on a chapter-by-chapter basis, on the U.S. Army Corps of Engineers' (the "Corps") DEIS for the Cape Wind Associates ("CWA") Energy Project. The comments on each chapter are broken down by topic, with references generally provided according to the relevant page and paragraph. As these extensive comments demonstrate, the DEIS is so fundamentally flawed on every level that the Corps has no choice but to undertake a wholesale revision and issue a supplemental EIS for further comment, assuming that the application is not withdrawn or rejected outright.

II. COMMENTS ON SUBSTANTIVE TECHNICAL DEFICIENCIES IN THE CAPE WIND DEIS

A. Comments on DEIS Section 1 (Executive Summary)

These comments do not discuss the DEIS Executive Summary separately. Although the Executive Summary is seriously flawed, those problems are all inherited from the discussion in subsequent chapters. Clearly, a supplemental EIS is needed, and commenting separately on the Executive Summary is unnecessary. The comments in this section instead correspond to DEIS chapters 3 (Alternatives Analysis), 4 (Project Description of Applicant's Proposed Action), 5 (Environmental Resources and Consequences), 6 (Comprehensive Environmental Monitoring), 7 (Regulatory Permitting), 9 (MEPA Findings), and Tables/Figures/Appendices. As discussed in this section, each of these chapters contains serious errors and must be redone.

B. Comments on DEIS Section 3 (Alternatives Analysis)

1. Navigation Comments

a. General

A report submitted on behalf of APNS by The McGowan Group (The McGowan Group, 2004) and its conclusions regarding the navigation and marine pollution risk of the Nantucket Sound site have been overlooked or ignored. The report's conclusions—that the Nantucket Sound project is incompatible with the marine transportation needs of the area, creates unacceptable risks to the environment and shipping, and is fatally flawed due to the failure to perform a rigorous navigation risk assessment—remain unanswered. These conclusions should have been fully addressed before an EIS was issued. The failure to do so renders the DEIS deficient on one of the most important issues.

The evaluation criteria and development, and the selection of alternatives, fail to first apply a national standard or criterion comparing alternatives developed among the nation's regions against national energy needs. The process being applied is myopic and evaluates sites in only one basic location (Nantucket Sound) in a single region (New England).

The process fails to apply a reasonable filter or ranking from a national perspective, as was prescribed in the United Kingdom ("UK") and described in the UK Department of Trade Report "Energy White Paper – Our Energy future, creating a low-carbon economy" in February 2003. The site selection process applied in the UK removes from any consideration the development of any site found to be environmentally sensitive and/or a hub of marine transportation, thus avoiding the building and operation of a functional yet incompatible facility. Such a standard applied here would eliminate Nantucket Sound from consideration.

The Nantucket Sound sites are erroneously evaluated in Section 3.4.4 by a flawed navigation risk assessment (DEIS, Appendix 5.12-B.) The McGowan Group report concluded that the risk assessment submitted with the DEIS was fatally flawed. The conclusion reached in the DEIS that "Horseshoe Shoal was shown to be technically, environmentally and economically preferable…" is equally flawed and should be withdrawn. A supplemental EIS should not be issued until a rigorous navigation and marine pollution risk assessment addressing the issues raised in The McGowan Group report is performed.

The conclusion reached in the DEIS that the siting of a Horseshoe Shoal wind facility and its WTG spacing will not interfere with navigation, recreation, commercial fishing, etc. also is based on an erroneous analysis, Appendix 5.12-B. An EIS should not be issued until a full, realistic risk assessment is performed, accompanied by mitigation recommendations addressing marine transportation, marine safety and marine pollution.

The McGowan Group report assessed the navigation analysis prepared for Cape Wind Associates and concluded that the Nantucket Sound project was "fatally flawed in that it appears incompatible with marine transportation activity and poses unnecessary and unacceptable risks to cruise and ferry vessel, oil transport, fishing and recreational users."

The McGowan Group report further concluded that the CWA navigation assessment (DEIS, Appendix 5.12-B) failed to:

- Develop and apply design criteria showing that placement of the proposed wind energy facility adjacent to active shipping channels is compatible with the needs of marine transportation, and poses necessary and reasonable risks to cruise ship and ferry vessel, oil transport, fishing and recreational users.
- Propose a tower structure whose strength was sufficient to withstand a collision without complete failure of the tower and blade and/or the tower foundation;
- Utilize recognized methodology or to perform a complete risk assessment by examining and predicting collision frequency calibrated against actual marine casualty and marine pollution histories;
- Conduct an accurate measure of the types, routes, and density of the current marine users of the waters of Nantucket Sound;

- Assess the safety and pollution consequences, including injury and loss of life, resulting from vessel collisions with a wind tower;
- Consider the aggravating effects of wind, fog, and current on safe navigation;
- Recognize the inherent risk of vessel collisions in a realistic manner, without overemphasizing common safeguards such as the COLREGS and their burden on vessel operators, or navigation systems and/or of navigational aids;
- Identify and propose realistic "best practice" mitigation measures to offset the safety and environmental risks identified;
- Explore the negative impact to the Nantucket Sound fishing industry by acknowledging that these projects will effectively cut-off all trawling/dragging within the entire confines of the wind facility; and
- Highlight the threat the wind turbine blades pose to a substantial number of sailing or other vessels (including cruise vessels) with mast heights exceeding seventy-five feet.

The DEIS fails to address these issues.

The final two conclusions of The McGowan Group report are: "The pollution consequences of vessel-to-vessel and vessel-to-wind tower collisions must be fully explored as part of the USCG navigation assessment;" and that "The Coast Guard should consider, prior to any decision regarding the pending EIS, evaluating the impact of maritime security mitigation measures for the CWA proposals on the marine transportation system in Nantucket Sound." The DEIS contains no meaningful analysis or discussion of either pollution resulting from vessel casualties or of the security aspects associated with an energy generating plant or node.

The DEIS either overlooked or ignored the analysis and conclusions of The McGowan Group report. This crucial dichotomy regarding the safety of shipping and boating, and the threat of marine pollution, should have been fully resolved before a DEIS was issued.

Recent information has come to light that sheds further doubt on the transportation, marine safety and pollution conclusions reached in this DEIS:

1) The applicant has at various times been reported in media accounts as dismissing concerns over placement of the facility directly adjacent to and 800 feet from Nantucket Sound's Main Channel. The dismissal has been accompanied with the claim that such a placement is common at other wind facilities worldwide.

   A review of existing offshore wind facilities revealed that offshore wind facilities worldwide have been purposely located <u>miles from any active shipping channels and marine traffic lanes with two exceptions</u>. The DEIS fails to address this critical issue.

The first exception noted is the Middlegrunden wind facility located at the entrance to Copenhagen harbor. A full description of this facility can be found in "Middelgrunden Offshore, A newsletter for customers and business associates," (BONUS Energy A/S 2001). This facility of 20 WTGs has been located directly adjacent to and between two main shipping channels of Copenhagen's harbor entrance. It was built atop the dredge spoil area or "mud bank" where the dredgings from the channels and harbor entrance were dumped, built up and "stored" for decades. The WTGs were built on this man-made dump area where the dredged spoils have reduced the water depth to an average of 3 to 6 meters (10 – 20 feet). The approaches to the WTG bases were so shallow that channels had to be dug to float construction barges into position. This shallow water location provides genuine collision protection from mid to deep draft vessels that use the adjacent channels.

The Horseshoe Shoal location of Nantucket Sound affords no similar protection, as is repeatedly and erroneously claimed in the DEIS. Many of the WTGs adjacent to the Main Channel lie in water that is 30 – 35 feet in depth and fully exposed to collisions with deeper draft vessels. This risk should not be tolerated, and certainly cannot be ignored as it is in the DEIS.

The second exception found was the North Hoyle wind facility located in the bay off the North Wales coast outside the approaches to Liverpool England. This offshore facility was the recent subject of a UK Coastguard study of the effects of wind facilities on navigation and communications (MCA 2004). North Hoyle is made up of 30 WTGs located in water depths that range from 7 to 12 meters (23 to 40 feet). At its closest point, the wind facility lies 1.3 nm (2,600 yards) from the outer limit of the Port of Liverpool (Admiralty Chart No. 1978). The waters of Ormes Head to Liverpool region are heavy with industrial usage, with numerous oil and natural gas field—some located within 5 nm of the coastline—large dredging and spoil areas, and gas and oil pipelines crisscrossing the sea bottom. An area of approximately 10 nm^2 is restricted from all anchoring to protect bottom oil and gas lines about two miles to the North. The UK Coastguard study found strong marine radar and ship collision avoidance system interference from this wind facility. While the North Hoyle wind facility is located within 1.3 nm of a shipping area, the facility has less than ¼ the WTGs and lies over 5 times the distance away from shipping channels as is proposed for Horseshoe Shoal.

This problem is potentially augmented by the recent boundary redefinition. Because state law prohibits such projects, the applicant has indicated an intention to possibly relocate a number of WTGs. This could bring those hazardous structures into even closer proximity to the Main Channel.

2) The McGowan Group navigational critique reported that other governments and standards-setting organizations were developing or updating risk and navigational standards applying to offshore wind farms. In addition to new UK Maritime and Coastguard Agency appended requirements, the report indicated that Det Norske Veritas (DNV) had issued draft standards for offshore wind farms which identified the essential elements of a navigation risk assessment. DNV issued the standard in final form in June 2004, entitled "Design of Offshore Wind Turbine Structures" (DNV 2004). The navigation risk assessment appended to the DEIS which forms the basis for the DEIS's Transportation and Navigation analysis and conclusions fails to meet the essential elements of the DNV standard or of the "Best Practice" examples contained in The McGowan Group report.

3) The United Kingdom's Maritime and Coastguard Agency completed an analysis (MCA 2004) of the effect of offshore wind facilities on navigation and communication systems. This UK Coastguard report concludes that the presence of a wind facility produced strong marine radar distortion not only on vessels operating within the wind facility but also for vessels operating approximately 1 ½ nm (3,000 yards) distant from the periphery of the wind facility. A new study was commissioned to "...produce a methodology for assessing navigational risk—and marine risk in general—in and around offshore wind farms. It is intended to be used by government agencies for the assessment and, where appropriate, acceptance of offshore wind farm applications, and for the guidance of developers in the preparation of such applications. Included in this will be recommendations on suitable distances of wind farm boundaries from traffic routes" (MCA, 2004). The study identified that marine radar distortion for vessels as well as for shore based radar worsens in proportion to the height of WTGs. In summary, this UK Coastguard study demonstrates problems for a wind facility comprised of 30 WTGs, with a tower and blade height of 334 feet that is located 1.3 nm from the nearest commercial shipping channel. This DEIS in contrast declares that no negative navigation impacts are anticipated for a facility with 130 WTGs, each with a height exceeding 416 feet that has been located 800 feet from the Nantucket Sound main shipping channel. Obviously, the DEIS is seriously flawed on this point when compared to the best available information from the UK, which actually studied the issue.

The entire Transportation and Navigation section of the DEIS should be subjected to a rigorous re-analysis using internationally recognized procedures, applying standards and best practices common to other offshore wind facilities, and based on data independently developed by authoritative sources before a supplemental EIS is issued.

The DEIS also states that "The FAA analyzed the potential for the WTGs to effect Air Navigation. Based on its aeronautical studies, the FAA issued a "Determination of No

Hazard to Air Navigation." FAA Aeronautical Study Number 02-ANE 982-0E appears only to have analyzed the obstacle obstructions considerations exceeding 200 feet into the air. When contacted, the FAA could not offer any scientific or empirical data other than anecdotal office studies to show that the proposed wind farm will not produce interference with air traffic and air defense radar and communications. When the UK studies were brought to light, the FAA issued a letter indicating the determination of no hazard was not final and a review may be granted or denied.

Before the EIS is released, the FAA, USCG and DoD must issue a finite impact statement on the effect of the wind farm on marine radar, ARPA, air traffic and air defense radar, and communications.

The DEIS contains various conclusions including: "The presence of the wind park will not result in large scale changes to recreation or commercial vessel movements on Horseshoe Shoal.... The project is not anticipated to have substantial impacts on commercial fishing activities currently occurring in the vicinity...." These conclusions, and the socioeconomic assessment that follows, are based on a flawed and incomplete navigation assessment. The McGowan Group report in contrast concluded:

- CWA's proposed Horseshoe Shoal location is at odds with common international practice and threatens disruption of the Main Channel as a marine transportation route. The Tuckernuck Shoal and Handkerchief Shoal alternative sites face similar risks and pose the same potential disruption of marine traffic as the Horseshoe Shoal location.
- CWA's proposal for a Nantucket Sound site is fatally flawed in that it appears incompatible with marine transportation activity, and poses unnecessary and unacceptable risks to cruise and ferry vessel, oil transport, fishing and recreational users.
- The CWA assessment fails to explore the negative impact to the Nantucket Sound fishing industry by acknowledging that these projects will effectively cut-off all trawling/dragging within the entire confines of the wind farm.

This dichotomy of socioeconomic impacts should be resolved through the conduct of a rigorous navigation and pollution risk assessment before a supplemental EIS is issued.

The DEIS also fails to consider the extent and magnitude to which the proposed offshore wind-generated power plant increases the risk of spillage of bulk oil and hazardous substances into Nantucket Sound. Spill risks are increased due to: 1) the potential of a vessel (such as an oil tanker) colliding with WTGs placed near shipping channels and established vessel routes, and 2) bulk-stored diesel and transformer oils on the ESP. Risks of spillage from the facility are heightened during the entire life of the proposed facility: from facility construction through operations and decommissioning.

Oil spillage from the proposed offshore facility can impact a spectrum of sensitive biological resources (e.g., shellfish, fish, reptiles, birds and mammals). In order to obtain a general understanding of the magnitude of impacts to marine/coastal organisms from the proposed offshore facility, and to determine the need for more in-depth analyses of oil and hazardous spill impacts, oil spill impact model scoping studies were conducted. These studies modeled injuries to organisms sensitive to released oil such as egg and larval life stages fish and shellfish as well as wildlife. Spill impacts to sensitive biological resources resulting from three spill scenarios were developed and analyzed during each season of the year in an expert report (see Høverstad, B.A. and B. Brørs 2005) and summarized in Section 4.7 of this document: a statutorily-mandated worst case discharge involving nearly 1.3 million gallons of petroleum from a tanker vessel plying the Main Channel that collides with one or more WTGs (i.e., all petroleum cargo released); a more probable release of over 380,000 gallons of petroleum from a tanker vessel colliding with one or more WTG where two cargo holds are ruptured; and a spill of the bulk stored transformer and diesel oils from the ESP (41,000 gallons). Diesel was used as a conservative spilled substance for impact modeling purposes due to its bulk transport in the Sound, storage on the ESP and similarity in behavior to spilled transformer oils. Example spill biological impacts from these analyses are provided in Figure 1 and Table 1.

Analysis indicates that a significant oil spill event in Nantucket Sound would directly impact the Sound, Cape Cod, Martha's Vineyard, Nantucket, Vineyard Sound, proximal portions of the Atlantic Ocean and the Elizabethan Islands. Significant direct and indirect adverse impacts to the rich biological, cultural and recreational resources of the area (as detailed in Sections 3 and 5 of the DEIS) are anticipated, potentially resulting in additional substantial impacts to the regional economy (i.e, through adverse impacts to the fishing industry, aquaculture and tourism). Experience with the recent (2003) spill in nearby Buzzard's Bay serves to clearly corroborate the results of this analysis.

Preliminary modeling results provide reasonable cause for requiring proponent to conduct in-depth oil spill modeling studies that quantify biomass killed (and sustained lost future growth) as a result of these (and other) reasonable spill scenarios by species and life stage during each season (or month) of the year, as necessary, to obtain an accurate projection of losses resulting from spill incidents involving the proposed offshore wind-generated power plant. This modeling effort should be conducted for each of the proposed sites prior to publishing the EIS.

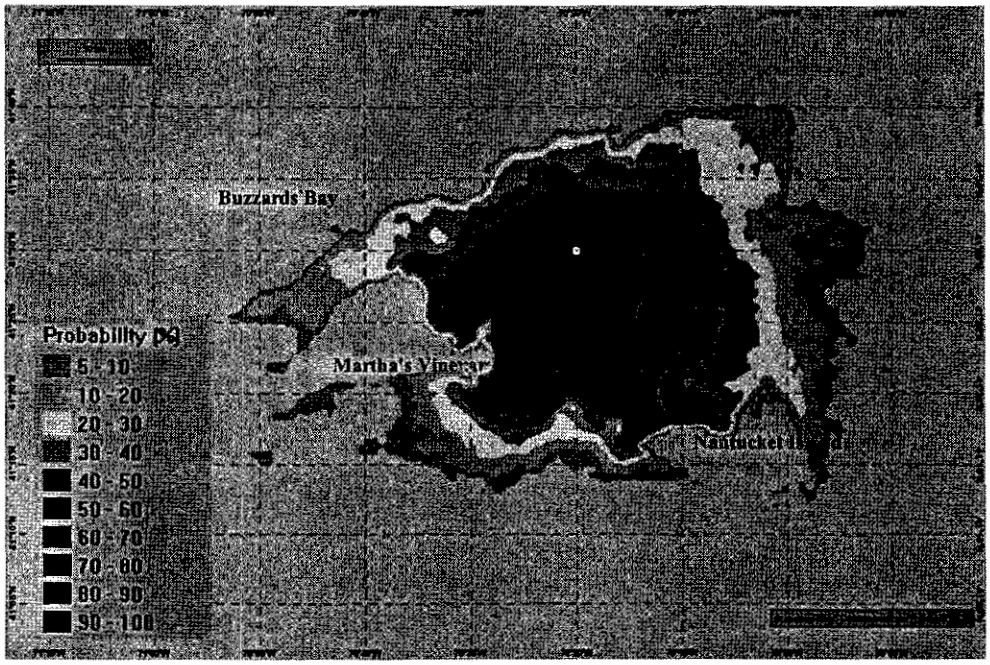


Figure 1 **Total risk map showing probability of adverse effects to shoreline, sea surface and water column biological resources with 0.1T/km² surface adverse effects threshold and 11ppb water column adverse effects threshold resulting from spillage of over 1.29 million gallons of diesel from a collision between a tanker vessel and a proposed WTG in autumn.**

Table 1

Open water areas and shoreline lengths at risk of pollution exposure and adverse effects resulting from a worst case discharge of over 1.29 million gallons of diesel from a collision between a tanker vessel and a proposed WTG during each season1

Habitat	Winter	Spring	Summer	Autumn
Water Column	695 square miles	598 square miles	722 square miles	869 square miles
Sea Surface	347 square miles	367 square miles	367 square miles	425 square miles
Shoreline	217 miles	211 miles	205 miles	217 miles

1 Areas at risk of pollution exposures and adverse effects are defined as those locations where there is a probability of greater that 5% exposure to oil contamination that exceeds the no adverse effects threshold concentration.

Pages 3-1 and 3-2 (3.0 and 3.1), all. The evaluation criteria and development and selection of alternatives fail to first apply a national standard or criteria comparing alternatives developed among the nation's regions against national energy needs. The process being applied is myopic and evaluates sites in only a single region. The flawed process in use fails to initially weigh a proposal made by a licensee for an offshore installation for its compatibility with transportation needs, public safety or for an unacceptable level of risk to a sensitive environment.

The process fails to apply a reasonable filter or ranking from a national perspective as was prescribed in the United Kingdom (UK Dept of Trade, 2003). The site selection process applied in the UK removes from any consideration the development of any site found to be environmentally sensitive and/or a hub of marine transportation, thus avoiding the building and operation of a functional yet incompatible facility.

Page 3-23 (3.2.2.6.1), all. The reliability of the machinery for wind produced electricity is provided apparently for shore-based wind facilities. This analysis needs to be updated to include offshore wind facility data, specifically to include the reliability experience of the Horns Rev offshore site in Denmark that was removed from service for an extended period in 2004, requiring complete overhaul and/or replacement of unreliable components that had failed prematurely in an offshore environment. The entire analysis should be updated including the most recent reliability and availability data for offshore facilities before an EIS is issued.

Page 3-25 (3.2.2.6.4), last par. This evaluation ignores the actual experience base of mitigating restrictions that have been put in place in the majority of offshore wind facilities severely impacting some waterway users. The McGowan Group report provides an overview of and conclusions for these restrictions and should be fully addressed before an EIS is issued (McGowan Group Report, 2004).

Page 3-25 (3.2.2.6.5), 3rd par. The potential impacts on marine transportation and marine environmental pollution and protection need to be added to potential environmental impacts.

Page 3-27 (3.3), 3rd par. The declarative sentence, "However, under the No-Action alternative, or if the permit is denied, it is likely that commercial development of offshore wind power in the United States…will not advance significantly" should be struck. No evidence or data is presented in the DEIS to substantiate this claim. Since the licensing process is myopic and only considers selected options in a single region of the United States, the value and importance of the proposed project to the nation's interests cannot be determined.

Pages 3-33 – 3-37 (3.4.2.2); Table 3-5, pp. 3-268-269. The screening and detailed "analysis" as described in the DEIS and summarized in Table 3-5 seems to selectively reach and present results in what would appear to be an arbitrary fashion. As noted in our comment under Section 3.0, these processes failed to weigh an alternative for compatibility with marine transportation needs, public safety or for an unacceptable level of risk to a sensitive environment. The process fails to apply a reasonable filter or ranking from a national perspective as was prescribed in the United Kingdom (UK Dept of Trade, 2003). The site alternative process applied in the UK removes from any consideration the development of any site found to be environmentally sensitive and/or a hub of marine transportation, thus avoiding the building and operation of a functional yet incompatible

facility. The analysis of the offshore alternatives is incomplete and erroneous in some areas as noted below:

- Some of the offshore alternatives provide information regarding potential conflicts with marine navigation. Others provide no marine navigation information at all such as the Nantucket Sound, Cape Ann, and Nantucket Shoals alternatives. This again shows the result-oriented nature of the alternatives analysis. The drafters of the DEIS only have one site in mind—Horseshoe Shoals.
- For those provided with navigation or marine transportation information, it would appear to have been in error, selectively applied and subsequently used to eliminate a particular alternative. As an example Section 3.4.2.2.2 identifies the following as a result for South of Martha's Vineyard: "The entrance to Muskeget Channel is located to the northwest which provides marine access into and out of Nantucket Sound between Martha's Vineyard and Nantucket, and project development in this area may impact marine navigation" (emphasis added). First, Muskeget Channel is northeast, not northwest, of this alternative as is depicted in Figure 3-12. Second, while Muskeget Channel may carry substantial small boat and some fishing vessel traffic is provides by no means major "marine access into and out of Nantucket Sound." The channel is too narrow and shoal-filled to serve that function. In contrast, the Main Channel of Nantucket Sound with its commercial, fishing, cruise and tank vessel, as well as extensive ferry service and recreational boat traffic, received not a single word about negative navigation impacts.

The analysis for offshore alternatives should be re-evaluated and explained in depth prior to issuance an EIS.

Page 36, last par. The DEIS refers to both a peer review report (Appendix 3-E) and an offshore wind facility industry survey effort (Appendix 3-F). The DEIS suggests that existing wind facilities have been built in relatively shallow water (<50 ft.) with low ESW's. A reading of the industry review, Appendix 3-F, paints a different picture for wind facilities being constructed (circa 2003) and planned. Maximum water depths for those facilities commonly range between 50 and 100 ft. at their deepest with ESW's up to 35 feet. The DEIS should be revised to indicate that 50 ft. depth is not a limiting factor, nor should ESW be limited to any arbitrary figure when identifying and evaluating alternatives.

Page 38, last par. If the New Bedford/Horseshoe Shoal alternative is to be selected, evaluation of removal of several WTG rows that abut the Main Channel of Nantucket Sound should also be considered to reduce the risk of ship causalities and marine pollution incidents before an EIS is issued.

b. Environmental Resources Review (3.4.3.2.10)

Page 3-91 through 3-93, all. The analysis of this section of the DEIS is based on a flawed navigation risk assessment, Appendix 5.12-B. The McGowan Group report provided a

detailed critique of the shortcomings and oversights found in its review of Appendix 5.12-B. The McGowan Group report was provided to the Army Corps of Engineers and to the Coast Guard Marine Safety Office which evaluated the navigation, marine safety and marine environmental aspects of this project. The report and its conclusions regarding navigation and marine pollution risk to the Nantucket Sound sites has been overlooked or ignored in this DEIS. The report's overall conclusion that the Nantucket Sound project is incompatible with the marine transportation needs of the area, creates unacceptable risks to the environment and shipping and is fatally flawed due to the failure to perform a rigorous navigation risk assessment remains unanswered by the DEIS. The report reached several other major conclusions:

- CWA's proposed Horseshoe Shoal location is at odds with common international practice and threatens disruption of the Main Channel as a marine transportation route. The Tuckernuck Shoal and Handkerchief Shoal alternative sites face similar risks and pose the same potential disruption of marine traffic.
- CWA's proposal for a Nantucket Sound site is fatally flawed in that it appears incompatible with marine transportation activity and poses unnecessary and unacceptable risks to cruise liner, ferry vessel, oil transport, fishing and recreational users.
- The CWA assessment fails to explore the negative impact to the Nantucket Sound fishing industry by acknowledging that these projects will effectively cut-off all trawling/dragging within the confines of the wind farm.
- Recent information has come to light that sheds further doubt on the navigation assessment in this DEIS:
    - A review of existing offshore wind facilities revealed that, in contrast to the Nantucket Sound proposals, offshore wind facilities worldwide have been purposely located miles away from any active shipping channels. The Horseshoe Shoal proposal is placed directly adjacent (offset 800 feet) the Nantucket Sound Main Channel. In this location no protection is afforded, as is repeatedly claimed in the DEIS, to prevent large ship and tanker collisions with the many WTGs to be built along the Main Channel. A large vessel traveling at 12 knots in the Main Channel losing power or steering control or misdirected by human error could collide with the near-by WTGs in approximately 40 seconds.
    - A major ship classification and standards setting body, Det Norske Veritas (DNV), published the first standards for the site selection and construction of offshore wind facilities. DNV first issued the draft standards in January 2004 and published the final standard in June 2004 (DNV, 2004). These standards define the basic elements of a navigation risk assessment including a detailed survey of the ships using the waterway, their routes and frequency, and finally, the computation of the risks and frequency of collisions and pollution incidents due to the presence of a wind facility and the probability for ship machinery malfunctions and human error.

A new, complete and rigorous navigation risk assessment should be performed based on the elements of recognized international standards and industry best practices before an EIS is issued (McGowan Group Report, 2004). Separate casualty and marine pollution analyses should be performed for each of the offshore alternatives since vessel traffic, routes and frequency of usage as well as vessel casualty and marine pollution history vary widely. The Coast Guard should perform a complete review of the new risk assessments and consider using the expertise of the Coast Guard Marine Safety Center.

"Nantucket Sound," page 3-92, 2nd par. Vessels of both medium and deeper drafts use the Main Channel of Nantucket Sound. The EIS should clarify the point.

"Nantucket Sound," page 3-92, last par. Anchorages "H" and "J" also lie adjacent to the wind facility Horseshoe Shoal site. The EIS should clarify the point.

"Vessel Usage," page 3-92, 1st par. Tankers and tank barges should be added to the listing of vessels that use Nantucket Sound to clarify the EIS.

CWA's proposed Horseshoe Shoal location is at odds with common international practice and threatens disruption of the Main Channel as a marine transportation route. The Tuckernuck Shoal and Handkerchief Shoal alternative sites face similar risks and pose the same potential disruption of marine traffic.

CWA's proposal for a Nantucket Sound site is fatally flawed in that it appears incompatible with marine transportation activity and poses unnecessary and unacceptable risks to cruise liner, ferry vessel, oil transport, fishing and recreational users.

One hundred thirty WTGs are obstructions to navigation that must be marked as private aids to warn mariners and boaters of their presence. They will be no more of assistance to any mariner or boater than 130 rocks placed 800 feet from the Main Channel of Nantucket Sound. They will be especially dangerous and heighten the current risk for mariners and boaters during times of poor visibility when they go undetected or are detected too late to avoid collision or loss of control.

The CWA assessment fails to explore the negative impact to the Nantucket Sound fishing industry by acknowledging that these projects will effectively cut-off all trawling/dragging within the confines of the wind farm.

Recent information has come to light that sheds further doubt on the transportation and marine safety and pollution conclusions reached in this DEIS:

- A review of existing offshore wind facilities revealed that, in contrast to the Nantucket Sound proposals, offshore wind facilities worldwide have been purposely located miles away from any active shipping channels. The Horseshoe Shoal proposal is placed directly adjacent (offset 800 feet) the Nantucket Sound Main Channel. In this location no protection is afforded, as is repeatedly claimed

in the DEIS, to prevent large ship and tanker collisions with the many WTGs to be built along the Main Channel. A large vessel traveling at 12 knots in the Main Channel losing power or steering control or misdirected by human error would collide with the adjacent WTG in approximately 40 seconds.

- The United Kingdom's Maritime and Coastguard Agency completed an analysis of the effect of offshore wind facilities on navigation and communication systems (MCA,2004). This UK Coastguard report concludes that the presence of a wind facility produced strong marine radar distortion not only for vessels operating within the wind facility but also for vessels operating approximately 1½ nm (3,000 yards) distant from the periphery of the wind facility.

c. Environmental Consequences (3.4.3.4.10)

Page 3-187 through 3-190, 1st par; Appendices 5.12-A and 5.12-B. This section of the DEIS provides an extensive discussion of the requirements for vessels and mariners under the Rules of the Road (COLREGS). It erroneously concludes with the pronouncement that: "Risks and impacts associated with failure to comply with the COLREGS or unsafe vessel operation cannot be evaluated and are beyond the scope of this assessment."

This conclusion conveys denial, profound ignorance or misunderstanding of the basic principles of risk management, including risk assessment and risk mitigation. It is agreed that the scope of this DEIS does not include a navigation risk assessment that predicts the increase in vessel accidents and casualty rates, the increase in pollution incidents or the increase in injuries to passengers and loss of vessels and boats that strike a WTG. That precisely is the problem with Section 3.4.3.2.10 and Appendix 5.12-B of the DEIS.

The initial Coast Guard requirements, Appendix 5.12-A, the best practices identified in The McGowan Group report, the new DNV industry standards (DNV, 2004), and the UK Maritime and Coastguard Agency regulations (MCA, 2003) all call for a navigational risk assessment that includes pollution incidence in addition to safety or collision incidence. The heart of any navigation risk assessment is the application of the probability of not only human error (COLREGS violation, losing the "way" in fog), but also machinery failure (engine or rudder breakdown) and environmental factors (wind, current , wave) driving a vessel or boat where it should not go. It is unrealistic and perhaps reckless to design a system or facility with the assumption that humans, machinery and Mother Nature always follow the rules.

The analysis of this section of the DEIS is based on a flawed navigation risk assessment, Appendix 5.12-B. The McGowan Group report provided a detailed critique of the shortcomings and oversights found in its review of Appendix 5.12-B. The report's overall conclusion that the Nantucket Sound project is incompatible with the marine transportation needs of the area, creates unacceptable risks to the environment and shipping, and is fatally flawed due to the failure to perform a rigorous navigation risk assessment remains unanswered by the DEIS.

A new, complete and rigorous navigation risk assessment should be performed based on the elements of recognized international standards and industry best practices, identified in The McGowan Group report before an EIS is issued. Separate casualty and marine pollution analyses should be performed for each of the offshore alternatives since vessel traffic, routes and frequency of usage as well as vessel casualty and marine pollution history vary widely. The Coast Guard should perform a complete review of the new risk assessments and consider using the expertise of the Coast Guard Marine Safety Center.

"Navigation," page 3-188, last par. The new risk assessment called for above should begin with a detailed survey to determine the number, types, routes and frequency of vessels that use the waterways adjacent to each of the proposed wind facilities. The superficial survey performed in Appendix 5.12-B was seriously deficient as reported inThe McGowan Group report

"Proposed Aids-to-Navigation," page 3-189, all. The DEIS is deficient in its discussion of navigation aids. The following questions should be answered before an EIS is issued:

- How will vessels or boaters identify a WTG in fog or poor visibility when their alphanumeric designation can't be seen?
- How will boaters who have no radar detect a WTG in fog or poor visibility?
- Will four fog horns with a ½ nm range be sufficient to warn vessels or boaters in the 24 square mile facility area of a WTG in fog or reduced visibility?
- How will boaters be warned of potentially treacherous eddies and swirling currents caused by the WTG foundations?

2. Protected Avian Species and Avian Resources Comments

a. Environmental Resources Review (3.4.3.2.1)

Page 3-39, last par. There are no data on occurrence of bats over Nantucket Sound.

Page 3-40, 4th par. Four hundred and fifty species of birds have occurred in Massachusetts, and about 400 on Cape Cod. Therefore, the "94 species documented" on Otis Air Force base suggests a fairly superficial survey.

Page 3-41, all. It looks a bit foolish to discuss possible impacts on Sharp-shinned Hawk populations. This is an abundant and widespread species that happens to be at the extreme southeastern edge of its breeding distribution in Massachusetts. The reason it is "state-listed" is that there have only been ~ five nests ever found in the state. But thousands of them migrate through every year and they are seen in virtually every habitat in the state. One can understand mentioning it for the sake of completeness, but the depth of the discussion of this species suggests unfamiliarity with North American birds on the part of the authors. It also suggests an effort to compensate for the lack of information on other more heavily affected species.

Page 3-42, 2nd par. It is questionable whether Barn Owls "prefer the Meadow Vole." Barn Owls are a cosmopolitan species; over much of their range Meadow Voles do not occur. Even in the context of the Cape Cod area, it would be surprising if they take this species any more often than other common species of rodents (white-footed and deer mice, Norway rats).

Page 3-42, 4th par. The name "bay-winged bunting" has not been used for Vesper Sparrow for over a hundred years. These species descriptions suggest lack of expertise on the part of the authors.

Page 3-43, 7th par. The abundance of migrant birds over Nantucket Sound is a datum critical to the current analysis. Therefore all numbers such as "millions of migrating passerines" should be supported with citation, and be more specific. Is this a number or a density, and is it per day, or summed over a year?

"Federally Listed Species," page 3-44. There are a number of mistakes in this section. First, Roseate Terns leave heir nesting colonies at the end of July, not August. Second, it is not true that "Roseate Tern is not able to successfully reproduce if predators are present;" all colonies have predators present and predation occurs every year. At the larger colonies in most years, Roseate Terns are able to reproduce successfully despite low levels of predation. Third, egg collecting does not take place in the winter range, because terns do not lay eggs in their winter range. And finally, Piping Plover chicks first fly about 3 weeks after they hatch, not hours after they hatch, as implied in paragraph 3. This statement is immediately contradicted in the next sentence, where Piping Plovers are said to fledge "four to five weeks" after hatching.

Page 3-45, 2nd par. It is doubtful whether "human disturbance in South America" is the "greatest threat to the Common Tern". Hunting that took place there 20 years ago has apparently been curtailed through education of the local fishermen. The greatest threats to Common Terns are most likely associated with human disturbance at their North American nesting colonies.

Page 3-45, bottom. The entire characterization of the "South of Tuckernuck Island" site is superficial at best and glaringly inaccurate with respect to comparison with the other sites. The South of Tuckernuck site has by far the highest abundance and species diversity of birds of any of the four sites discussed in detail (diametrically the opposite of what is claimed). The surveys cited (Appendix 5.7-K) in support of the comparisons are feeble. First, they are conducted during the spring (19 March – 2 June 2003), probably the season when the lowest number of birds is present. Second, they fail to take in to account the enormous commuting flights of Long-tailed Ducks that transit the area, at rotor height, on half to three quarters of all days between late November and late March. In that season, between 250,000 and 500,000 Long-tailed Ducks fly directly over the "South of Tuckernuck Island" site in both the morning and afternoon on their daily commute between their roosting grounds in Nantucket Sound (unknown with certainty, but data

suggest on or near Tuckernuck Shoal) and their feeding grounds on the Nantucket Shoals (Veit; unpublished data based on aerial surveys in 1998 and 1999). The commuting Long-tailed Ducks fly from 50' to 1000' over the sea surface (Veit; pers. obs.), or very often at rotor height. Construction of a windfarm at the "South of Tuckernuck Site" would be an environmental disaster for this reason alone. Third, data provided within the DEIS show that the South of Tuckernuck site is a major concentration point for Common Eiders. In sum, arguments within the DEIS about relative abundance of seabirds substantially misrepresent the basic fact that the South of Tuckernuck site has the HIGHEST diversity and abundance of seabirds of any of the alternative sites considered for a windfarm. Under no circumstances could this site be seriously considered. These basic points were communicated to the authors in a phone call referred to as "Veit 2003" on page 3-45, third paragraph from the bottom.

Furthermore, the various bird species totals cited as representative of the various sites (e.g. Buzzards Bay, South of Tuckernuck) are feeble and based on extremely limited data. Veit (pers. com.) has personally recorded over 300 species of birds on Tuckernuck Island alone, and single-day Christmas Bird Count totals from that island have exceeded 70 species. Thus totals of, for example "52" species for New Bedford Harbor area are suspect and unlikely to reflect real differences between sites.

Page 3-47. Most of the claims about bird diversity and abundance on this page are either just plain wrong or of dubious value. For example, vastly larger numbers of Red-breasted Mergansers feed off Tuckernuck and Muskeget Islands than are ever found in Buzzards Bay; it is remarkable that the substantial nesting colony of Double-crested Cormorants at the Weepeckett Islands isn't even mentioned in the discussion of cormorants in Buzzards Bay; gulls are NOT more numerous in Buzzards Bay than "farther offshore" as claimed, as the largest gull colonies in the area are on offshore islands, especially Muskeget and Nantucket. Pelagic seabirds rarely enter Buzzards Bay (they occur much more frequently off the outer islands) and herons and egrets are at least as numerous, and likely more numerous due to the presence of substantial colonies, on offshore islands such as Muskeget, Tuckernuck and Nantucket.

Under "Federally-listed Species," the statement "with some estimates indicating that upwards of 50%" suggests an unwarranted lack of precision with respect to Roseate Tern numbers. It is an established fact that this proportion nests in Buzzards Bay; indeed there are few wildlife populations whose numbers are as precisely known as are the northeastern North American Roseate Terns.

Under "state-listed species," Leach's Storm-Petrels do not forage in Nantucket Sound or Buzzards Bay, but much farther offshore (near the continental shelf break). Arctic Terns nest on No Mans Land and occasionally Nantucket in addition to Nashawena Island.

Page 3-48, 2nd full par. Arctic Terns are rare in Massachusetts; the reference to colonies of "tens of thousands of pairs" is misleading with respect to the Nantucket Sound area. Again, this shows the lack of expertise of the authors.

The paragraph under "Comparative Summary of Existing Resources" about the MMR Alternative Site is ludicrous, and suggests complete unfamiliarity of New England avifauna on the part of the authors. Species totals refer to completely different habitats and thus completely different birds. To say that the site has "three times the diversity" as the Horseshoe Shoal site, for example, is nonsensical. What this means is that the MMR site, which is forested, has many songbirds while the Horseshoe Shoal site, which is open water, has, surprisingly enough, waterbirds. Any comparisons among sites should be based on relative risks to the affected populations.

Page 3-49, 1st par. Again, it is inappropriate to talk about threats to Sharp-shinned Hawks on the MMR site. This is an abundant and widespread species that just happens to be rare as a breeder in Massachusetts because Massachusetts is on the extreme periphery of its breeding range.

Page 3-39, 6th par. This section correctly notes that "Southeastern Massachusetts is included in the range of seven species of bats" (after DeGraaf and Yuamasaki, 2001), as follows: *Lasiurus borealis* (red bat), *Lasiurus cinereus* (hoary bat), *Lasionycteris noctivagans* (silver-haired bat), *Eptesicus fuscus* (big brown bat), *Myotis lucifugus* (little brown myotis), *Myotis septentrionalis* (northern myotis), and *Pipistrellus subflavus* (eastern pipistrelle). Additionally, this section correctly notes that "none of these bats are federally or state protected species." However, the argument that these species have "*generally robust populations throughout their ranges*" is not founded on empirical data in southeastern Massachusetts, or for that matter most regions in North America.

Page 3-39, 7th par. This section, citing DeGraaf and Yamasaki (2001) states, that "most of the seven bat species are uncommon to rare in the southeastern Massachusetts portion of their ranges and are not known to spend substantial periods over large bodies of open water such as Nantucket Sound." This section concludes with the statement "they (the bats) are not likely to be present in great numbers at the offshore alternative sites (for additional information on bats, please refer to section 5.6)." Both of these statements are inconsistent with the historic literature (Miller, 1897, Griffin, 1940, 1970), and there have been no empirical studies to support these conclusions. In fact, large numbers of silver-haired were reported flying (migrating?) in August up to 30 miles off the coast of Maine, and red bats were observed flying late in August and early September near the Highland Light House located near the edge of one of the highest points along the bluffs that forms the outer side of Cape Cod, which is separated from the mainland toward the east and northeast by from 25 to 50 miles of open water (Miller, 1897). Silver-haired bats and red bats have been observed up to 95 miles SE of Montauk Point, on Long Island from mid- to late August, "flying over water" (Mackiewicz and Backus, 1956). Carter (1950) reported that large numbers of red bats, estimated to be about 200, were observed flying at daybreak up to 65

miles offshore (40° 10'N, 71° 00' W). These and similar reports provide evidence that these two species do indeed fly over open water. Moreover, these reports are consistent with similar observations on migration of red bats, hoary bats, and silver-haired bats at other offshore sites in the Atlantic Ocean (Allen, 1923, Nichols, 1930 as well as over mainland sites in eastern North America (Mearns, 1898, Merriam, 1884, 1887; Griffin, 1940, 1970, Cryan, 2003).

In a recent study conducted on Martha's Vineyard from May to October 1997 and from April to October 1998, Buresch (1999) found that the two *Myotis* species were recorded most often using ultrasonic bat detectors, but that red bats were the third most abundant species recorded with these devices over grassland (51%) and mesic woodland (33%) habitat. No ultrasonic monitoring was conducted over open water. Based on mist-netting data, the most common bat species recorded on Martha's Vineyard is the northern myotis (*Myotis septentrionalis*), a local migrating species. No information is available on the migratory patterns of this and other species that are summer residents of Martha's Vineyard (Buresch, 1999). Echolocation data from Buresch (1999) suggest that Martha's Vineyard could be a stopover point for spring migrants of *M. septentrionalis*.

Page 3-39, 6th par. The DEIS correctly notes that "big brown bats and eastern pipistrelles migrate for short distances (generally less than 50 miles) from summer to hibernation sites." This report also notes that red bats and silver-haired bats migrate somewhat greater distances to more southern localities as far away as Gulf States, while the hoary bat may migrate as far as Central America." Still, little is known of the migratory pathways taken by these bats. Cyran (2003) recently summarized the available museum records for red bats, hoary bats, and silver-haired bats in North America, and found evidence of migratory corridors, one of which appears to occur along the eastern seacoast—at least for red bats. Most of the offshore records reported by Cryan and others have been based on opportunistic collections and observations. Because observation of bats and museum specimens is more likely to be recorded onshore compared to offshore, it is not surprising that few records have been reported offshore. Nevertheless, the reports of bats flying offshore (over open water and on offshore islands) provides evidence contrary to the conclusion presented in the DEIS.

Page 3-85, 6th, 7th, 8th par. The DEIS refers to a study conducted on Camp Edwards during 1999 and 2000, in which four species—including big brown bats, red bats, northern myotis and eastern pipistrelles—were reported (MAARNG, 2001). The latter report correctly notes that none of these species are federally or state protected. However, in summarizing the natural history of the red bat, the DEIS incorrectly states that red bats "typically overwinter in hollow trees." This document further states "the red bat is a non-resident migratory bat found throughout the region [the region was not identified] but breeds locally." It is not clear what point the author of this section of the DEIS was trying to make with this statement, as one part of the sentence states that red bats are migratory, but it also states that they occur throughout <u>the region</u> where they breed locally.

b. Environmental Consequences (3.4.3.4.1)

Page 3-132. On the other hand, Grasshopper Sparrows, Vesper Sparrows and Northern Harriers are in general threatened by loss of grassland habitat and their welfare should be taken into consideration in proposed windfarm construction. But the grouping of these vulnerable species with abundant and widespread birds like towhees, chipping sparrows and sharp-shinned hawks suggests ignorance on the part of the authors.

Page 3-133, 3rd full par. This discussion misses the point that the main concern about wind turbines is about their proclivity to attract and kill nocturnally migrating songbirds.

"Collision," page 3-133. First, comparisons of bird mortality at wind turbines to that recorded at "other man-made structures", put forward frequently in this report, is irrelevant to the issue at hand, for two reasons. First, the issue at hand is whether or not wind turbines pose an unacceptable risk to endangered populations in the vicinity of Nantucket Sound. The number of people killed in commercial airline accidents is small compared to the number of people killed in automobile accidents. That is no justification for not taking every step possible to prevent airline accidents. Second, "birds killed by other man-made structures" refers primarily to those killed by communication towers and tall buildings on land; the concern here is with wind turbines at sea. Thus, these comparisons are virtually meaningless in the present context.

Page 3-133, 2nd par. after "Collision." The statement that "0.01 to 0.02 %" of known bird mortalities occur as the result of wind turbines is near meaningless in the present context since there are no ocean-based wind turbines in North America from which to collect data.

Page 3-133, penultimate par. The mitigation presented here sounds reasonable and will likely reduce potential mortality.

"Shorebirds," page 3-134. Here, and elsewhere in the DEIS the claim is made repeatedly that nocturnally-migrating birds fly above rotor height. This is true on average. The problem is that all the mortality of migrants referred to in Erickson et al (2001) happens during inclement weather (mainly rain and fog) when migrants fly lower than average and are attracted to lights on the structures.

"Passerines", page 3-134. The DEIS dismisses potential impact to songbirds saying that "night migrating songbirds, for the most part, are likely to fly at altitudes well above the turbine rotors (approx. 417-ft) and would not be at substantial risk of collision" (Kerlinger and Moore 1989). The Kerlinger and Moore 1989 citation is simply a secondary source that cites other primary altitude research studies. The studies it cites are all older radar studies with known biases toward higher altitudes. In other words, these radar studies did not provide good resolution of the distribution of migrants in the lower stratum of the atmosphere and therefore do not accurately reflect altitude distribution of night migrating birds. This citation and others used in the DEIS from other regions in the United States are inappropriate for use in drawing any assertions for the proposed project on songbird

mortality. For example, on pp. 5-122 the following citations are made to support the DEIS statement that the large majority of migratory birds are flying above turbine height – Kerlinger 1995, Kerlinger and Moore 1989, Griffin 1974, Able 1970 and Gauthreaux 1972. The first three of these citations are not primary studies but simply are summaries of bird migration information from other studies, and all these studies had the previously mentioned altitude biases. The latter two studies also had altitude biases and were from the Gulf Coast region where spring bird migration is typically much higher due to the dynamics of transgulf migration. The inclusion of these references in the DEIS suggests that the authors are making the presumption that altitude of bird migration is uniform across the continent. There also appears to be a selective bias in which altitude studies are included. Certainly, if the DEIS was going to cite any altitude studies, those from New England would be more appropriate than those from the Gulf Coast. Alaska Biological Research, Inc. has carried out a half a dozen radar altitude studies in the northeastern United States in the last decade and these papers have been widely circulated and cited in the recent wind/bird literature. Failure to cite these papers suggests that the DEIS reviewers are not current with regard to available wind/bird interaction research.

The most applicable radar altitude study for the DEIS is the Geomarine study carried out by the applicant. Unfortunately, the Geomarine study only characterized part of the spring and fall migration seasons. It stands out as a glaring oversight that the fall radar study was not carried out in the October and early November migration period when the Nisbet radar studies of the early 1960s documented a pattern of lower altitude flights occurring over the Sound. Therefore, Geomarine's altitude characterization cannot be used to characterize annual risk for Horseshoe Shoal, only for the periods that were studied. Even then, the Geomarine altitude characterization will be biased high because it missed birds flying on the water. Also, because the study was only carried out during one year, the data contain a significant uncertainty related to what the annual variation might be.

The DEIS makes the statement that "Virtually all communications towers that kill large numbers of birds are greater than 500 feet…." This is misleading because virtually all mortality studies at communications towers are greater than 500 feet.

The DEIS also makes the statement that "Unguyed towers (primary lattice type communications towers) of less than 500 feet (153 meters), which are similar to wind turbines with appropriately sensitive lighting pose little threat to birds (Shire et al. 2000)." If this is true, how does the Corps explain the following citation in *Avian Mortality at Man-made Structures: An Annotated Bibliography* Avery et al. (1980):

> Wylie, B. 1977. Bird kill at Chestnut Ridge. Redstart 44(2):65.
>
> On 20 October 1975, following a night of fog and rain, 73 birds of 21 species were found dead at the Sand Springs fire tower on Chestnut Ridge, Cooper's Rock State Forest, WV. The tower is 100 feet tall and sits atop the

2600-foot ridge. It is not lighted and no lights exist anywhere in that part of the forest.

It is not hard to imagine that there were more than 73 birds killed in this event given the possibility that scavengers (e.g., ravens) removed some carcasses and that the surveyors might have missed some birds in their search. Besides providing evidence against the aforementioned statement on p.3-134 in the DEIS, a bird kill like this provokes the question that, if such a bird kill can occur at a 100-foot lattice structure (the breadth of which is similar to that of a tubular wind turbine support structure), how many more birds might be killed at a solid 400+ foot high structure? It also provides evidence for the supposition that significant songbird mortality may occur at windmills that is not induced by the spinning rotor, but rather simply by collision with the support structure. Page 3-136. In general, the studies cited on this page about the reaction by birds, especially ducks, to wind turbines, is based on extremely limited data. For example, the characterization of eiders as birds that "avoid vertical structures" would not be accepted by any scientific journal on the basis of the evidence now available, even though there are some published observations of such avoidance having occurred. It would verge on reckless to approve construction of wind turbines in or near areas of major eider concentrations (e.g. South of Tuckernuck, to a lesser extent Horseshoe Shoal) on the grounds that the eiders there will simply avoid the turbines.

Page 3-137, 4th full par. The statement about seaducks flying 10-20 m above the water does not apply to Long-tailed Ducks, which often fly much higher, and certainly within the rotor swept zone.

Page 3-137, last line. It is critically important to avoid turning on mercury vapor lamps at night in fog or rain during passerine migration period (May and mid-August to 1 November). Mercury vapor lamps are highly attractive to migrants during fog and rain and will certainly kill large numbers of migrants under such conditions.

"Oceanic/pelagic," page 3-138. Shearwaters do not frequent the Horseshoe Shoal area.

Page 3-138, 4th par. How can any number of birds be "too low to measure"?

Page 3-138, 5th par. The statement that the distribution of seaducks and other waterbirds is "strongly affected by storms" needs clarification. Do storms make it more or less likely that these birds will visit the vicinity of turbines, or collide with them? References to collisions with wind turbines on land near the Great Lakes are of questionable relevance to the issues at hand in Nantucket Sound.

"Shorebirds," Page 3-139. Observations have been made (Veit; pers. obs.) of shorebirds migrating low over the ocean far at sea (100-400 miles off the US coast) in spring, so they don't always migrate at above rotor height. It is probably not known what proportion of time they fly at various altitudes.

Page 3-139. As noted earlier, all mortality of migrants at man-made structures occurs during rain and fog, when migrants are not flying at average height. So discussions of average height at which migrants fly is irrelevant. What needs to be done is to ensure that migrants are not attracted to wind turbine towers during inclement weather.

Page 3-140. The avian community of the South of Tuckernuck site is badly misrepresented by the discussion on this page. There are very large numbers of a broad diversity of species present in this area (far higher abundance and diversity than the Horseshoe Shoal site, for example). Even though most Long-tailed Ducks feed near the Nantucket Shoal they all fly directly across the South of Tuckernuck Site, at rotor height, at dawn and dusk for most of the winter. This is by far the largest concentration of Long-tailed Ducks in North America, and one of the largest in the world.

"Gulls and Terns," page 3-141. This is incorrect. Gulls and terns are both far more numerous at the South of Tuckernuck site than virtually anywhere in Nantucket Sound (except close to Monomoy).

"Seaducks," page 3-141. Virtually all species mentioned are more (not less) abundant and thus more likely to be impacted at the South of Tuckernuck site than at the other sites. As mentioned earlier, the surveys presented in Appendix 5.7-k badly misrepresent the abundance and diversity of birds at the South of Tuckernuck site.

"Shorebirds," page 3-141. There are actually more nesting shorebirds on Tuckernuck and Muskeget Islands closer to the South of Tuckernuck site than for any of the other Nantucket Sound or Buzzards Bay sites.

"Endangered species," page 3-141. There are more endangered species present at the South of Tuckernuck site than at the other sites, especially when large numbers (thousands) of nonbreeding and postbreeding Roseate Terns are considered. (These roost in large numbers on Muskeget and surrounding shoals, as they do on Monomoy.)

Pages 3-142-143. The conclusions of this entire section, on the comparison of bird abundance and diversity among sites, are unjustified because of the poor quality of data on which the discussion is based.

3. Geology Comments (Geology and Soils, Mass Military Reservation, Bedrock and Glacial Geology, Seismicity)

Page 3-49, 2nd par., 3rd sentence. The description of topography is incomprehensible, and needs to be corrected/refined to describe the topography of the area.

Seismicity is discussed briefly in Section 3.0, alternative sites. It seems that the same text occurs elsewhere. The paragraph reviews earthquake history in the area and nearby bedrock faults, but does not reach any conclusion.

The FEMA Coastal Construction Manual, Third Edition, provides guidelines from the International Building Code (IBC) for determining seismic loads for any proposed structure in the coastal zone. It would seem that this is a reasonable guideline for structures in the shallow nearshore. Section 11.10 [Seismic Loads] identifies "Maximum Considered Earthquake Ground Motion" maps in the Earthquake Loads section of Chapter 16 of the IBC. Also, a Site Class can be determined to establish the susceptibility of the materials in the site using with geotechnical analyses that measures the site soil shear wave velocity, penetration resistance, and/or unconfined shear strength. Both the seismic potential for the site and the seismic susceptibility of the site are fundamental factors necessary to evaluate of project of this magnitude.

4. Oceanography Comments

a. Environmental Resources Review (3.4.3.2.3)

"Tides and Currents," page 3-56, 2nd par. While there is a detailed discussion of net water movements, there is only a brief mention of actual tidal velocities in Nantucket Sound, which can vary greatly based on location, water depth, and time. Also, there was no mention of ebb or flood dominance of flow or tidal asymmetry, which is likely in this area. This is a critical variable for review of this site.

The "net drift of the water mass" is described as an area (square feet). This needs to be explained, as its meaning is not clear.

There is no mention of the tide range, including areal and temporal variations in this complex region. This is a serious deficiency in a DEIS for a project in this location.

"Nantucket Sound, Estimated Wind-Generated Wave Conditions," page 3-57. These seven paragraphs describe methodologies in detail, and barely mention actual wave conditions once, citing an "average wave height and period," which is of little use in understanding the system, or applying as analytical input. While data tables and appendices are mentioned, a synthesis of the "wind generated wave conditions" should be part of this section, since the waves are a complex variable at this site.

"South of Tuckernuck, Estimated Wind Generated Wave Conditions," page 3-58. There is no synthesis of discussion of "wind-generated wave conditions" beyond an extreme storm wave height, just a reference to a table.

"Nantucket Sound, Construction and Decommissioning," page 3-146. The skid/pontoon-mounted jet plow is described as laying cable at 6-8 ft depth in one pass. The subsequent sedimentation is described for sandy and finer-grained sediments. However, the last

paragraph on the page describes encountering boulders on the surface (to be moved with conventional construction equipment), while subsurface boulders will "be captured within the monopole or deflected during pile driving." The discussion does not discuss the occurrence of boulders at 6-8 ft depth, or how the jet plow technology functions/deals with subsurface boulders.

"Operation and Maintenance," page 3-147. There is no discussion of the ability of the frond-mats to withstand extreme wave and current erosion expected during normal storm activity in these shallow water areas. The report states that, "natural processes are anticipated to rapidly restore seabed topography following completion of construction." It did not discuss the alteration of tidal currents diverted around monopiles, which could cause acceleration and increased scour. This should be addressed.

The statement, "...uncovering of the submarine cables due to natural processes is unlikely due to the minimum 6-foot burial depth," is in the same paragraph that describes the migration of sand waves across the shoals. There is no discussion the range of amplitudes of sand waves, which easily can be several feet. Therefore, within the natural system of migrating sand waves, bottom elevation, and therefore burial depth, will vary plus or minus sand wave amplitude within the natural processes. If there are three foot amplitude sand waves, cables would be effectively buried only three feet in many areas. Is three feet of burial suitable for likely extreme impacts or scour during storms? As well, there was no discussion of the thickness of the shifting marine sands that make up the shoals overlaying the long-term stable underlying glacial sediments. This would give some indication of the vertical envelope of change of bottom depths. Also, there was no discussion of shifting of shoals in general. While navigational charts often warn that shoals shift, and regionally this is discussion of longer-term shifting of shoals, there is no historic analysis of the natural shifting of shoals, which can also affect the assumptions made about stability of cable arrays and even possibly stability of the monopiles.

"South of Tuckernuck, Construction and Decommissioning." Same comments as Nantucket Sound, above.

"Operation and Maintenance." Same comments as Nantucket Sound, above.

"New Bedford/Horseshoe Shoal, Construction and Decommissioning," page 3-148. Same comments as Nantucket Sound, above.

"Operation and Maintenance." Same comments as Nantucket Sound, above.

b. Nantucket Sound

The data quoted from the NOAA/NOS chart for water depths/bathymetry are reasonable but the chart itself is based upon rather dated data. The latest data in the NOS bathymetry database for this area are from 1993-1994 to the north and west of Horseshoe Shoal and from 1998 in Pollock Rip Channel. The rest of the data date from the 1980s and earlier.

The tide and current references are not available but the general current description agrees with Eldridge and seems reasonable. The "net drift" units quoted here (and elsewhere) are bizarre, ft^2, and therefore one wonders to what extent the numbers are correct.

The results for estimated wind-generated wave conditions are based upon analyses in Appendices 5.2-A and -B. The locally generated wave estimates were based upon model simulations using 1986-2001 winds from Nantucket to get the mean conditions. The model used was very simplified, as the results are solely a function of wind speed, fetch, and mean depth. No account of refraction, reflection or dissipation is included. Table 3.2 of Appendix 5.2-A shows wave heights for a variety of directions at the Nantucket Sound locations for average winds and the average of the 10% highest winds. Depending on location and wind direction, the significant wave heights produced by the highest 10% of the winds range from 3.4 to 3.6 ft. Waves produced by ocean swell, 4.5 ft and 8 second period, entering the Sound from the east were propagated into the region using a shoal condition which appear to produce maximum waves over the shoals of about 6.5 ft (Figures 3-5b through 3-7b in Appendix 5.2-A). Again, the modeling of ocean swell was very simple using a shoaling coefficient ($h_{max} < 0.78$*water depth) to limit wave heights in shallow waters.

Extremal wave heights at Horseshoe Shoal are based upon a "generalized extreme value" methodology using the statistics for waves generated by the maximum 3 to 4 winds events for each year of the Nantucket wind data. The same wave generation model (ACES) with the same simplifying assumptions used for the mean conditions was used for the extremal wave generation. Limited fetch within the Sound is responsible for the limited size of these extreme waves. Various return period wave heights and periods were estimated from this analysis and then rather arbitrarily added to return period storm surges to get the final return period wave height estimates. (Storm surges can also be storm set-downs depending upon wind direction.) Fifty-year return period locally generated wave heights estimated in this fashion were 10.2 ft with a 6.2 second period.

c. South of Tuckernuck Island

The same comment on the dated quality of the bathymetric data that applied to the Nantucket Sound data applies here as well. Given the potential for significant sediment transport and movement of the shoals the depths specified are subject to error. It is noted that the water depths in this location are generally greater than 60 ft and therefore beyond the preferred depth range for the monopole WTG design.

Given the paucity of tidal and current data from this region, the estimates specified are not unreasonable but more data would clearly improve the estimates.

NOAA's Wave Information Studies (WIS) hindcast results were used to estimate wave conditions in this area. Ocean waves generally from the south are the dominant waves

here. Extremal statistics based upon the WIS results indicated return period waves substantially higher, by a factor of ~3, than those within Nantucket Sound.

d. New Bedford/Horseshoe Shoal

This section addresses the concerns for a combined Horseshoe Shoal and New Bedford Harbor WTG array. The New Bedford site lies in the outer reaches of the harbor to the west of the Main Channel and extends into Buzzards Bay.

The latest data in the NOS bathymetry database for the area under consideration for the WTG array comes from 1976 suggesting that perhaps some of the depths for any sandy areas may need to be updated.

The tidal height data, while not from the exact area under consideration, are quite representative as are the tidal current data especially that from Dumpling Rocks. What is missing from the discussion is the wind driven currents which may be of the same order as the tidal currents.

The data used for the wave analysis came from Buzzards Bay Light which is exposed to ocean conditions from the southwest. There is a nearly clear run between the Light and New Bedford harbor but it is unlikely that the harbor would experience waves of the same severity as the Light. As a result, the average and 50-year extremal wave estimates are almost certainly over-estimates of wave conditions at the WTG array.

5. Protected Marine Species Comments

a. Environmental Resources Review (3.4.3.2.4)

"Federally Listed Threatened and Endangered Species," Page 3-61. The first sentence in this section indicates that humpback, fin, and right whales "may occur" in Nantucket Sound. In the later section on "Marine Mammals" and elsewhere in the DEIS, it likewise is indicated that harbor seals, gray seals and a variety of other marine mammals "may occur" in Nantucket Sound. It is clear from information presented in Appendix 5.5-D that all three whale species occur at least occasionally in Nantucket Sound, and that harbor and gray seals are residents. Consequently, such statements are misleading and should be changed accordingly everywhere they appear in the DEIS.

The fourth sentence in this section states that "Nantucket Sound does not support high densities of food sources for these species." As pointed out in our comments on Appendix 5.5-A, no data or references to other data sources are presented to support this contention -- i.e., no information is provided on the presence or densities of the preferred prey of these or other marine mammals in Nantucket Sound or the areas farther north where large feeding aggregations of the three whale species are known to occur seasonally. Rather, it simply is assumed that, because many fewer humpback, fin, and right whales have been observed in Nantucket Sound than in the areas farther north, and that the areas farther north are known to be important summer feeding areas, there must be few if any prey resources

in Nantucket Sound. If better justification for this contention cannot be provided, it should be indicated that it is not known or is uncertain why relatively few whales have been observed in the Sound.

The second paragraph in this section provides information on three species of ESA-listed sea turtles known to occur in Nantucket Sound. As pointed out in our comments on Appendix 5.5-A, green turtles, *Chelonia mydas,* also are known to occur in Nantucket Sound during the summer months and should be considered in the impact assessment. The second sentence in this paragraph states that "Loggerhead turtles and leatherback turtles can be expected to be present in Nantucket Sound when water temperatures are favorable…." Kemp's ridleys rather than leatherbacks should be referenced here since leatherbacks have the ability to regulate body temperature while loggerheads and Kemp's ridleys do not.

The fifth sentence in the second paragraph states that "Kemp's ridley turtles occasionally visit Massachusetts waters, and are known to be occasionally cold stunned in Cape Cod Bay during the fall and winter months." Table 2 in Appendix 5.5-A shows that there were strandings of this species in Massachusetts' waters every year from 1990 through 2000. During this period, 549 Kemp's ridleys were reported to have stranded in Massachusetts. Danton and Prescott (1988) reported consistent annual strandings of cold-stunned Kemp's ridleys in Cape Cod Bay (115 from 1977 to 1987). Consequently it is clear and should be noted that this species visits Massachusetts waters **regularly** and are known to be cold-stunned **regularly** in Cape Cod Bay.

Corresponding changes should be made throughout a supplemental EIS which would then be made available for public comment.

b. Environmental Consequences (3.4.3.4.4)

"Construction / Decommissioning," page 3-152. Here and elsewhere the DEIS indicates that the impacts of construction and decommissioning of the proposed wind farm on protected marine mammals and sea turtles "are anticipated to be localized and temporary." As indicated in the comments on Appendix 5.5-A, this conclusion is not supported by data, analyses, or references to other data sources provided anywhere in the DEIS. For example, if installation of the monopiles for the WTGs will take at least 12 or 13 months over two construction seasons at times when the various ESA-listed species would most likely be present, any consequential changes in the presence, movements, or vital behavior of the species during that time period cannot reasonably be considered temporary. Also, as pointed out previously, it is clear that the data presented and referenced in the DEIS provide an insufficient basis for designing a monitoring program capable of validating the presumption that any impacts will be localized and temporary. The only way to eliminate this uncertainty would be: (1) to conduct seasonal sighting surveys and behavior studies for a period of at least three years to determine seasonal and annual variation in the presence, abundance, distributions, movements, and activities of cetaceans and sea turtles in Nantucket Sound and adjacent areas; and (2) based on the study results, to design and

conduct a monitoring program capable of detecting any unanticipated impacts on these species.

"Acoustic Impacts," pp. 3-152 & 153. This section contains conclusions or assertions that are not fully consistent with those provided elsewhere in the DEIS. Also, some of the conclusions or assertions are not supported by data, analyses, or references to other data sources provided anywhere in the DEIS. For example, the first sentence in the section states that "[p]roject construction, and to a lesser extent, decommissioning, would generate localized and temporary underwater sound that has the potential to affect marine mammals or [and] sea turtles if they are present in the Project area during these activities." However, nowhere in the DEIS is there a description of the sources, types, or levels of sound that would be generated by decommissioning. Also, the DEIS indicates elsewhere that neither construction, operation, nor decommissioning of the proposed Wind Farm "will have any adverse effects on wildlife" (e.g., the second sentence in the section of Appendix 5.5-A titled "Acoustic harassment").

As pointed out earlier, there is reasonable evidence that exposure to sound levels less than 180 dB will not cause permanent hearing damage or physical injury to marine mammals. However, there also is reasonable evidence that exposure to much lower sound levels can cause behavioral changes, some of which may be biologically significant. The available data are insufficient to draw any meaningful conclusions regarding the likely effects of Project-related sounds on sea turtles. In this context, while it is true as stated in the last sentence of this section that marine mammals and sea turtles "**may** react to short term acoustic disturbance...by avoiding or moving away from the sound source," there is no evidence that they would actually do so. Unambiguous assessments should be provided of both the sounds expected to be generated by construction and decommissioning activities, and the possible impacts of those sounds on marine mammals and sea turtles. The rationale and support for the conclusions should be articulated clearly.

"Vessel Traffic Impacts of Construction/Decommissioning," page 3-153. Among other things, this and corresponding sections of the DEIS state that –

> Evidence from whale watching and fishing activities in Massachusetts waters indicates that humpback whales, fin whales, and seals readily acclimate to the presence of large or small motor vessels (Watkins, 1986) and that there is no evidence of long-term effects to these marine mammals due to the physical disturbance of motor vessels.... Sea turtles do not appear to be overly disturbed by the physical presence or sound produced by vessels, and may simply dive when approached by a vessel (NMFS 2002). If marine mammals or sea turtles are present at any of the Alternatives during construction or decommissioning activities they may exhibit avoidance behavior in response to Project-related vessel traffic.... Vessels moving at slower speeds (less than 14 knots/16 miles per hour), such as the construction vessels that would work on the Project, are less likely to

cause collisions (Laist et al. 2001) and can be avoided by most marine mammals and sea turtles.

Some of these statements provide conflicting conclusions and, whether intentional or not, appear misleading. Also, some do not accurately reflect the sources that are cited. As examples of the later, the referenced paper by Watkins (1986) does not report observations of seals acclimating to vessel traffic; the referenced paper by NMFS (2002) is an ESA section 7 Biological Opinion on an oil and gas lease sale in the Gulf of Mexico and at best has questionable bearing on sea turtle behavior relative to vessel traffic in Nantucket Sound; and the referenced paper by Laist et al.(2001) indicates that the likelihood of vessel strikes appears correlated with speed, and declines between speeds of 10 and 14 knots, meaning that speeds below 10 knots are required to minimize this risk. As examples of the former, (1) there is no mention of right whales, the species most likely to be affected adversely by vessel strikes and vessel noise; (2) if there is no evidence of long-term effects, it follows that there also is no evidence that there are no long term effects; (3) terms like "overly disturbed" have no commonly accepted meaning; and (4) if as indicated marine mammals and sea turtles may exhibit avoidance behavior to Project-related vessel traffic, this would be an indication that they do not readily acclimate to vessel traffic. Also, citing the 1986 paper by Watkins to support the contention that seals and whales readily acclimate to vessel traffic assumes that, over the last two decades, there have been no significant changes in the numbers or types of vessels transiting Nantucket Sound, or how different species respond to those vessels. Both assumptions may be invalid and would not be tested by the monitoring proposed to be conducted during construction and operation if the Project is approved.

Such ambiguity here and elsewhere in the DEIS should be eliminated. If, for example, there are uncertainties concerning possible effects, as appears to be the case here, those uncertainties should be acknowledged, not obfuscated.

"Acoustical Impacts of Operation / Maintenance," page 3-154. The first sentence in this section states that "[d]uring Wind Park operation/maintenance, marine mammals and sea turtles are not anticipated to experience **substantial impacts** from vibrations/underwater sound generated by the WTGs." Subsequent sentences indicate that:

- The extent of acoustical impact is governed by both the underwater sound to be generated by the operating WTGs and the existing baseline underwater sound conditions;
- the underwater operational sound generated by the WTGs is expected to be the same at all of the Alternatives **under the design wind conditions;**
- the acoustic model simulations suggest that the predicted sound level from operation of an offshore WTG would be only slightly above baseline levels (1.9 dBL above baseline), and total sound levels are predicted to fall to baseline levels within approximately 360 feet (110 m) of the sound source; and

- because of the planned spacing of the WTGs, no cumulative impacts from operation of the WTGs would be expected (emphases added).

There is no indication of what are considered "substantial impacts," or what sounds would be generated by the WTGs under gale or other unusual conditions. Also, no consideration apparently was given to transmission of WTG-generated vibrations and sounds through bottom sediments and bedrock, as well as through the water. Likewise, no consideration apparently was given to how differences in water depths, currents, bottom contours, and bottom type would affect sound transmissions both between and within the Alternative sites. Finally, while it might reasonably be argued that the proposed spacing of the WTGs would assure that there are areas within the proposed wind farm where operational sound levels are not above ambient levels, it does not follow from this that no cumulative impacts would be expected. Like other sections of the DEIS concerning possible acoustic impacts, this section needs to be revised and expanded to provide a clearer, more comprehensive, and better justified assessment of the subject.

"EMF/Thermal Emissions," page 3-154. This one sentence section states that "[n]o impacts to marine mammals or sea turtles are expected at any of the Alternatives from EMF/thermal emissions emitted by inner-array cables…." As pointed out in the comments on Appendix 5.5-A, this assessment fails to cite or discuss specific studies on sea turtle use of magnetic fields for orientation and navigation.

"Acoustic Impacts of Construction/Decommissioning in the Nantucket Sound Alternative," page 3-155. Among other things, the first paragraph in this section indicates that marine mammals and sea turtles "**may react** to short-term acoustic disturbances from pile-driving or [and] Project vessel traffic **by avoiding or moving away from the sound source**" (emphasis added)." As pointed out earlier, no rationale is provided for the apparent conclusion that pile-driving over 13 months in two construction seasons would constitute a "short-term acoustic disturbance." Also, while it is not unreasonable to speculate that marine mammals and sea turtles "may react to acoustic disturbances by avoiding or moving away from the sound source," it is important to acknowledge that they also could be attracted to the sources in some cases and that there is no hard evidence one way or the other. Likewise, it is important to acknowledge that there is no reason to believe that the proposed 500 m Safety Zone would prevent biologically significant acoustic disturbance or harassment of either marine mammals or sea turtles.

The second paragraph in this section indicates that there is less likelihood that development at the Horseshoe Shoal site would affect seal haul-out and breeding sites than would development at other referenced sub-sites. Although this assertion is valid, it fails to recognize that seals are more likely to be affected by development-related activities when they are in the water feeding or searching for food. In this regard, it is important to recognize that the DEIS provides no information on the in-water movements or activities of seals and that, if such information is not available, to acknowledge that there is no basis for assessing the possible impacts of the proposed action on seals.

"Vessel Traffic Impacts," page 3-155. Among other things, this section indicates that

> Although sea turtle and seals are known to occur in Nantucket Sound, they do not appear to be overly disturbed by the presence of vessels and can typically avoid slower moving vessels such as those which would be associated with Project construction (Vella 2001: NMFS 2002; NMFS 2001). As discussed above, potential impacts to seals related to vessel traffic are likely to be less of an issue at the Horseshoe Shoal sub- sites than the Monomoy and Tuckenuck sub-sites, which are closer to seal haul-out and breeding sites....

As pointed out earlier, it is not evident what is meant by "overly disturbed." Similarly it is not evident what is meant by the phrase "can typically avoid." Also as pointed out earlier, the sources cited as the basis for these conclusions have little to do with vessel traffic in Nantucket Sound, and nothing to do with responses to that vessel traffic by seals and sea turtles in Nantucket Sound. Also, if as pointed out earlier, nothing is known about the movements or principal feeding sites of seals in Nantucket Sound, there is no basis for concluding that vessel traffic in the vicinity of Horseshoe Shoal is less likely to be an issue than at the sites closer to their haul-out and pupping sites.

"Operation/Maintenance," page 3-155. This one sentence assessment states that "[s]ince the Nantucket Sound Alternative is not in an area of **highly abundant protected species**, operational impacts are similar to those described above as common to all the Alternatives (emphasis added)." As pointed out earlier, this conclusion ignores the fact that, while right whales may be present only occasionally in Nantucket Sound, the loss of a single animal, particularly a breeding-age female, would constitute a significant adverse impact. If, as seems to be the case, there is significant uncertainty concerning the possible effects on right whales and other ESA-listed species of operation and maintenance as well as construction and decommissioning of the proposed Wind Farm at the Horseshoe Shoal and other possible alternative sites, that uncertainty should be acknowledged.

6. Fisheries Comments

a. Environmental Resources Review (3.4.3.2.5)

This section compares Nantucket Sound and alternate sites south of Tuckernuck and in the New Bedford/Buzzards Bay area. The sketchy analyses of commercial and recreational fisheries in the alternate sites have some of the same deficiencies as those analyzed below for Nantucket Sound—reliance on limited trawl survey data and raw MRFSS data, the absence of estimates of recreational fishing participation and its contribution to the economy, and tendentious generalizations and comparisons not substantiated by data. Commercial fishing data for the south of Tuckernuck site is not available. The material presented here on Nantucket Sound essentially consists of excerpts and summaries of material from 5.4, which is discussed in detail below. There is little worth commenting on in this section.

Page 3-74, 7th par., notes that the area "supports a highly developed recreational fishery through numerous marinas, launch sites, bait and tackle shops, and charter boat operations." In comparison, page 3-68, 6th par., simply says that Nantucket Sound and the waters surrounding Nantucket and Martha's Vineyard "support a diverse array of recreational fishing activities." Comparing these descriptions, one might conclude that the New Bedford/Buzzards Bay seems to be more heavily fished. But according to MDMF's "Massachusetts Saltwater Sport Fishing Guide," there are many more marinas, launch sites, bait and tackle shops, and charter boat operations in the towns surrounding Nantucket Sound.

Page 3-75, 5th par. claims that the "New Bedford portion of the New Bedford/Horseshoe Shoal Site is closer to spawning grounds utilized by several anadromous fish species such as ... alewives than the other two offshore alternative sites." The implication is that Nantucket Sound is not an important location for alewives. This is an example of a frequently used rhetorical strategy by the drafters to imply that "less" means "little or none." In fact, there are 75 active alewife/blueback herring runs in the towns from Falmouth to Chatham.

b. Environmental Consequences (3.4.3.4.5)

Page 3-149, 4th par. states that the presence in the New Bedford/Buzzards Bay site of "more fine sands, silts and clays than the other offshore Alternatives" (as well as contaminated sediments) "coupled with the proximity of fish spawning grounds and shellfish beds...raise concerns about the mobilization of these sediments during construction and decommissioning." This is another example of implying that "less" means "little or none." However, as documented below, there is considerable evidence for the widespread presence of fine sands, silts, and clays in Nantucket Sound. The Sound also contains spawning grounds for a number of species and shellfish beds. These facts should "raise concerns" about similar construction/decommissioning impacts, but they are ignored in favor of a best-case analysis which focuses on coarser sands.

Page 3-165, 4th par. claims that the 372 caisson supports and 37 monopiles required for the Tuckernuck site "would introduce more structure into a non-structure oriented environment compared to the two other offshore Alternatives. This could potentially result in a greater impact to finfish community assemblages...." The implication is that siting the Project in Nantucket Sound shouldn't raise similar issues of habitat and fish community alterations. And in fact, "Habitat Impacts and Alteration for Nantucket Sound," page 3-162, 4th par., does not even mention these critical issues. But if 372 plus 37 structures can change the habitat enough to impact finfish communities, then so can 130 monopoles plus 1 ESP. These issues are analyzed in more detail below.

7. Benthos Comments (3.4.3.2.6)

This entire discussion is based on existing literature that is not reinforced by the collection of any primary data. None of the information collected during benthos and sediment coring efforts was incorporated into this discussion. It also should be noted that much of the data used to characterize the benthos of these alternative sites in this section of the DEIS are more than 20 years old. For example, the data presented in Theroux and Wigley (1998) were collected between 1956 and 1965. Although these older studies provide valuable information on the potential general character of these benthic environments and communities, it should be kept in mind that benthic communities in coastal environments such as those in the alternative sites can change over the long-term, and that little recent information is available to substantiate that the general nature of the communities is similar to that found in these older data collections, except as given for the Nantucket Sound site in Appendices 5.3-A to 5.3-C.

Indeed, the generalizations discussed here and based on the literature were apparently found somewhat at variance with samples discussed in Appendix 5.3-B. Prior to the benthos study discussed in that Appendix, predictions were made concerning the type of substrate expected at the benthos sampling stations. These predictions were apparently significantly inaccurate, based on the discrepancies between predictions and actual findings as indicated by bottom type data used for the statistical analyses, which calls into question the applicability of earlier bottom surveys for predicting Project impacts on benthos, and emphasizes the need for good surficial sediment data collected concurrently with benthos samples.

Table 2: Bottom Type Predictions *vs.* Findings

Bottom Type	Predicted	Found*
Fine Sands	11	25
Medium Sands	24	8
* as implied by the use of these figures in statistical analyses		

The sampling density in the areas of the alternative sites was also low in Theroux and Wigley's (1998) study; 7 samples in Nantucket Sound, 2 samples in the vicinity of the South of Tuckernuck Island site and 3 samples in Buzzards Bay. It should be kept in mind that several generalizations made in this section are supported by only limited pre-existing information.

Page 3-76, 5th par., lines 4-5. "The data and level of detail used for this section was determined through consultation with other resource agencies."

The resource agencies and the level of data detail discussed with them should be provided. Existing letters of agreement should be appended to the DEIS.

Page 3-76, 6th par., lines 1-3. "A qualitative review of benthic resources was conducted for each of the three offshore alternative sites consisting of a detailed summary of the habitat variables that most influence benthic community composition (i.e., water depth, temperature, and clarity; sediment grain size…)."

The information provided in this section focuses on gross surficial sediment characteristics, and not the distribution of particle sizes present in the upper ~15 cm of the sediments influencing sea floor communities. The general level of characterization provided may be sufficient to compare alternative sites relative to engineering and construction issues but it does not provide information allowing evaluation of benthic community variations.

Page 3-77, 1st par., lines 5-9. "The magnitude of the annual temperature range in Nantucket Sound averages 64.4°F (18°C) in offshore waters and 71.6°F (22°C) in nearshore waters. The minimum temperature at this site is reported to be 32°F (0°C) and the maximum is reported to be 71.6°F (22°C)…."

What does this mean? If the minimum is 32 and the maximum is 71.6, then is the range not 71.6 minus 32 = 39.6 rather than 64.4 or 71.6? Can the meaning of the first sentence be clarified?

Page 3-77, 2nd par., line 3 and 6th par., line 4. "Mauer" should be "Maurer."

Page 3-77, 3rd par., lines 2-3. "The composition of the bottom sediments of Nantucket Sound is well known, having been documented in over 20 different studies."

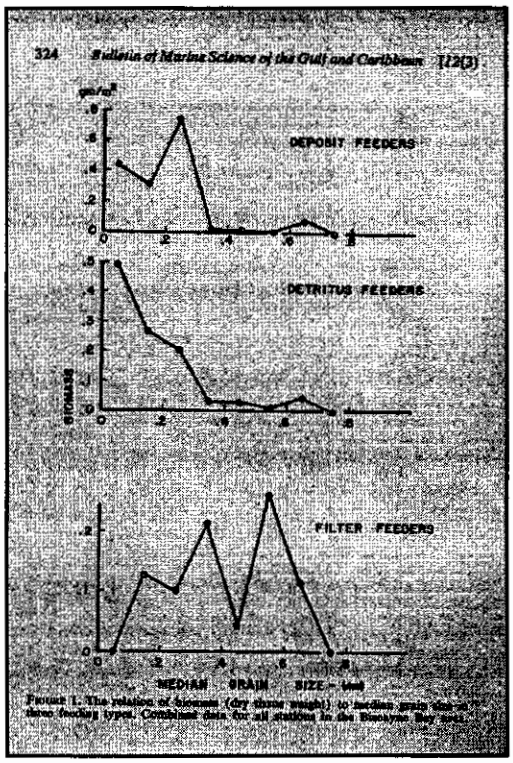
Citations should be provided for these 20 publications. Also, a summary of these data should be provided to enable determination of the level of detail to which these sediments are known. Please see the next comment.

Page 3-77, 3rd par., lines 3-5. "In general, as discussed in (Section 3.4.3.2.2), Nantucket Sound is dominated by sand-sized particles (Pratt, 1973), with the exception of the Tuckernuck Shoal area, which is dominated by gravelly sand…."

While such terminology is perhaps adequate for a general overview description, e.g. "sand-sized" and "gravelly sand," it must be remembered that these terms are not sufficient for discerning benthic community structure or predicting Project impacts on benthos. Differences in % composition of the various particle sizes can have profound effects on the structure of the benthic community. The DEIS indicates repeatedly (e.g., Appendix 5.3-A, page 5, 1st par.) that microhabitat differences create benthic community variation, which lies at the crux of what the DEIS efforts should consider, i.e., estimating what factors relate to particular community types so that estimates may be made concerning what kinds of benthos will colonize habitats altered by the proposed development.

The reason these particle size breakdowns are so important may be illustrated by Figure 1 from McNulty *et al.* (1962), reproduced here:

Figure 2



This figure illustrates the components of benthic communities occurring in areas with slightly different sediment grain size distributions in bottom sediments. Note the fall in deposit feeders, for example, when median grain size changes from 0.2 mm to 0.35 mm; it drops from peak occurrence to virtual zero. The other examples in this figure are similarly dramatic.

Even Sanders (1956), who is frequently cited in the DEIS, provides a rather extensive discussion of benthic infaunal feeding types and their relationships and community variations relative to amounts of silts and clays in sands occurring in Long Island Sound. Sharp changes in benthic community types based upon sediment characteristics are clearly reflected in the following tabular summary of his findings (Sander's Table IX). Such data are useful for forecasting the types of benthos that will become established in disturbed areas.

Table 3: Composition of Primary Feeding Types at Each Station

Station	Suspension Feeders (%)	Deposit Feeders (%)		% Silt-clay
		Selective	Nonselective	
4	95.56	4.30	0.14	5.4

1	82.94	16.63	0.43	4.7(*sic*)
Charles Is.	76.91	20.19	2.90	11.0
5	43.03	18.93	38.04	18.5
8	10.16	43.52	46.32	28.0
7	5.82	55.82	38.88	31.5
2	6.15	59.84	34.01	56.0
3	5.78	41.68	52.39	65.0
NOTE: Stations Arranged in Order of Increasing Silt-Clay Percentage				

Page 3-77, 4th par. "Not all benthic organisms are influenced by sediment grain size in the same direction or to the same degree; however, the general trend is for increasing numbers and diversity with increasing sediment grain size . . . particularly with regard to the smaller size fractions (silt-clay, sand-silt, and sand)."

Although the diversity of benthic organisms does increase with increasing sediment grain size, the abundance of organisms generally does not, depending on what comparisons one is making. Indeed it is often found that benthic abundance is higher in finer sediments in shallow coastal / estuarine waters.

It is not clear what is meant by "particularly with regard to the smaller size fractions."

Page 3-77, 5th par., lines 4-8. "The TOC content of sediments in Nantucket Sound is reported to be low, with a TOC content of less than 0.5% throughout most of the open water area (Theroux and Wigley, 1998). This is in contrast to the TOC content found to exist in sediments of many bays and estuaries, which often exceeded 2% (Theroux and Wigley, 1998). In general, sediment with very low TOC (<0.5%) typically supports a macrobenthic community that is less abundant and less diverse (Theroux and Wigley, 1998)."

It appears that these statements are based on findings and conclusions presented in Theroux and Wigley (1998) who examined large-scale trends in benthic community structures extending from shallow coastal waters to almost abyssal depths, where sediments are finer and abundances are lower. Given this, the statements in the DEIS are misleading in their generality. In fact, the last sentence in the quote above is in direct contradiction to the fact that, although sediment organic content based on Theroux and Wigley's (1998) analysis is low in Nantucket Sound, the area supports a very diverse benthic fauna. It also contradicts the very next sentence in paragraph 6, which states "Based on literature reviewed, Nantucket Sound is generally reported as a moderate to highly productive area for benthic invertebrates...."

Page 3-77, 6th par., lines 7-9. "Although density and biomass of the benthic community is reportedly high, faunal diversity (i.e. numbers of species and numbers of individuals per

species) in Nantucket Sound is reported to be lower than the diversity observed in the rest of the Southern New England Shelf (Sanders, 1968)."

The statement that faunal diversity in Nantucket Sound is reported to be lower than the diversity on the rest of the southern New England shelf is not supported by the information presented in Sanders (1968) which the DEIS references. This paper looks at large scale trends in benthic diversity and none of the sites that were considered in Sanders' (1968) analysis are from Nantucket Sound. The DEIS presents no information as to the basis of this statement if it is based on comparison of Sanders' information with other studies. If this is the case, these comparisons should be provided in the DEIS. All references to Sanders (1968) are likely inappropriate in the context of describing the benthic communities at the alternative sites considered in the DEIS.

Page 3-78, 2nd par., lines 1-3. "In general, the benthic fauna of Nantucket Sound is reported to be only moderately diverse (Pratt, 1973), with several researchers reporting that less than five faunal groups typically comprise more than 75% of the organisms collected (Sanders, 1959; Sanders, 1968)."

The statement that the benthic fauna of Nantucket Sound is only moderately diverse is not founded, particularly given that the basis for this statement is several "researchers reporting that less than five faunal groups typically comprise more than 75 % of the species." This latter statement suggests a fundamental lack of knowledge of how coastal benthic communities are structured. Many coastal benthic communities, whether they are species-rich or -poor, are generally dominated by a few major taxonomic groups (e.g. polychaetes, amphipods, bivalves, etc.) This is not an indicator of diversity (one way or the other). What matters are species richness and the relative abundances of the species that are found. Based on studies by Theroux and Wigley (1998) and those conducted for the DEIS (Appendices 5.3 -A, -B, and-C), the region and the alternative sites in Nantucket Sound appear to support a fairly diverse fauna.

The Sanders (1959, 1968) works cited contain no data on Nantucket Sound. How may it be said that Sanders is the basis for describing Nantucket Sound fauna if he reports none?

Page 3-78, 3rd and 4th par. "MDMF research trawl survey data was (*sic*) obtained from trawl locations within the boundaries of the alternative sites in Nantucket Sound to help characterize shellfish resources in this area. These data indicate that common shellfish species collected during these surveys included the channeled whelk, lady crab…Atlantic rock crab…and spider crab…in both the spring and fall trawl surveys, and the knobbed whelk in the fall trawl surveys. Commercial shellfishing and lobstering are discussed in Section 3.4.3.2.5. According to MDMF (2001b), there is a heavily populated area of northern quahog in the shoals east of Horseshoe Shoal. Bay scallops are reported to occur in shallow waters of Nantucket Sound, primarily in areas near seagrass beds. Also, two species of large gastropod whelks (knobbed whelk and channeled whelk) are abundant in the coastal waters of Nantucket Sound…."

MDMF (2001b) is cited as if it were a published work. It is, however, merely a personal communication.

Commercial fishery species should be discussed here. Just because they are fished commercially does not mean they are not important components of the area's benthic ecology. The opposite is true, actually, and they should be considered together in the dynamic of benthos interactions.

No mention is made of the Atlantic surf clam, *Spisula solidissima*.

According to the "Fisheries Data Report," Appendix 5.4-A, page 18, 1st par., "Sea clams appear to be the most common species harvested over the ten-year period in Area 10, Nantucket Sound. Sea clam landings constitute 52% of the shellfish landings from 1990 through 2000." Table 8 of the same Appendix indicates that 13 million pounds of "sea clams" were landed in this ten-year period, which is reinforced by the pie diagram in Table 15 of that Appendix.

A "Google" Internet search readily confirmed that the Atlantic surf clam, *S. solidissima*, is the "Sea Clam." A Mid-Atlantic Foods, Inc. site (MAFI, 2004) states, "The commercially processed clam industry makes use of two species of clams....The first clam species is the 'Surf' or 'Sea Clam' (*Spisula solidissima*). The second variety is the 'Ocean Clam' or 'Quahog' (*Arctica islandica)*." The website of the Town of Barnstable identifies *S. solidissima* as the "Sea Clam" (Barnstable, 2004) as do at least three other sites (Foodsubs, 2004; Parker River, 2004; Wellfleet, 2004).

Page 3-78, 6th par., lines 2-5. "The magnitude of the annual temperature range at the South of Tuckernuck Island Site averages about 62.6F (17C). The minimum temperature at this site is reported to be 35.6F (2C) and the maximum is reported to be 18C (64.4F)...."

Once again, this language is not clear. Is the temperature range not 64.4 minus 35.6 = 28.8 rather than 62.6?

Also, the units inside and outside of parentheses should be consistent.

Page 3-78, 7th par., lines 11-12. "Consequently, this community would be expected to have a greater number of taxa, a characteristic of stable sand substrates."

The assertion that sand-sized particles typically support the highest density and biomass of organisms is incorrect as the relationship between grain size and these community variables is much more complex and variable.

Page 3-78, 8th par., lines 4-7. "In general, as discussed in Section 3.4.3.2.2, the South of Tuckernuck island Alternative Site is dominated by sand-sized particles...which in marine

environments typically support the highest density and biomass of organisms per square meter, as compared to either larger or finer grained material…."

The assertion that sand-sized particles typically support the highest density and biomass of organisms is incorrect as the relationship between grain size and these community variables is much more complex and variable.

Page 3-79, 3rd-5th par. "Based on literature reviewed, the South of Tuckernuck Island Alternative Site is generally reported as a moderately productive area for benthic invertebrates, with densities of benthic organisms typically ranging between 700 and 5,500 individuals/m^2 and benthic organism biomass typically ranging between 50 and 500 grams/m^2 (Wigley and McIntyre, 1964 and Theroux and Wigley, 1998). This Site is reported to have slightly higher benthic organism diversity than Nantucket Sound and a diversity similar to that found near the New Bedford/Horseshoe Shoal Site (Sanders, 1968; Theroux and Wigley, 1998). This may be a function of the generally deeper water depths and more stable substrate at this Site. The reduced magnitude and frequency of sand movement is believed to be correlated with more diverse benthic communities, since relatively few species have adapted to recover from burial (Pratt, 1973). Literature reviewed indicates that the most abundant taxa at the South of Tuckernuck Island Site are crustaceans and mollusks, followed by polychaete worms (Theroux and Wigley, 1998). "

Although the DEIS makes comparisons of benthic diversity and abundance among the alternative sites here. It would be helpful if additional data were presented to substantiate these statements.

Page 3-79, 5th par., lines 4-6. "However, several taxon (*sic*) are expected to occur at the South of Tuckernuck Island Site that would be much less common within Nantucket Sound. These include the Crustacean taxa: Amphipoda, Cumacea, and Isopoda, as well as the Nemeitea (*sic*), Nematoda, and Sipuncula…."

The statement that certain taxa would be more common at the South of Tuckernuck Island Site than at the Nantucket Sound site is made with no supporting data.

Given the methods employed by Theroux and Wigley (1998), i.e. the use of a 1 mm sieve, speculating on the relative numbers of nematodes in the alternative sites based on these reports is dubious at best. Nematodes are considered meiofauna and virtually all pass through a 1.0 mm sieve as used by Theroux and Wigley (1998).

"Nemeitea" above should be "Nemertea."

Page 3-79, 6th par., lines 1-3. "In general, the fauna of the South of Tuckernuck Island Site is reported to be only moderately diverse…with several researchers reporting that less than five faunal groups typically comprise more than 75% of the organisms collected…."

Once again, the statement that the benthic fauna of the Tuckernuck Island Site is only moderately diverse is not founded, particularly given that the basis for this statement is several "researchers reporting that less than five faunal groups typically comprise more than 75 % of the species." This latter statement suggests a fundamental lack of knowledge of how coastal benthic communities are structured. Many coastal benthic communities, whether they are species-rich or -poor, are generally dominated by a few major taxonomic groups (e.g. polychaetes, amphipods, bivalves, etc.). This is not an indicator of diversity (one way or the other). What matters is species richness and the relative abundance of the species that are found. Based on studies by Theroux and Wigley (1998) and those conducted for the DEIS (Appendices 5.3 -A, 5.3-B, 5.3-C), the region and the alternative sites in Nantucket Sound appear to support a fairly diverse fauna.

Page 3-79, 7th par., lines 2-5. "These data indicate that shellfish species collected…included the American lobster, Atlantic rock crab, Jonah crab,…and spider crab…and the lady crab, sea scallop, and unclassified shrimp…."

The purpose of this section of the DEIS is to describe "benthic community composition and abundance…" (page 3-76, 5th par., line 1), but no numbers or other descriptive data other than "more" or "less common" are provided concerning any of these species. They are important components of the benthic community and should be described relative to their abundance, distribution, and roles in the ecosystem. Otherwise, what is this section about?

Page 3-79, 8th par., lines 4-5. "Suspension-feeding species are reported to be less common south of Tuckernuck Island than at the other offshore alternative sites."

Are they less common as the numbers of species, i.e. fewer species, or as numbers of individuals or biomass within each species?

Page 3-79, 9th par., line 2. "The blue mussel is common in shallower waters near low tide attached to rocks and shells…."

Does this mean a mussel-dominated community can be expected to develop on the Project piles?

Page 3-80, 5th par. "Due to relatively shallow water depths, the benthic community of the New Bedford/Horseshoe Shoal Alternative Site is exposed to warmer water temperatures, on average, and a greater annual range in the temperature of bottom waters than the other two offshore alternative sites (Theroux and Wigley, 1998). Therefore, it is likely that there are fewer deposit-feeding species and more suspension-feeding species in this area, particularly in samples collected from the shallowest waters, In addition, the shallower areas of this Site…are likely to be characterized by organisms that are prevalent in shifting substrates, since frequent disturbances would occur in these areas as a result of wave energy reaching the bottom. Consequently, the benthic community in this Site would be

expected to have a higher abundance of amphipods and/or other taxa that would be adapted to shifting sands and frequent burial than the other two offshore alternative sites."

The statement that there are fewer deposit feeders versus suspension feeders in the New Bedford section of the New Bedford/Horseshoe Shoal alternative and that the community should be primarily made up of organisms adapted to shifting sands is totally without foundation. It also makes no mention as to what other sites are used to make this comparison. Comparative data should be explicitly provided.

A quick review of Sanders (1958) suggests that this alternative site may be dominated by deposit feeders, in contrast to the characteristics as described in this paragraph.

Page 3-80, 7th par., lines 1-5. "The composition of the bottom sediments at the New Bedford/Horseshoe Shoal Alternative Site is well known and has been documented in several studies (Howes and Goehringer, 1996; CR Environmental, 2002; Theroux and Wigley, 1998; Poppe *et al.*, 1989). Although no studies were found that focused solely on the New Bedford/Horseshoe Shoal Alternative Site, several studies did include this Site as part of larger evaluations designed to characterize seafloor sediments in the region."

- Work by Sanders (1958) in Buzzards Bay, including stations near the proposed alternative site, is not noted.
- Since the "composition of bottom sediments ... is well known" in the New Bedford portion of this alternative site, a map of the sediment distributions and other important habitat features such as rocky outcrops should be provided.

Page 3-81, 2nd par. "Based on literature reviewed, the New Bedford/Horseshoe Shoal Alternative Site and, to some extent, the surrounding Buzzards Bay area, is reported as a moderate to highly productive area for benthic invertebrates…(Theroux and Wigley, 1998)…."

No reference is made to work by Sanders (1958) in the area. His data appear pertinent to the area under discussion.

Page 3-81, 3rd par. "The nearshore areas within New Bedford Harbor may be organically enriched as a result of sewage discharges in this area…and, presumably, stormwater runoff. These enriched areas are dominated by the polychaete, *Mediomastus ambisetsa*, an opportunistic colonizer of polluted sediments and sediments subject to disturbances that would typically limit recruitment of most other organisms…. However, areas offshore of New Bedford Harbor still possess a benthic community that would be categorized as relatively 'pristine'…."

The areas mentioned to be dominated by *Mediomastus* are primarily within New Bedford Harbor. The relatively "pristine" offshore area likely includes the area of the New Bedford portion of the New Bedford/Horseshoe Shoal alternative.

Page 3-81, 5th par., line 3. "*Yolidia*" should be "*Yoldia*."

Page 3-81, 5th par., line 5. "*Nuncula*" should be "*Nucula*."

"Comparative Summary of Existing Resources," page 3-82, 4th-7th par. This section is very general; ranges of depth and temperature conditions should be provided. Clarification or definition of terms such as "somewhat less" and "slightly more diverse" should be provided; how was diversity measured?

There is no attempt here to provide a more informative comparison of the alternative sites.

A tabular comparison of data among the sites would be very helpful. The textual presentation of this complex information does not enhance its clarity.

Page 3-82, 6th par., lines 1-3. "With regard to benthic species diversity, both the South of Tuckernuck Island Alternative Site and the New Bedford Harbor portion of the New Bedford/Horseshoe Shoal Alternative Site are slightly more diverse than the Nantucket Sound Site (Pratt, 1973; Sanders, 1968; Theroux and Wigley, 1998)."

The DEIS fails to explain how species diversity calculations were derived from Theroux and Wigley (1998) data. It does not indicate what criteria were used to support this statement or what calculations were made.

8. Aviation Comments

a. Environmental Resources Review (3.4.3.2.8)

Page 3-87. This section describes existing aviation use of the airspace in and around the alternative sites being considered in lieu of the primary wind energy project site. While this section inadequately describes the aeronautical activities in and around the alternative sites being considered, the DEIS tends to describe airways and air navigation fixes as points in the sky. The airways, airports, and navigation fixes do have a defining latitude and longitude or appear as a point or line on a map; however, they all occupy a larger volume of airspace. For example, the Massachusetts Military Reservation (MMR) is described as being 12.75 miles west of Barnstable Municipal Airport.... The MMR is over 21,000 acres of real estate with special use airspace that extends to 18,000 feet above mean sea level in some cases. Barnstable Airport is considered Class C airspace with the volume of a cylinder approximately 5 statute miles in diameter and a height of 2,500 feet. An airway is a rectangle of airspace four (4) nautical miles on either side of the centerline of the airway that extends 18,000 feet. This illustrates interference with air traffic radar, air defense radar, and communications, the potential conflicting area is greater than described in the DEIS. The DEIS does not adequately quantify the aviation activity using the airspace in the alternative sites. During most of the year, all of the alternative sites are among the busiest aviation and shipping routes in the United States. For identical reasons

cited by MMR Authorities, Cape Cod civilian business and pleasure activities will be disrupted, diminished, or eliminated if one of the alternative sites is utilized.

Pages 3-88 through 3-90; all. The DEIS provides no mention of civil and military radar in this section except for the PAVE PAWS military radar. Section 3.4.3.2.8 (Aviation) mentions airports but does not make any mention of any of the radars that are vulnerable to interference by the wind turbine generators. The EIS should be required to address potential adverse effects on all civil and military radar sites in the Nantucket Sound area that are potentially vulnerable to interference caused by the installation of the wind turbine generators (WTGs) see Figure 1.

The FAA provides both Terminal Radar Control (TRACON) and En-Route control services in the area. Radar sites are marked with solid red balls and airports are marked with red circles. Aircraft operating under Instrument Flight Rules (IFR) file a flight plan and receive continuous positive control by air traffic controllers. All other aircraft use Visual Flight Rules (VFR), and may request services but are not required to do so.

The EIS fails to consider the fact that there are a large number of flights using the affected area that can be impacted by any degradation caused by the wind turbine farms. Cape TRACON (K90) in Falmouth handles about 110,000 flight operations per year, as summarized in the table below. (Letters in parentheses indicate the FAA designations for the facilities mentioned.) It provides terminal approach control services to the airports at:

Nantucket (ACK)
Hyannis/Barnstable (HYA)
Martha's Vineyard (MVY)
Falmouth/Otis Air National Guard base (FMH)
Plymouth (PYM)
New Bedford (EWB)
Provincetown (PVC)

Cape TRACON also provides control for aircraft transiting the area using IFR and, on request, assists aircraft in the area that are using VFR. IFR minimum altitude is 1200 feet in the area. At least seven smaller airports in the area are not shown in Figure 1; aircraft using these facilities also contribute to the workload of Cape TRACON. These services are provided using radar data from the radar installations at Nantucket and Falmouth/Otis.

Aircraft position location is provided by ASR-9 airport surveillance radar at Nantucket and an ASR-8 radar at Falmouth/Otis. The CWA project is located about halfway between the two ASR locations, about 15 miles from each one.

A third radar, the ARSR-4 air route surveillance radar at Truro near the tip of Cape Cod, supports the Air Route Traffic Control Centers (ARTCC's) at Boston and New York. These centers control all aircraft above 12,000 feet; these aircraft use Instrument Flight Rules (IFR). The ASR-4 has an instrumented range of 200 nautical miles and is also

equipped with an ATCBI-5 beacon transponder. The proposed project site is 33 nautical miles from this radar.

Figure 3

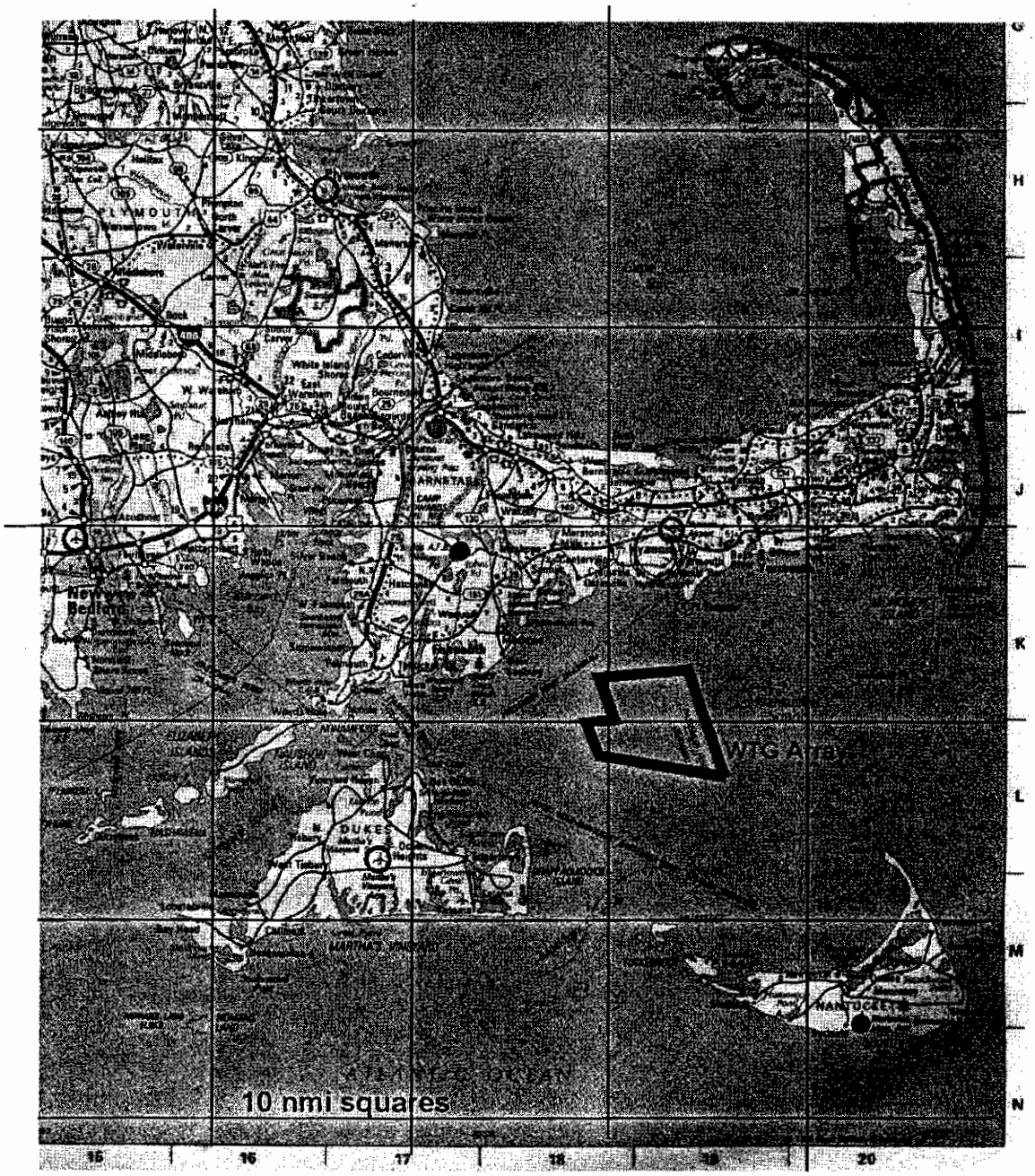


Table 4: FAA Flight Operations Statistics for Cape Cod Area

FACILITY	CODE						
Cape Tracon (Falmouth)	K90	1					
Primary Operations			11648	0	0	0	11648
Secondary Operations			97108	48	62043	33746	1271
Overflights			869	316	4	139	410
Total Operations			109625	364	62047	33885	13329
Hyannis	Hya	3					
Primary Operations			28216	0	21283	6880	53
Total Operations			28216	0	21283	6880	53
Nantucket Memorial	Ack	3					
Primary Operations			36701	49	24915	11169	568
Total Operations			36701	49	24915	11169	568
New Bedford	Ewb	3					
Primary Operations			13112	0	2563	9761	788
Total Operations			13112	0	2563	9761	788

Aircraft position location for local air traffic control is provided to Cape TRACON by an ASR-9 airport surveillance radar at Nantucket and an ASR-8 radar at Falmouth/Otis. These are 2-D radars that do not provide aircraft altitude information. In addition to the ASR "primary" radar, each radar installation includes "secondary" radar, an ATCBI-4 air traffic control beacon interrogator that transmits a signal that causes a transponder on the aircraft to respond. In normal operation, the beacon system (secondary radar) is preferred for traffic control because the beacon response provides aircraft altitude and a means of identifying the aircraft. However, the primary radar alone allows detection of aircraft that have no transponder, or a transponder that is turned off, and can provide weather information. These systems have an instrumented range of 60 nautical miles. The Horseshoe Shoals site is located about halfway between the two ASR locations, about 15 miles from each radar.

The ARSR-4 is part of the nation-wide surveillance system that is used by the Air Force for detection of potentially hostile or hijacked aircraft.

It is likely that data from both the ARSR and the ASR's would be used to support detection of aircraft that might be hijacked or seem to have hostile intentions.

PAVE PAWS is a very long-range early warning radar system located at Cape Cod Air Force Station, 15 miles northwest of the CWA Project (see green dot in Figure 1). Its mission is to search for ballistic missiles. It has a range of 3000 miles. Because of its

strategic and tactical importance, the impact on this radar should certainly be considered in the EIS.

The ARSR is the primary means of tracking aircraft transiting the Atlantic between the US and Europe and as such is an important asset to the national air traffic control and air defense systems.

Due to the height of the wind turbine generators (417 feet above mean sea level) and the height of the radar antennas (towers) used for the ASR's, ARSR, and Pave PAWS, the wind turbine blades and most of the supporting structure will be within the field of view and therefore visible to all of these radars.

The terminal radars (ASR's) have fan beams that are wide in elevation and therefore will display the returns from the WTGs merged with the returns from aircraft at higher altitudes. The ARSR and the PAVE PAWS have narrower elevation beams and can discriminate in elevation, although they are still vulnerable to returns from the vertical sidelobes of the antenna. UK studies indicate that the returns from the base of the wind turbines are substantial at the frequency band used by the ASR and are much stronger at the lower frequencies used by the ARSR.

The Doppler processors used in these radars should greatly reduce the returns from the base of the wind turbine generators as long as they do not saturate the receivers. However, the rotation of the blades will produce Doppler offsets that will be passed through to the displays.

The material provided by the UK reports should be considered in the DEIS. A very brief summary of this information is given below:

<u>British Wind Energy Association</u>
The British Wind Energy Association funded Marconi Systems to quantify the adverse effects that WTGs might cause for radars and to investigate the feasibility of modifying radars in some way to reduce or eliminate these effects. They state, "there is evidence that unwanted effects do occur, reports from the operators of a number of radar systems that currently operate in the vicinity of wind turbines have identified problems."

They generated a mathematical model of a WTG and generated a number of interesting characteristics. They concluded, "Turbines cause two principal effects: Doppler modulation of the reflected signal at frequencies similar to those from aircraft and very high potential reflection levels causing limiting and numerous other effects in the radar signal processing."

Radar reflectivity is measured in terms of a target's radar cross section (RCS) in square meters (m^2). The radar cross section of the tower portion of a WTG is proportional to the square of its height and can be as large as 1,000 m^2 at the ARSR frequencies (L-Band) and

about 100 m^2 at the ASR frequencies (S-Band). A large airliner is roughly 20 m^2 nose-on and 1000 m^2 broadside, while a small general aviation aircraft is 1-5 m^2 nose-on. An air traffic control radar's Doppler filters ("Moving Target Indication" processing, or MTI) can remove the tower returns from the display only if they do not cause limiting in the receiver. If the receiver gain is manually reduced to avoid limiting, the ability to detect aircraft is reduced at all ranges.

The second effect pointed out in the study is that the motion of the WTG blades "produce directional reflections and their rotation causes RCS (radar cross section) flashes" and generate a false Doppler return that fools the radar's Doppler filters: "Because of the nature of the movement of the turbine blades, these filters will pass their signals causing the radar to present the Air Traffic Controller with false information." Because these individual targets have Doppler offsets but do not have realistic motion, the study correctly points out that the radar scan-to-scan tracking filters (which correlate radar blips from scan to scan based on possible motion of aircraft over the 360° scan time of 4.8 seconds) can be modified to avoid false track generation on WTG returns. However, this assessment seems to deal with only one WTG, rather than multiple WTG installations like the CWA energy project. In a 130-WTG wind farm, there is a possibility that returns from different WTGs will correlate when viewed on subsequent radar antenna scans because their distance between scans is comparable to aircraft motion over 4.8 seconds. Based on the WTG X and Y separations of 600 and 1000 meters, the equivalent aircraft speed for a 4.8-second scan rate are approximately 250 and 400 knots. This range encompasses speeds that could be employed by aircraft over flying the area or intruder aircraft.

Another complication for the scan-to-scan tracking filters is that the WTGs will generate intermittent strong flashes. For the CWA project, there will be 130 x 3 = 390 possible broadside flashes from the blades. However, only a fraction of these (those where the blade is parallel to the radar polarization vector) will be visible on any one pass. This means that there will be a large number of new targets appearing in different places within the wind farm on each subsequent scan, so the tracking filter must be able to handle a large number of new targets on each scan without running out of capacity to detect new targets.

It should also be noted that marine radars do not use Doppler filtering and will therefore need to have enough dynamic range to pass both a WTG return and a smaller ship return. If the receiver gain is set at its highest value, the WTG return will bleed into the antenna sidelobes and obscure smaller targets near the WTG farm, and if the gain is reduced, the smaller targets at all azimuths may fall below the threshold of detectability.

<u>Information Contained in Letter from Julian Chafer, U.K. Ministry of Defence, on "The Effect of Wind Turbines on Radar Systems"</u>

The Ministry of Defence (MOD) assesses the impact (WTG) turbines on Air Defense, Air Traffic Control, and weather radar which are proposed to be located within the line of sight of the radar. Initially, they only considered turbines within 40 nautical miles but the initial findings of recent research indicated that the 40 nm threshold should be lifted pending

assessment of their final report. The letter lists effects of turbines on radar that have been experienced in the UK include:

- overhead obscuration of aircraft flying over wind farms, which is a problem for 2-D radars that use an antenna that has a fan beam in elevation (such as the ASR's used at Falmouth/Otis and Nantucket);
- clutter caused by the rotating blades, dependent on their speed, angle, and relative position; and
- shadows in radar coverage immediately behind the turbine.

Interim Guidelines on WTG Installations Issued by U.K. Government/Industry Working Group

A Working Group that included the British Wind Energy Association, the Ministry of Defence, Department of Trade and Industry, the Civil Aviation Authority, and the National Air Traffic Services produced this report. It provides a thoughtful overview of the interaction of WTGs with virtually every other facility in the U.K and a detailed list of procedures required to ensure that wind farms can co-exist successfully with other things that may be affected by WTG installations. They also commissioned:

- a model to predict the effect of WTGs on radar installations. In the area of interference with radar; and
- an investigation of measures to reduce the potential effects of WTG installations on radar installations.

Their report discusses the following aspects of the nature of the impacts of WTGs on radar.

Masking: This refers to the casting of shadows behind WTG that may lead to missed detections of targets that fall within the shadow. It is a concern for military, civil air traffic control, and weather radars.

Radar Returns / Clutter: These are unwanted returns that may mask targets of interest, particularly in the case of radars with a wide elevation antenna beam width (2-dimensional or "2-D" radars) that are trying to detect aircraft flying over WTG farms, as is the case with the ASR's at Nantucket and Falmouth/Otis.

They point out that a target that continually appears in one place causes much less trouble than when the target is intermittently detected, because an intermittent return is more likely to represent a maneuvering or unknown aircraft. This is the case with WTGs, which they say can appear only on one of every 6 radar scans due to the fluctuating nature of the fan-blade returns. They also say that the problem becomes much more difficult when there are more than a very few WTGs. Multiple WTGs will present several returns during every radar sweep, causing a "twinkling" effect. If the radar system interprets them as one or more moving objects and initiates a track on the returns, the radar track processor can become overloaded.

Scattering, Refraction, and False Returns: The possible effects discussed in the report include:

- multiple false returns;
- display of radar returns from genuine aircraft in an incorrect position (range, azimuth, or both); and
- garbling or loss of SSR radar (beacon transponder) information due to reflections of the airborne transponder from the WTGs.

The latter effect would occur when an aircraft is near the WTG farm. Each aircraft's transponder is interrogated by all the air traffic control radar beacon interrogators in the vicinity (60 mile radius) on every scan, and it radiates omni directionally. The transponder signal can bounce off a nearby WTG and be received by the interrogating radar as a response that is at a longer range and a different bearing than the aircraft. This signal will usually be weaker than the original. Airborne collision avoidance systems that rely on detection of beacon transponder signals from other aircraft could generate false collision warnings if this occurs.

Potential Mitigating Measures: Doppler processing will not remove the return from the WTG rotor blades, but the report states that this is not a serious problem if there are only one or a few WTGs. It points out that WTG farms containing a large number of WTGs (as in Nantucket Sound) can produce the appearance of multiple unknown aircraft moving around the WTG farm and states that military systems may automatically start tracking the activity.

The report states that the automatic track initiation feature can be disabled in the area of the WTG farm if the software permits selective disabling of automatic acquisition. When an aircraft is under automatic track, the position of the aircraft on the present scan and its smoothed velocity are used to predict a "basket," i.e., where to look for the return associated with that target on the next scan, 4.8 seconds into the future. Ideally, the radar blip from that target on the next scan will fall into the basket and will be the only blip to do so. If the target is over a WTG farm and is being viewed by a 2-D radar, the WTG returns can confuse the tracker and cause multiple tracks to be generated.

The report also points out that controllers can simply ignore returns from the WTG area by keeping all aircraft 5 miles away from it, or limit service (calling out potential conflicts) when aircraft are in the vicinity of the returns from the WTG farm. They also point out that the significance of unwanted returns from WTG farms will depend not only to the type of airspace they are within or underneath, but also on their proximity to traffic patterns and routes.

The DEIS also makes no mention of the instrument landing systems (ILS) installed at the above airports and does not address whether or not the WTG farm will interfere with these systems. Since these are the primary guidance method used by aircraft landing in foul or

foggy weather, any interference with any of the local airports' ILS systems will have immediate tragic consequences.

"Comparative Summary of Existing Resources," page 3-90. The DEIS states, "All four of the alternative sites are located in areas that have some level of existing aviation use of airspace. The MMR has the most intensive use of airspace since the MMR supports substantial military flight training and USCG search and rescue flights as well as being a designated alternative emergency landing site for the NASA space shuttle." The proposed principal CWA energy project site is also located in close proximity to all of the alternative sites, thus the radar, communications, and physical impacts will be nearly identical. Barnstable Airport, Martha's Vineyard, and Nantucket are all air carrier airports that have far more operations and support substantial regional economic activity than the aeronautical activities of the MMR, which has been declared as incompatible as an alternative wind energy project site.

b. Environmental Consequences (3.4.3.4.8)

Page 3-182 and Appendix 5.12-C. In an FAA NE Region letter included in Appendix 5.12-C, FAA Determinations, to the Corps, the FAA pledged to conduct an evaluation "regarding physical, electromagnetic, or line-of-sight interference on existing or proposed air navigation, communication, radar, and control systems facilities." Evidence has been presented in the United Kingdom studies that points out the further research is needed before the EIS is released.

The prevailing issue not adequately addressed by the DEIS is the extent, if any, that interference by radar to air traffic and air defense radar. The potential of interference is illustrated by studies conducted in the United Kingdom. To minimize the risk involved with regional air traffic, terrestrial air defense gaps and use of Otis AFB as an emergency landing field for the space shuttle further study is required to determine if the proposed CWA project will interfere with area radars.

Page 3-182 through 3-184, all. The DEIS makes no mention of interference with air traffic control and USAF surveillance radars other than PAVE PAWS, and the project.

PAVE PAWS discussion may not be accurate based upon recent studies in the United Kingdom. This is an extremely serious issue that must be addressed at the highest levels of the federal and state governments.

This section of the DEIS mentions that the three proposed turbine arrays in Nantucket Sound are located within 2 to 3 miles of the three alternative WTG sites; the minimum altitudes for these flight paths range from 1,700 to 2,000 feet. The DEIS concludes that since the turbine arrays are not located in the flight paths of any low altitude IFR routes, no problem exists. On the contrary, there are potential hazards caused by the close proximity of aircraft to the turbine arrays. These are track confusion and/or beacon transponder reflections that can adversely affect air traffic control operations.

Figure 3-21 of the DEIS shows Instrument Flight Rules flight paths in the vicinity of the proposed locations in Nantucket Sound. Flight paths V141 and V167 come within 3 miles of the Horseshoe Shoal Alternative and V141 comes within less than a mile of the Monomoy-Handkerchief Shoal Alternative. The close proximity of these flight paths to the large radar returns from wind turbine generators is not addressed as a concern in the DEIS. In particular, there is a possibility of generating the appearance of a potential flight conflicts due to false radar tracks generated by the wind farms.

Radar trackers used by FAA air traffic control correlate aircraft primary and secondary (beacon transponder) radar returns from each scan of the radar antenna. Each new scan produces a series of new target returns, and each new return has to be associated with the set of previous tracked points of a particular aircraft. This is accomplished by deducing the speed and heading of the aircraft and predicting where the return on the next scan will occur. If the new return falls within a reasonable distance of the predicted return, the track is updated and a new prediction is made. If the aircraft turns or if there are multiple returns in the vicinity of the predicted position, confusion can occur.

For example, V167 executes an abrupt 80-degree turn to the left at its closest point of approach to the Horseshoe Shoal site. At that point V167 is within 9 miles of intersecting V141. A radar track of an aircraft on V167 would be extended along a straight line up to and beyond the turning point. When the aircraft makes its turn, the radar tracker is vulnerable to generating a track correlation with a primary radar return from the Horseshoe Shoal wind farm, which is in the direct path of the previous tracks from that aircraft. The false track would indicate a potential conflict with aircraft on V141 and vice versa. False tracks and/or track bifurcations of this type can lead to confusion or the possibility of missing a hazardous situation and should be addressed in the DEIS.

It should be noted that beacon transponder information (secondary radar returns), when present, allows tracks to be associated with the correct aircraft by using identity codes and altitude information transmitted by each equipped aircraft. However, the DEIS should address the potential for confusion that arises when one of the aircraft transponders is not operating. In addition, the possibility of strong reflections of the beacon transponder signal from the wind turbine generators could lead to further confusion in air traffic control and this is also not addressed in the DEIS.

This section of the DEIS relies on assertions that "the FAA has determined that the Nantucket Sound Alternative as proposed does not present a hazard to air navigation" and lists seven areas where there was deemed to be no adverse impact. However, none of the seven areas specifically mention the adverse impact of the radar returns from the WTG farms on the effectiveness and efficiency of FAA Airport Surveillance Radars in the area, or on the Air Force and FAA users of the Air Route Surveillance Radar located on Cape Cod. The documents cited were produced by the New England Regional Office of the FAA rather than by FAA Headquarters; the FAA may need to enlist additional technical

expertise to make an adequate assessment of the complex issues involved. In addition, the "No Hazards" determination is being appealed by several airport managers in the Nantucket Bay area.

Information produced in the United Kingdom indicates that the UK government has serious concerns on the effects of WTGs on civil and military radar operations and has initiated serious technical studies of the problems. Results of these investigations were published in November 2004, after the DEIS was issued, so they could not have been considered in the DEIS.

The fact that the DEIS does not devote a numbered paragraph to the important issue of interference of the WTGs to critical radar functions performed by the FAA and military in the Cape Cod area is clear evidence that this important issue has not been properly considered in the DEIS and requires much more attention in a supplemental EIS. It is important that these serious issues be properly resolved before the WTGs are installed because to do otherwise leaves the project at risk of being delayed or restricted in operation.

The DEIS cites "No Hazard to Air Navigation" determinations by the FAA New England Regional Office as the sole and final word that the proposed wind turbine generator farms offer no hazard to air traffic control operations. However, the FAA determinations (reproduced in DEIS Appendix 5.12-C) do not clearly enumerate the scope of the investigation performed by the FAA New England Regional Office, particularly with regard to potential radar problems associated with the wind turbine generator farms. It is not clear that the New England Regional Office has the technical resources to make such a complex determination regarding radar interference issues without outside technical support, and there is no evidence in the DEIS that FAA headquarters has reviewed and concurs with these findings.

The four FAA determination letters refer to Horseshoe Shoal (4/9/2003), Monomoy - Handkerchief Shoal (7/21/2003), Tuckernuck Shoal (8/5/2003), and South of Tuckernuck (5/17/2004). The memos apparently allow installation of wind turbine generator farms at any one or all four sites, without regard to the aggregate effects if all four sites are populated with wind turbine farms. Thus, the FAA determination appears to allow installations at all four of the sites mentioned.

The four FAA determination letters make no mention of adverse effects on radar-based air traffic control, although the 5/17/2003 and 3/26/2004 letters have the following additional stipulation: "However, should spurious electromagnetic noise or aggregate noise from multiple wind turbines adversely cause Electro-Magnetic Interference (EMI) to an FAA facility, the proponent agrees to cease operations of the wind turbine(s) until such EMI is mitigated." This means that wind farms could be shut down indefinitely should problems occur. This potential impact needs to be considered in a supplemental EIS.

At a minimum, a supplemental EIS should be required to specifically address potential adverse effects of the wind turbine generator farms on electromagnetic systems that fall into the following six categories:

- Reflection of primary radar signals that can cause false targets to appear on air traffic control radar, air defense radar, and shipboard navigation radar;
- Reflection of secondary radar (beacon transponder signals) from aircraft that can cause false targets to appear on air traffic control systems and airborne collision avoidance systems;
- Reflections leading to interference with instrument landing systems (ILS);
- Physical blockage leading to potential attenuation and/or garbling of signals for radar, air traffic control beacon transponders, Global Positioning System (GPS) and LORAN navigation receivers, and voice communications and data links;
- Radiated electrical noise emissions associated with rotating electrical machinery that can cause interference with receivers operating in the frequency bands in which the noise is generated; and
- Radiated electrical fields associated with the power transmission lines.

9. Telecommunications Comments

a. Environmental Resources Review

Page 3-90. The issues identified above are applicable to the telecommunications systems. The DEIS offers no scientific data show on impact on the regions telecommunications systems. The principal and alternative site locations for a wind farm are located in the heart of Cape Cod's military, aviation, and sea-borne economic activity and the Corps must devote its resources to studying these issues and developing a national policy for offshore and terrestrial wind farms.

b. Environmental Consequences

Page 3-185 and 3-186, all. The DEIS states that no interference with marine radar is expected from the wind facility and cites tests conducted at the Horns Rev wind facility. No data is supplied to substantiate this claim.

The United Kingdom's Maritime and Coastguard Agency (MCA) completed an analysis of the effect of offshore wind facilities on navigation and communication systems (MCA, 2004). This UK Coastguard report concludes that the presence of a wind facility produced strong marine radar distortion not only for vessels operating within the wind facility but also for vessels operating up to 1 ½ nm (3,000 yards) distant from the periphery of the wind facility. The study also noted that the wind facility interfered with the Automatic Radar Plotting Aid (ARPA), a collision avoidance feature, on marine radar and expressed concern that mariners may be unable to comply with international requirements governing its use. The radar interference was found to depend on the height of the WTG and rotors. The WTGs and rotors for the proposed offshore sites are larger than the facility tested in

the UK. The MCA's study found these severe navigation problems effecting vessels up to 1 ½ nm from the wind facility. The MCA has recommended a follow-on study to further examine this interference with marine radar and to recommend minimum distances that wind farms should be located from navigation channels and shipping routes. The Nantucket Sound alternatives have been placed within 800 feet of the Main Channel and less than a mile from heavily traveled ferry boat routes now transited by high-speed ferries.

The issues of marine radar and ARPA interference must be addressed as well as reevaluating the minimum distance that an offshore alternative should be set back from channels and shipping routes before an EIS is issued.

"Nantucket Sound," page 3-185. The DEIS mentions the PAVE PAWS radar in connection with the MMR site only. However, it fails to mention that the Nantucket Sound WTG sites are all within the line of sight of both of the ASR radars, the ARSR radar, and also PAVE PAWS because the height of the radar antennas and the height of the WTG towers are sufficient to make up for curvature of the earth. Detailed comments on Section 3.4.3.4.8 (Aviation) contain the information relevant to radar interference by the WTGs.

"Comparative Summary of Impacts," page 3-187, all. VHF communications are line of sight, which places the turbines directly between two surface vessels attempting communications. Because the extremely large returns caused by the turbine tower bases will force a reduction in sensitivity of shipboard search radar operating near the turbines, it is critical that surface vessels are able to communicate effectively in the vicinity of the turbine array, particularly in the frequent fog conditions found in the area. Oil spills due to even minor ship collisions can result in serious pollution.

The assertion in DEIS 3.4.3.4.9 that "According to US Coast Guard personnel it is unlikely that the turbines would impact communications from the Coast Guard Communications Center at MMR because the majority of their signals are transmitted to the east, away from the proposed turbine locations" is confusing and possibly misleading. If the Coast Guard thinks that there will be interference, the Corps must evaluate how they communicate with vessels in the vicinity of the WTG array and how will they provide search and rescue operations in the Sound.

It is well known that helicopters can be recognized on VHF radios because they provide a distinctive sound on VHF radios due to the modulation introduced by rotor blades. Similar effects would be expected for the rotating turbine blades, except that there will be many more blades in the line of sight and they are turning more slowly. The Corps needs to address the potential adverse effects of this on bridge-to-bridge, search and rescue, and other VHF communications. The DEIS quotes the Horns Rev Wind Farm report to assert that there were no reports of problems with VHF radios. However, a close reading of this report (DEIS Appendix 5.14-A) reveals that these results are anecdotal rather than

quantitative measurements. The EIS should include a detailed measurement of the effects of the WTGs on VHF radio signals trying to propagate through the WTG farm.

10. Aesthetics/Landscape/Visual Comments

a. Environmental Resources Review (3.4.3.2.12)

Page 3-100, 2nd par. "This section describes the aesthetic and landscape character and viewshed in the vicinity of each of Alternative Site." This is indeed a responsibility of this section, though the description of aesthetic and landscape character is perfunctory at best. Instead it focuses on the details of landscape elements, and mostly avoids judgments of quality that might be important in identifying the best alternative. This failure presages the same failure in Section 5.

The DEIS states: "The representative locations (viewpoints) for each Alternative Site have been limited to the onshore historic property closest to and with an open view of the site…." While it may be appropriate to consider a limited number of viewpoints in the analysis of alternatives, it is most assuredly inappropriate to limit it to historic properties. The DEIS (Section 5.16.4.6 Tourism and Recreation), on page 5-276, 2nd par., is clear that: "Potential impacts on tourism and recreation would result from…the effects of…visual impact, should the wind farm be located in the viewshed of the resource." Since tourism and recreation are a primary part of the local economy (TIA 2000), and historic properties are only a small aspect of the local tourism industry, it seems unreasonable to limit viewpoints to historic properties. Again, this failure presages the same failure in Section 5.

Page 3-100, 5th par. (and other locations). A viewshed is the "surface areas from which a critical object … is seen" (Smardon et al. 1986, p. 322). The expedient of defining the viewshed as including "the area within 300 feet (91.5 meters) of the perimeter" of the site is unjustified. This is particularly so, since MassGIS data and the GIS software to access it are used elsewhere (e.g., page 3-104, 3rd par.) and could have been used to calculate potential visibility. The potential viewshed is identified using only topography and without considering screening elements that may be removed for development purposes or by natural causes. A second analysis considering screening effects may be conducted to identify the existing viewshed. Once again, this failure to appropriately conduct an analysis presages the same failure in Section 5.

Page 3-101, 5th par. (and other locations). The DEIS states: "The character of the viewscape is consistent with a natural unified nearshore southern New England seascape." This is the typical assessment of character and is also used elsewhere. It lacks detail about the visual qualities and elements that create this character. Such detail is needed to evaluate potential impacts and propose possible mitigation. Again, this failure occurs throughout this section and presages the same failure in Section 5.

Page 3-102, 8th par. The DEIS states: "It is presumed that viewers toward each Alternative site would include both residents and tourists…." This is the only reference to

viewers in this section. However, it does acknowledge that there are different types of viewers, which implies that the meaning and impact of the proposed wind power facility will be different to each group. Determination of the numbers of potential viewers and their sensitivity to visual impact from the project should be included in this section or the section on recreation.

b. Environmental Consequences (3.4.3.4.12)

Page 3-197, 4th par. The DEIS asserts that: "The visual contrast of the aboveground turbines at each of the Alternatives to the character of the existing landscape or seascape is described in this section." No process to determine visual contrast has been identified, so no analysis of visual contrast can be provided. This same assertion occurs elsewhere and presages the same failure in section 5.10.

Page 3-198, 3rd par. The description of how the simulations for the MMR Alternative were created suggests that "photographs" of the Fenner turbines were used. However, the methods described in Appendix 3-K indicate that computer rendered 3D models of the turbines were used (page 4). Thus, it is unclear how the MMR Alternative simulations were created.

Page 3-198, 5th par. It is unclear on what basis the conclusion is reached that "the addition of the WTGs into the viewscape, while clearly visible, does not seem out of character for this area, where infrastructure converges to serve Cape Cod and the Islands as a whole." The description of landscape character (section 3.4.3.2.12, page 3-100, 4th par.) indicates "areas of mature forest and undulating topography, communities such as Sandwich and Bourne, outlying mixed suburban development, busy transportation corridors including secondary roads and rotaries, and open marine views in the vicinity of the Cape Cod Canal." The DEIS offers no discussion of how it determined that structures towering over this suburban landscape are "in character." Not only is the assertion unjustified and result-oriented, there is no process of rational analysis to support such an assertion.

"Potential View from Sagamore Bridge, MA," figure 3-53. This is the first simulation of visual impacts presented. It is helpful to have a plan that indicates the view's coverage. However, to evaluate the accuracy of the images, it is necessary to have sections showing the spatial relationships among the viewer, project elements, and surrounding context. The accuracy and precision of these sections is particularly important in areas with relatively modest topographic variation, as in the Cape. This comment applies to all the visual simulations.

Page 3-198, 7th par. The DEIS asserts that "The visual contrast of the aboveground turbines at each of the Alternatives to the character of the existing landscape or seascape is described in this section." No process to determine visual contrast has been identified, so no analysis of visual contrast can be provided.

Page 3-200, 2nd par. The DEIS states: "The grid layout is visible, as are the individual structural components such as rotor blades" from the Horseshoe Shoal Sub-site. The DEIS states that the geometric layout and individual industrial elements are clearly discernable within an otherwise natural seascape (as characterized on page 3-101, 5th par.). The impact of introducing an admittedly industrial facility (huge power turbines located in a grid occupying 24 square miles) in an admittedly natural seascape must be analyzed. This comment applies to all off-shore Alternative Sites with a natural seascape context.

Page 3-202, 3rd par. The DEIS asserts: "The existing built features already in the [MMR Alternative Site] viewshed result in less visual contrast when the turbines are added in the landscape than for the offshore Alternatives" where there are no built structures present. This statement appears to be true if the turbines are viewed from the same distance for all alternatives. However, the turbines at the MMR Alternative Site are much closer than the other Alternative Sites. There is no procedure to evaluate this affect, or determine the tradeoff between proximity and lower contrast with the existing land use. The fundamental problem is that there is no comprehensive process to analyze visual impacts. This general criticism applies to all the alternatives and presages the presentation in section 5.10.

11. Recreation Comments

a. Environmental Resources Review (3.4.3.2.13)

Page 3-103, 2nd par. It is noted that the recreation section of the alternatives analysis apparently includes only data from MassGIS, and not other sources. Particularly absent is any field work investigating these recreation resources.

Page 3-103, 3rd par. The same arbitrary and unjustified rule of thumb to identify a viewshed (i.e., a 300 foot buffer) is used to determine the area for potentially effected recreational resources. As stated before, this is inappropriate and a viewshed analysis must be done.

Page 3-104, 4th par. (similar in other locations). A partial list of recreational activities is given, but no attempt is made to connect activities to places. In addition, there is no indication of the number of people engaged in these activities. Nor is there any analysis of how sensitive people who are engaged in these activities might be to the proposed wind power facility. This information is required to evaluate potential impacts. The DEIS is silent about potential recreation related impacts from the alternatives. This failure presages the same failure in Section 5.

b. Environmental Consequences (3.4.3.4.13)

Page 3-203, 3rd par. It is claimed here and repeatedly in this section that users of various recreation resources will "experience" views of the turbines. However, there is no description here or elsewhere of the nature of this experience and its impact on the expected recreation experience.

Page 3-204, 2nd par. The DEIS asserts that "Impacts are discussed below in detail." However, no impacts are discussed below. What is stated is that views are possible, but there is no analysis of the impact of these views on recreation users and their experience. This same assertion is repeated in other places.

"Operations and Maintenance, Physical Impacts," page 3-204, all. This section should be revised to reflect that there may be an increase in recreational boat casualties and pollution incidents and that sailboats or other vessels with masthead heights exceeding 75 feet must be restricted from approaching a WTG.

Page 3-205, 6th par. The DEIS asserts: "Greatest visibility and visual contrast will occur at undeveloped or lightly developed sites with dark skies…". The stars of the night sky are an important cultural resource that is particularly a part of the experience of natural areas, such as those available on the Cape and Islands (Borden 2004; IDA 2004). To simply state that the condition exists is not an analysis of its impact, which is required as part of the DEIS. How important is the experience of the starry night sky over Nantucket Sound? What is the quality of this experience? How may people come to Cape Cod in part for this experience? How will the introduction of numerous flashing and colored lights into this night view affect this experience? Answering these questions is necessary to understanding the nighttime impacts of the project on people who come to the Cape and Islands for a natural seascape experience that includes enjoyment of the starry sky over the Sound. The DEIS fails to provide this important analysis.

Page 3-207, 8th par. The DEIS states: "No recreational resources have been identified within the upland MMR Alternative Site." However, "several listings [from the MassGIS database] appear within the MMR property" (page 3-103, 4th par.), and while they are not now accessible to the public, they may be at some future time.

"Comparative Summary of Impacts," page 3-207, all. This section fails to recognize the adverse impact of the large wind energy projects on recreational boating, particularly sailing. Although Nantucket Sound is known as one of the premier sailing areas in the world, the DEIS seems to limit adverse effects to only one sailboat race event, the FIGAWI. This overlooks the fact that recreational (non-racing) sailors will also have to cope with the wind eddies and current variations caused by the towers. DEIS Section 4.1.2 mentions placement of the wind turbines to minimize energy losses due to lower wind speeds in the wakes of upstream wind turbine generators, but no mention is made of the adverse effect of wind wakes on sailing conditions. The DEIS (Section 3.4.3.2.13) also mentions that currents up to 2 knots are present in the area, so the tower bases will also leave water wakes.

Sailboats sailing into the wind must tack (turn 90 degrees left or right) periodically to make headway upwind, and the problems of sailing and tacking back and forth in an array of turbine columns with their wind eddies and current wakes will make the area essentially

useless for recreational sailing. The well-known fog conditions present on the Sound will further diminish effective use of the area by all recreational boaters in the wind farm areas. The fact that this will clearly impact the reputation and economic viability of the Sound as a premier sailing venue is not addressed in the DEIS. The DEIS fails to consider the economic impact of diminishing the desirability of the area as a boating venue, including inability to host an America's Cup racing series and other effects on the recreational boating industry.

Page 3-208; 2nd line. One hundred and thirty WTGs are obstructions to navigation that must be marked as private aids to warn mariners and boaters of their presence. They will be no more of assistance to any mariner or boater than 130 rocks placed 800 feet from the Main Channel of Nantucket Sound. They will be especially dangerous and heighten the current risk for mariners and boaters during times of poor visibility when they go undetected or are detected too late to avoid collision. The sentence should be struck from any EIS to be issued.

12. Water Quality and Water Resources Comments (3.4.3.2.15)

Page 3-109 through 3-113, all. Provision has not been made within this DEIS to focus on the element of marine sourced oil pollution that can be substantial and is unique to offshore alternatives. This DEIS covers in a superficial way the threat of oil and chemical spills from either the facility machinery or from vessels working in the facility under the "Safety" element. The DEIS grossly under appreciates the real logistics to clean up such spills in the ocean. Assessment needs to model possible advection pathways and where a pollutant will wash up on some shore if/when material is discharged and not recovered.

No discussion or analysis is provided to establish a baseline of pollution incidents and consequences within the vicinity of the proposed sites. No discussion or analysis is provided of the impact the construction and/or operation of the facility will have on the frequency and size of marine pollution incidents or of their consequences to the proposed sites or to Nantucket Sound.

13. Electrical and Magnetic Fields (EMF) Comments (3.4.3.2.16)

Page 3-161, 6th par. The DEIS states: "Therefore, impacts from EMF have been minimized, and no adverse impacts to finfish or other marine organisms that cue into the earth's geomagnetic field are expected to occur from EMF along the cable routes." In the vicinity of the monopiles, there will be distortion of the earth's magnetic field. Whether the impacts will be adverse remains to be determined, and this is an issue the DEIS fails to address. Potential impacts of the various electric fields of the cables and monopiles are not mentioned, even though they are bound to affect the shark and ray populations in the region.

Page 3-216, 3rd par. The DEIS states: "Low-frequency EMF will be present anywhere electricity is generated, distributed or used and, therefore, these fields are a common occurrence where electric power facilities exist or power is used." This is true, but in addition to 60-Hz electric and magnetic fields, also DC electric and magnetic fields are produced wherever industrial installations are present, especially in a conductive seawater environment.

Page 3-216, 8th par. The DEIS states: "Electric fields (60 Hz) will be effectively contained within the underground cables by a grounded metallic shield and, therefore, no external electric fields would be present." This is NOT true. Moreover, the situation is totally different on land than at sea. As the DEIS says: in general, this level of 60-Hz magnetic exposure has not been shown to result in measurable changes to species populations of plant and animals, but this is limited to effects on land.

Page 3-217, 4th par. The DEIS states: "Ecological (plant and wildlife) exposure to magnetic fields from the Project is anticipated to be typical of that experienced on existing ROWs containing electric transmission or distribution facilities." It should be noted that AC submarine cables produce not only magnetic fields, but also AC electric fields, however well—realistically speaking—they are shielded. Moreover, no data on the DC electric fields produced by the towers and cables are provided.

Page 3-218, last par. The DEIS states: "Potential EMF impacts for the four Alternative Sites are generally similar." They are not. Underground and submarine cables not only have an entirely different physical environment, but also biologically are entirely different. There are no sharks and rays with a keen electric sense in the ground, and they survive largely guided by nature's electric and magnetic fields. The DEIS fails to evaluate these impacts.

14. Safety Comments

a. Environmental Resources Review (3.4.3.2.18)

Page 3-118 and 3-119, all. *This DEIS section does not address safety hazards associated with working on offshore structures during intense or extreme weather events such as storms and hurricanes or rough seas, except to provide temporary housing for stranded personnel. Transit to and from the facility may become difficult, and docking in heavy seas and winds may present significant safety hazards.*

Elsewhere in the DEIS, the Corps states that the heliport on the ESP may be used for helicopter transport of employees to service the facility during marine conditions when waterborne vessel transit is not feasible. However, weather conditions such as fog or high winds may preclude helicopter transport, making response to emergency onsite needs difficult or impossible during emergency servicing or response (e.g., to a release of a hazardous substance or some other urgent servicing requirement). The Corps should state

that there shall be times when access to the facility is at best difficult, or impossible; and describe those conditions that preclude access to offshore facility for safety reasons. Analysis of impacts to ESP and WTG resulting from a hit from a hurricane (or other extreme weather events) and, correspondingly, safety hazards to surrounding environs and mariners associated with such an event should be addressed.

"Comparative Summary of Existing Resources," page 3-119, 5th par. Under this subsection, the DEIS states: "The Nantucket Sound Alternative Site has slightly greater safety concerns than the South of Tuckernuck Island Alternative Site because of the greater vessel traffic and the presence of the marked Main Channel that passes through the Sound." While it is agreed that the presence of the Main Channel increases the risk of an accident (collision) between a vessel and one or more WTGs on the periphery of the wind farm, the DEIS appears to minimize the increase in risk of such an incident. Oil tankers and other large vessels carrying significant oil and hazardous substances ply the Main Channel on a regular basis. Additionally, daily ferry traffic servicing Hyannis and the Islands run along the eastern and north/northwestern edge of Horseshoe Shoal, not to mention a plethora of fishing vessels and recreational watercraft that frequent this area of Nantucket Sound. A collision of a tanker (or other vessel) with a WTG could result in significant spillage of oil and hazardous substances, presenting a major safety and environmental hazard. The immediate proximity of (especially) the southern most WTG structures to the Main Channel present a substantive risk of collision, presence of proposed navigational markers notwithstanding.

Thus, the Nantucket Sound Alternative Site has *significantly* (rather than "slightly") greater safety concerns than the South of Tuckernuck Island Alternative Site because of the greater vessel traffic and the presence of the marked Main Channel that passes through the Sound.

"Comparative Summary of Existing Resources," page 3-119, all. Search and rescue operations are the responsibility of the US Coast Guard. Boats and helicopters are used. The height of the wind turbines and potential problems associated with wind and water wakes during helicopter search and rescue operations are not addressed by the DEIS. The US Coast Guard uses a requirement to maintain minimum altitude clearance of 500 feet above obstructions for search and rescue operations. The minimum height in the areas of the turbines is therefore 917 feet. Aircraft flying under VFR (visual flight rules) will also have to maintain a minimum altitude of 1000 feet over the Sound, which can lead to difficulties in the case of bad weather, where low cloud cover would otherwise dictate lower altitudes. This would prohibit flight operations for aircraft and pilots not qualified for IFR (Instrument Flight Rules) operations when the ceiling is below 1000 feet.

It should be noted that search and rescue operations are often, if not usually, conducted under adverse weather conditions. The DEIS does not address the ability of the Coast Guard to effectively conduct such operations in the area of the wind turbine farm due to rotor height and wakes due to the turbine blades and towers. Strong currents in the area

will further complicate the situation if they sweep disabled vessels into and through the wind farm. When ground fog obscures the WTGs, no helicopter operations will be possible. These issues should be addressed in a supplemental EIS.

b. Environmental Consequences (3.4.3.4.18)

"Operation and Maintenance, Contractor Safety," page 3-220, all. No substantive discussion is provided in DEIS regarding safety and access limitations regarding O&M work in the monopile and nacelle portions of the WTG. Monopiles include ladders for access to nacelle, however, these are very tall structures with the nacelle hub height at approximately 246 feet (75 meters, per Section 4.1.1 of DEIS, page 4-2). It is unclear how heavy equipment will be transported, as needed, to the WTG in general, and nacelle in particular, during servicing of units. In fact, according to the Garrad Hassan Report (Appendix 3-F of the DEIS, page 6 of 8, 7th par.), access to offshore wind farm facilities is the primary issue to address with regards to implementing O&M operations. For example, to access the nacelle at the Horns Rev facility in the North Sea near Jutland, Denmark, technicians are landed on Nacelles by helihoist. As stated earlier, it appears that normal access to the nacelle units is by ladder. However, transport of (heavy) equipment, and safety considerations thereof, are not addressed in DEIS, but should be described. If, in fact, it is anticipated that substantially heavy equipment will not be transferred to and used in the monopile and nacelle for O&M, then this should have been stated in the DEIS. However, if heavy equipment is required, safe methods for transferring this equipment to the monopile and nacelle should be described before an EIS is issued.

Page 3-221, top par. The DEIS states that "the possibility of extreme events is not expected to vary greatly between the Alternatives." Though this may be the case, it should be noted that the *consequences* of a hurricane (or other extreme weather event) hit on a land-based wind-generated power plant relative to an offshore alternative may be significantly different from a safety perspective. Dislodged structures/pieces from an offshore facility may affect safety of, or inhibit navigation to, mariners following the storm; dislodged onshore structures may endanger personnel at MMR and surrounding environs. In either case, facility personnel are at risk. Discussion of effects of hurricane/extreme storm events on public safety for on and offshore alternatives should be addressed in this section of any EIS issued.

Page 3-221, 2nd par, and 3-222, 5th par. Risks of leakage of small amounts of dielectric fluids and/or lubricating oil are very briefly addressed. The paragraph under "Public Health and Safety" further alludes to the fact that, "...transformers, capacitors, etc. constructed as a result of the project may contain similar types of fluid(s)." No mention is made of the actual safety risks to workers posed by spillage of these substances. Moreover, no mention is made of the safety risks posed by 40,000 gallons of dielectric transformer oils stored at the ESP. Minimally, such safety risks should be addressed for minor and major releases, especially with respect to onsite transformer oil. Surprisingly, given the large quantity proposed for onsite usage, the proponent has not named the type of bulk transformer oil to be used. Proponent should, minimally, name candidate transformer

oils, if not the actual one to be used. Mineral-based transformer oils, commonly used in step up transformers, may have significant health and safety effects with exposure, the degree of effects depending on the actual oil used. Proponent should expand health and safety discussion to address exposure risks during release of stored oil and hazardous substances, especially the transformer oils.

It should be noted that petroleum-based transformer oils commonly used in industry are complex mixtures of different organic compounds, consisting of saturated and unsaturated straight chained, cyclic and (most toxic to marine life) aromatic hydrocarbon compounds up to 40 carbon atoms. These materials may be toxic to humans and marine life under certain circumstances.

Under normal conditions (i.e., transformers sealed), exposure tends to be minimal. However, exposure to transformer oils would increase during a release of (and response to) such fluids, or during servicing of transformer units. It is unclear how certainty exists in DEIS regarding claims in DEIS of "minimal" health and safety risks (page 3-222, 5th par.) from transformer oil exposure when the particular transformer oil has not been selected. Selection of transformer oil and corresponding health and safety data should be required to be supplied by project proponent and added to any EIS issued.

"Public Safety," page 3-221, all. The DEIS states: "It is also believed that some portion of the existing soil may be impacted with hazardous materials. Transportation of materials, excavation for foundations, and construction of the wind turbines may generate dust that could contain hazardous materials to which the personnel at MMR may be exposed. It is unlikely that dust would extend beyond the boundaries of MMR where it could become a public concern." Proponent should develop a reasonable dust-monitoring program to determine: 1) contamination of dust; and 2) dust exposure to MMR personnel and public, as appropriate, to implement during onsite operations. These measures should be detailed in any EIS issued.

"Operation and Maintenance, Public Safety," page 3-222, 1st par. As previously noted: "CWA's proposal for a Nantucket Sound site is fatally flawed in that it appears incompatible with marine transportation activity and poses unnecessary and unacceptable risks to cruise liner, ferry vessel, oil transport, fishing and recreational users." A new, complete and rigorous navigation risk assessment should be performed based on the elements of recognized international standards and industry best practices. Separate casualty and marine pollution analyses should be performed for each of the offshore alternatives since vessel traffic, routes and frequency of usage as well as vessel casualty and marine pollution history vary widely. The Coast Guard should perform a complete review of the new risk assessments and consider using the expertise of the Coast Guard Marine Safety Center.

2nd par. The McGowan Group report demonstrated, in regards to the anchoring of large vessels, that a margin of safety of 2 feet may be insufficient and lead to damage of the

buried cables, to anchoring vessels, to trawling fishing vessels etc. A detailed study modeling and accounting for the scouring effect of bottom currents and margin of error in laying/burying the cables should be performed to determine the safe and adequate depth for burying power cables.

15. Engineering Comments (3.4.3.3.1)

"Foundation Design," page 3-124, all, and Figure 3-45. The McGowan Group report (2004) reached the conclusion that "Cape Wind proposes an inferior tower structural design, which may catastrophically fail if struck by known marine threats." The flawed risk assessment of the DEIS, Appendix 5.12-B, contains a tower failure analysis that was used to validate the WTG foundation size (16.7 ft) and design depicted in Figure 3-45. The design is predicated on the ability of the tower base, mast and rotor to survive without collapse a collision with the largest ship that has the possibility of striking a WTG. The analysis failed to use the largest ship identified and instead used a smaller ferry boat. A realistic risk assessment and failure analysis should be conducted. The failure analysis should also include a realistic assessment of the likely damage to a vessel that strikes a WTG, to its passengers, if any, and to its cargo or fuel tanks that could lead to a marine pollution incident.

16. Economic Comments (3.4.3.3.2)

Page 3-127. In its analysis of the relative economic impacts of different alternatives, the DEIS states, "The relative economic viability of an alternative site is driven by five primary variables," which it identifies as (1) the capital cost of constructing a wind facility on the site; (2) the installed capacity of the proposed facility; (3) the wind regime at the site; (4) the net power production; and (5) the operation and maintenance costs. The ECONorthwest report explains that these variables look at the alternatives solely in terms of their attractiveness to the developer rather than in terms of the overall economic impacts. Hence, the DEIS fails to provide information that can support a comparison of the alternatives' overall economic impacts.

17. Summary of Detailed Analysis of Alternatives Comments (3.4.3.5)

Table 3-57. Based on the findings of (MCA 2004) the line item for "Telecommunications" should bear an "X" under all the alternatives.

"Benthos," page 3-230. Until a marine pollution risk analysis is performed, a heightened risk of marine oil spills should be recorded as an impact for each of the Nantucket Sound and New Bedford alternatives due to their close proximity to active shipping channels and transit routes.

"Telecommunications," page 3-232. An impact of disruption of marine radar and ARPA should be recorded for each of the offshore alternatives.

"Navigation," page 3-232. Until a new, complete and rigorous navigation risk assessment is performed, impacts for increases in vessel collisions and casualties, marine pollution incidents, injury or death of vessel passengers, and restrictions for commercial fishing, anchoring and for vessels with masthead heights exceeding 75 feet should be recorded for each of the offshore alternatives.

The impact of "...CWA commitment to provide private ATONs..." should be struck and reworded to reflect that 130 WTGs are obstructions to navigation that must be marked as private aids to warn mariners and boaters of their presence. They will be especially dangerous and heighten the current risk for mariners and boaters during times of poor visibility when they go undetected or are detected too late to avoid collision or mishap.

"Recreation," page 3-233. Until a new, complete and rigorous navigation risk assessment is performed, impacts for increases in boating casualties and marine pollution incidents, injury or death of vessel passengers, and restrictions for vessels with masthead heights exceeding 75 feet should be recorded for each of the offshore alternatives.

"Water Quality and Resources," page 3-234. Until a marine pollution risk analysis is performed, a heightened risk of marine oil spills should be recorded as an impact for each of the Nantucket Sound and New Bedford alternatives due to their close proximity to active shipping channels and transit routes.

18. Comments on Comparison of Nantucket Sound Alternatives (3.4.4)

Page 3-236 and 3-237, 2nd sentence and listing. This sentence should be revised to read: "This geographic area was determined to be technically, environmentally or economically constrained for the following reasons:"

The following reasons should be added to the listing given:

- "Siting of WTGs and cables in this area of Nantucket Sound is constrained by commercial navigation since it is in an area of defined navigation channels (Main Channel and North Channel) and heavily transited ferry routes and serves as a crossing point for traffic outbound to the Atlantic Ocean, inboard for Vineyard Sound or for one of the nearby commercial and recreational ports (Hyannis, Nantucket ...)
- The area is one of active commercial fishing activity.
- The area is surrounded by authorized commercial and recreational anchorage areas."

The following reason should be struck from the listing as inaccurate and misleading concerning navigation channels, depths of water and patterns of commercial traffic:

- "Horseshoe Shoal is located outside established navigation channels and fairways...."

Page 3-237, Table 3-58. The "Minimal conflict with established shipping channels ...," the "Minimal conflict with commercial fishing," and the "Minimal impact to the marine environment" Project Design Siting Criteria should all be changed to No or "N" for Horseshoe Shoal.

C. Comments on DEIS Section 4 (Project Description of Applicant's Proposed Action)

This section discusses the most serious deficiencies in the DEIS discussion of the proposed project. Like every other section of the DEIS, even the project description is drafted only to convey the information favorable to the project and that CWA wishes to make public. The Corps has failed to fulfill its duty to ensure an objective and adequate description of the CWA wind energy project, adding further reason for a supplemental EIS.

There are multiple deficiencies in this DEIS chapter, touching upon all of the following issues:

- Limitations in watersheet and seafloor use by the public;
- Considerations for reducing the large radar returns produced by the tower and rotating blades associated with conventional wind turbine generator (WTG) designs;
- Safety and effectiveness of electric grounding strategy and blade de-icing;
- Maintenance and environmental considerations associated with protective coatings of WTG and ESP superstructures;
- Ability of monopile structure to support WTG for 20 year lifespan;
- Effects of scour mats on benthic infauna communities;
- A lack of discussion regarding sound and noise impacts in the project description (e.g., during WTG and ESP installation);
- A lack of information as for the electric and magnetic fields associated with the wind farm;
- Rationale for underground upland vaults needed;
- Benthic impacts resulting from monopile driving;
- Monitoring requirements for sub sea cable laying and landfall transition construction;
- Requirements for a comprehensive Operations and Maintenance (O&M) plan;
- Offshore facility access during heavy winds and rough seas;
- Description of equipment left behind in submarine and upland environments following decommissioning activities;

- Oil and hazardous substances spill risks at WTGs (involving potential vessel collisions) and at ESP (involving releases of bulk transformer and diesel oils);
- Need for spill fate and effects modeling to support development of appropriate SPCC/OSRP plans, which incorporate several additional issues unique to proposed offshore facility;
- Need for development of a security plan that complies with appropriate State and Federal regulations; and
- Electromagnetic impact on the aquatic animals in the region. Primary concern is the dearth of information as for the electric and magnetic fields associated with the wind farm. No information on DC magnetic fields and earth's magnetic field distortions in the seawater, no information on DC electric fields and induced AC electric fields.

1. Wind Park Description Comments

Page 4-6, 1st par. This paragraph discusses the use of buoyant, polypropylene frond, scour protection mats. The very design of the mats intends that they cause the settlement of suspended materials over the mats, which will be anchored to the surface of the seabed. This process will intentionally raise the elevation of the seabed. To the extent that these mats are used to surround monopiles that are located within waters of the United States, they constitute the discharge of fill material. By modification of 33 CFR 323.2 and 40 CFR 232 on may 9, 2002 (67 FR 31129-31143), the Corps and EPA respectively, included any material which has the effect of raising the elevation of a water of the United States in association with structures or infrastructure. Specifically included was plastic which, for example, could be used as the liner for a landfill. Also included was the use of wood chips, for example, to cover the ground on a trail. The Corps has long regulated pre-cast concrete slabs, which could be dragged into place in a wetland or other water of the United States as the pad for a structure. The Corps has also regulated piles when placed in close proximity and have the effect of fill. As discussed previously, the use of these mats constitute fill material giving rise to the need for a section 404 permit.

Last sentence. Clearly, the DEIS anticipates if the mats are ineffective, the proponent will resort to more traditional forms of erosion control such as riprap. Over 800 sq ft. will be covered with mat around each monopole (see Comment 2). If all 130 monopiles are located in waters of the United States, this would constitute over 2.4 acres of seabed which would be covered with plastic mat and ultimately buried by the action of the mats to induce sediment deposit. It is too late to assess the impact of placing 2.4 acres of rock on the seabed, after all the poles are installed and the mat is found to be ineffective. (In fact, it is likely that more than 800 sq ft would be impacted per pole if they go to riprap because they will not be able to control placement as accurately as with the mats.) Logic at that point is to okay whatever it takes to ensure the structural integrity of the poles. Thus, a 404 analysis should be done in advance because whether they use the mats which induce a

build-up of sediments above the existing seabed or riprap, the fact is that the bottom elevation of at least 2.4 acres of seabed will be raised.

"Description of the Wind Park" (4.1). Page 4-1, 3rd par., states: "The WTG Array configuration shown in Figure 4-2 represents a technically efficient and economically feasible array for the Project in order to meet the desired energy generating capacity and the continuation of existing watersheet use...and present uses of the seabed." However, Section 3.4.3.4.18 (page 3-222, 2nd par.) states that "site control personnel in boats will assist in temporarily keeping the public at a safe distance from the individual offshore construction sites. Maintaining temporary controlled access to the limited areas while active construction or decommissioning activities are occurring...." Further, Section 4.8 of the DEIS (page 4-22, 3rd par.) describes the development of a "security plan" for the facility.

Such limited access during construction and decommissioning and, possibly, to enforce ongoing security measures (to be developed), functions to limit the public's use of the watersheet and sea floor in the Horseshoe Shoal area. The closing of the fishing grounds would be in conflict with the current management approach used for other federal and state regulated fisheries in Nantucket Sound. This conflict should be resolved before a supplemental EIS is issued.

Also, Section 4.1 describes the configuration of the wind turbine generators but fails to mention any considerations for reducing the large radar returns produced by the tower and rotating blades associated with conventional wind turbine generator designs. WTG towers are known to provide extremely strong radar returns on surface search radar used by surface vessels for collision avoidance. This often requires vessels navigating in the vicinity to reduce the gain of their receivers, thereby reducing sensitivity to all radar targets in the area. This poses a hazard to safe navigation, particularly in foggy weather. WTG towers also provide strong returns on air surveillance radar used by the Air Force for Homeland Security and Defense and by the FAA. Returns are strongest at the frequencies used by the USAF/FAA Air Route Surveillance Radar (ARSR) but are still significant at the higher frequency band used by the FAA Airport Surveillance Radars (ASR). One ARSR and three ASR's are located within the field of view of the proposed wind farm locations in Nantucket Sound. All of these radars have Doppler processors that should reduce the effects of the tower returns, but the rotating blades can have sufficient Doppler offset so that the blade return passes through the Doppler rejection circuitry and clutters up the display. In the United Kingdom, research is underway to see if applying some aspects of stealth technology to the towers and blades in an attempt to reduce their undesirable effect on radar can mitigate these adverse effects. Section 4.1 of the DEIS does not mention any consideration of this approach on the design of the blades and towers or any firm evidence of why this approach is not necessary. It would seem prudent to consider such techniques before the design of the WTGs is finalized.

Page 4-2, all, and "Rotors" (4.1.1.2), page 4-2, all. The first sentence of Section 4.1.1.2 states that "[t]he WTG rotor has three blades manufactures from fiberglass-reinforced epoxy, mounted on the hub." Icing of the rotors and rotor blades can be a significant problem for both on and offshore WTGs, especially in seasonally cold climates such as Nantucket Sound. In fact, icing represents the most important threat to the integrity of wind turbines in cold weather. The icing likely to form on wind turbine blades is of two kinds: glaze and rime (Lacroix et al, 2000).

The rotors and rotor blades described in the DEIS do not address the complexities of safely and effectively operating in seasonally cold and icy climate such as Nantucket Sound. Specifically:

- Is the fiberglass-reinforced epoxy composite used in the rotor blades effective at the large temperature range in Nantucket Sound?
- Does the fiberglass and epoxy in this composite have similar expansion coefficients?
- Is this composite susceptible to stresses at lower temperatures such as (micro) cracking?
- The rotors, as described in the DEIS, have neither passive nor active ice prevention technology to counter the frequent icing events (glaze or rime) that occur in Nantucket Sound. What is the rationale for not providing ice prevention technology? If active ice prevention technology is adopted for rotor blades, how would this system be powered? Would additional diesel be required to be stored on the ESP? Also, do ice prevention technologies limit radar capabilities in the area? If so, managing these impacts should be addressed.

The last sentence of Section 4.1.1.2 states that: "Temporary icing of a rotor blade would activate vibration sensors causing turbine shutdown in order to prevent rotor damage or hazard from flying ice." Given the local importance of seasonal icing in Nantucket Sound, the DEIS does not address important aspects of ice sensing on the rotor. For example, what type (make/model) of vibration sensor is proposed to monitor for seasonal ice? Has it been tested for offshore application? Will it work as effectively for both glaze and rime ice? What is the anticipated life cycle for the proposed vibration sensor? The effectiveness of ice sensors cannot be assumed to be effective. For example, in an application of an ice sensor on a WTG rotor, the ice detector supplied with the turbine was not effective and was removed from the control circuit. Also, is a vibration sensor the best type of ice sensor for this application? An application found that rime ice formation appears to occur with remarkable symmetry on all turbine blades with the result that no imbalance occurs and the turbine continues to operate. In other words, a vibration sensor may not activate a shut down if the icing on the rotor is balanced, hence, minimizing vibration.

"Nacelle" (4.1.1.1), page 4-2, all, and Figure 4-5. Figure 4-5 includes a call-out for "impact noise reduction" in connection with the turbine. The DEIS should reference where detailed information about noise that is generated can be found.

"Marine Use Design" (4.1.1.4), page 4-2, all. Since the United States has no standards that govern the siting, design or operation of an offshore wind energy project, the proponent should be required to demonstrate compliance with a recognized industry standard. One such was recently developed and published specifically to assure the safety, quality and reliability of offshore wind facilities (DNV, 2004). While this standard was issued by Det Norske Veritas (DNV), DNV is just one of several large classification societies whose expertise lies in shipping, offshore facilities and equipment and systems operating in a marine environment. Compliance with a recognized standard should be resolved before an EIS is issued.

"Life Span, Protective Coatings Applied to WTG" (4.1.1.5), page 4-3, 3rd par. It is presumed that WTG coatings are applied prior to deployment. The DEIS should verify this. Also, what are design life and maintenance requirements for coatings (i.e., do they require reapplication)? How frequently? If reapplication is necessary, how is this accomplished? What is the chemical composition of the coatings? Do these coatings present a hazard for marine life: what are published EC50 and LC50 values for marine organisms and what concentration of exposure is expected in the water column proximal to offshore structures? Material Safety Data Sheets and chemical composition for coatings should be provided. All of these questions must be answered in a supplemental DEIS.

The footnote on page 4-3 describes; "Testing has included a complete acoustical noise measurement program over the full operating range..." Specifics of these test results should be included.

"Monopile" (4.1.3.2) and "Foundation System Design Criteria" (4.1.3.3), page 4-5, 3rd par. The DEIS provides no clear and defensible rationale for size of monopiles and extent that they are embedded into seafloor. As seen in Appendix 3-F, Garrad Hassan Report, Nantucket Sound had the largest extreme waves of the 25 offshore wind-generated power plant facilities reviewed (i.e., less than 12 m) and substrate (mixed sand, silt, gravel) provides relatively poor load bearing capacity. Thus, a defensible rationale should be presented in DEIS for monopile size and extent of embedding into seafloor to ensure a stable foundation for the WTG over the intended 20 year life span. This comment pertains to Section 4.1.3.3, Foundation System Design Criteria (pp. 4-5 to 4-6) as well.

The McGowan Group report concluded that the proposed foundation size failed to meet the proponent's own collapse analysis when a vessel larger than a ferry collides with a WTG. The dynamic load of a large ship or tanker collision must be factored into the structural design of the WTG foundations. These deficiencies should be resolved before an EIS is issued.

"Scour Mats," pages 4-5, last par., to 4-6, first par. DEIS states that "the mats are made of buoyant polypropylene fronds and polyester webbing which is anchored securely to the seabed." Do mats inhibit burrowing ability of benthic infauna? If so, to what degree (e.g., partial or total occlusion of burrowing benthic infauna)? If occlusion occurs, this would constitute an additional "taking" of occluded habitat in footprint of mats.

Also, a related scour analysis was described in Appendix 4-A, using local field wind/current data from a Woods Hole Group Study and a scour methodological analysis developed by Sumer and Fredsoe (2002). There was no discussion why this method was chosen. Accordingly, the DEIS should provide a rationale for selecting the Sumer and Fredsoe methodology for conducting scour analysis.

Page 4-5 and 4-6, all. The DEIS states the following: "Although foundation loading by drifting sea ice is not a frequent occurrence for this area of Nantucket Sound, a conservative ice loading design factor of a 6-inch ice cap was applied in the analysis. In addition, a 1.18-inch ice cover over the tower and nacelle was included." Ice loading on the proposed offshore structures at the sea surface is largely a function of: 1) ice formed on the structures; and 2) loading from sea ice coming into contact with the structure.

Ice forms on offshore structures in Nantucket Sound from waves and ocean spray during periods of below freezing air temperatures, resulting in formation of ice "collars" (also known as ice "skirts") on the surfaces of the WTG monopiles and ESP in splash zones (and, possibly, the intertidal zones in periods of very cold air temperatures). Most significant ice skirt/collar formations likely would occur in the splash zone of the offshore structures. Thus, the approximate width of ice collars would normally be <1–4 feet, the height of significant waves in the area; however, the splash zone can be larger during winter storm events when larger waves/splash zones are evident. Based on review of similar ice formation on offshore structures, and extensive interviews with experts throughout North America with expertise in offshore structure/ice dynamics, these ice skirts/collars reasonably could range up to several feet in thickness, radiating out from the surfaces of the proposed offshore structures. The ice skirt/collar would be limited in size by heat conductance from the relatively warmer water to the ice, inducing melt (hence, limiting size to a couple of feet thick). Winter air temperatures in the area facilitate water freeze on structures: for example, Nantucket air temperature data for the period January–March 2004 showed that their were approximately 24 days at or below freezing during this period, allowing for on-structure ice formation that is several factors larger than the "conservative ice-loading design factor of a six-inch ice cap" used in the ice loading analysis alluded to in DEIS Section 4.1.3.3.

In addition to ice loads created by ice formation on structures, significant lateral loading from sea ice can occur, especially during harsh winters. Significant sea ice events have occurred several times in the recent past with the last one occurring during the 2003-2004

winter season. Vessel pilots and fishermen in the area have reported ice floes over a square mile in size with extensive sheet ice cover in the open sound during very harsh winters. Even during relatively mild winters substantial drift ice occurs in the open sound due to ice that has broken off from ice sheets formed on the south shore of Cape Cod (especially, in bays and harbors) as well as drift ice flowing in an east/west direction with the tides, creating areas of relatively heavy drift ice loads in the open sound.

During especially harsh winters several pilots and fishermen have reported that ice forms from the Cape's southerly shore across to Nantucket and Martha's Vineyard and that ice breakers assist the Steamship Authority and the Hy-Line Cruises by breaking ice to open the ferry routes (extensive ice breaking in the Sound most recently occurred during January 2004). Under conditions of large sheet ice coverage and ice floe, the proposed 24 square mile offshore wind-generated power plant with 130 monopile WTGs and ESP may serve to hold large ice sheets in place. Additional ice floes (e.g., east/west tidal current floes) intersecting with the anchored ice sheets at the wind farm could conceivably mound on top of ice that is held in position by the wind farm, exacerbating the ice loading at the facility and immediately proximal navigational channels (i.e., ferry channels and Main Channel). Mounding ice in and near the navigational channels and offshore facility may necessitate additional ice breaking resources to manage this issue.

Thus, the ice loading at sea level on the proposed offshore wind-generated power plant structures are significantly heavier than the ice loading assumptions used in the ice loading analysis alluded to in DEIS Section 4.1.3.3, necessitating the need for a more rigorous and quantitative analysis of lateral ice loading on the proposed structures in each of the contemplated alternative locations. Such quantitative ice loading analyses are necessary to ensure that offshore facilities are designed and constructed to withstand damage from local ice conditions, and to protect the safety of facility personnel. Given that the offshore structures, as proposed, are to be in place for 20 (or more) years, it is likely that they will be subjected to multiple significant icing events. It is unclear from the DEIS precisely what analyses of ice loading that is based on realistic regional conditions has occurred. Therefore, a rigorous ice loading analysis for each proposed location should be conducted and described before the EIS is published for this proposed project. This analysis should consider (but not be limited to) the following factors:

- Size of ice floes;
- Wind speed/direction;
- Current speed/direction;
- Temperatures (air and water);
- Spacing of offshore structures; and
- Design of offshore structures.

Established ice loading computer models, used in conjunction with site-specific oceanographic, meteorological, and project design data, may be used to rigorously model and simulate sea ice/offshore structure interactions. Ice loads on the offshore structures and risk of facility failure due to excessive ice loading should be simulated based on a worst-case ice loading analysis expected during the period of operation of the facility.

Finally, it is unclear how the "a 1.18-inch ice cover over the tower and nacelle" referred to in the DEIS was determined. The basis for this estimate should have been described in the EIS.

"Electrical Service Platform" (4.1.4), page 4-7, 2nd par. DEIS does not appear to address strategy for protecting the ESP steel superstructure from corrosion. What is the proposed strategy? What corrosion inhibitors will be used? What is their toxicity to marine life? Will corrosion inhibitors be applied prior to deployment or following deployment? What is the maintenance schedule for continued ESP corrosion protection? Will maintenance of ESP corrosion protection result in additional exposure of corrosion inhibitors to marine life? The DEIS is deficient because it does not answer these questions.

"Inner-Array Cables" (4.1.5), page 4-7, all, and "33 kV Inner-Array Submarine..." (4.3.3), page 4-12, all. No indication is given for the minimum depth that the inner-array cables will be buried. A safety analysis needs to be conducted and included showing the impact of large vessels anchoring, fishing vessels dragging on these cables. The analysis should be completed and included in a supplemental EIS.

This section should have included information on the rotation speed of the rotor.

2. Construction and Operation & Maintenance Comments

"Ancillary Structures, Size of Upland Transition Vaults and Splice Vaults" (4.3.3), page 4-9, 4th par. The DEIS states: "The interior dimensions of the upland transition vaults and the splice vaults will be 7'0"W x 33'6"L x 7'6"H." What is the rationale for the apparently large size of these underground vaults? Again, the DEIS fails to supply an answer.

"Wind Turbine Generator Installation, Impacts from WTG Pile Driving and Submarine Cable Installation Activities" (4.3.1), last par. on page 4-10 through first seven par. on page 4-11. What is the estimated footprint on the seafloor occupied by the jack-up barge/crane, driven monopile, displaced sediments during monopile and submarine cable installation activities at each WTG? It is presumed that benthic biota (epifauna and infauna assemblages) is destroyed in the footprint of these activities. The DEIS should have more clearly elaborated on benthic impacts from monopile driving, including the anticipated recovery time of benthic biological assemblages from these activities.

"Pressure and Sound Impacts from WTG Pile Driving Activities," page 4-10, last par., through page 4-11, 2nd par. What is the radius, intensity of anticipated impacts to marine animals from wind farm construction activities such as pile driving, ESP construction and the like? The DEIS should address this issue.

"ESP Installation" (4.3.2), pages 4-11 to 4-12. Issues raised in Section 4.3.1, above (i.e., footprint and sound/vibration impacts) also pertain to ESP installation as well and should have been addressed in the DEIS.

"115kV Submarine Transmission..., Monitoring of Submarine Cable Laying" (4.3.4), page 4-13, 5th-7th par. Due to variations in geomorphologic composition of seafloor sediments, constant monitoring of jet plowed trench depths are needed to ensure that the cables are buried to an appropriate, uniform depth. Monitoring of fluidized sediment re-settlement also is required to ensure that sediments are appropriately falling back into the trench and bottom currents are not carrying significant sediment loads (especially fine silts) from trench. The DEIS fails to discuss this issue.

"Landfall Transition Installation, Monitoring" (4.3.5), pages 4-14 to 4-17. Constant monitoring by observers during landfall transition installation is required to quickly identify releases of bentonite drilling fluid and sediments into Lewis Bay. It is not clear from the DEIS whether there are weather/sea state conditions that would delay installation of the landfall transition structures, cofferdam installation and HDD activities. In essence, detailed installation, monitoring and response plans should be developed to ensure water quality degradation due to loss of bentonite drilling fluids or substantive increases in TSS (and increase in turbidity) do not occur or are minimized to extent practicable; and when such water quality degradation occurs, a flexible, but rigorous, response plan is in place to address releases of bentonite drilling fluids and increases in suspended sediment loads. The DEIS should have required development of these rigorous monitoring and response plans. Town conservation commissioner and other appropriate Agency personnel may be useful as observers.

"Excavation of Area Inside Cofferdam," page 4-15, 6th par. The DEIS failed to include a figure detailing before and after slope changes due to excavation and methods for monitoring and controlling significant transport of sediment loads from cofferdam.

"Operations and Maintenance Plan: Types of Operations and Maintenance (O&M) Considerations to Include in O&M Plan" (4.4), pages 4-18 through 4-19. This section of the DEIS only sporadically addresses the various types of O&M considerations necessary to keep the offshore wind generated power plant running in a safe and productive manner. The DEIS should have identified the spectrum of parameters that should be addressed in an O&M plan. Such information is presumably available from other offshore platform facilities and WTG manufacturers.

"Maintenance Intervals, Level of O&M per WTG," page 4-18, bottom, through page 4-19, top. The DEIS states that "...five days per year per turbine has been established as anticipated maintenance intervals. These visits cover two days of planned or preventative maintenance, and three days or unplanned or forced outage emergency maintenance." The DEIS further states: "Based on 130 WTGs, this is equivalent to 630 maintenance days." This calculation, as written, appears to be incorrect: 130 WTG x 5 days O&M/WTG = 650 days. Further, this does not appear to address maintenance time required for ESP, control centers in Yarmouth and New Bedford, and service vessels. CWA therefore needs to recalculate level of effort for O&M for this project addressing all these factors/requirements.

"Access to WTG and ESP in Heavier Winds and Sea States," page 4-19, 1st par. The DEIS states that "Experience has shown that wind speeds must be less than 8 m/sec to gain safe access to the WTGs, although safe access with winds up to 12 m/sec is possible." According to Garrad Hassan Report (Appendix 3-F) Table 4, Cape Wind Nantucket Sound Site, the annual mean wind speed (at hub) is 8.9 m/sec at site. Though, their exists differences in wind speed between the hub (75 m) and the boat docks on the WTGs (approximately 12 m), it remains a concern how normal maintenance can safely be maintained at this relatively windy site where seas can make navigation and offshore site difficult or impossible. Further, the DEIS (and O&M plan) failed to detail how access is safely implemented during windier weather (i.e., conditions allowing for marine transit by vessel, helicopter use, etc.). In fact, the Garrad Hassan Report considers access to be the primary O&M issue for offshore wind farm facilities (Appendix 3-F, page 6 of 8, 7th par.).

"Decommissioning" (4.5), page 4-20, various. It appears that CWA intends to leave several pieces of facility equipment in place following decommissioning operations, for example:

- Page 4-20, 2nd par.: the bottom portion of the monopile (approximately 2 meters below mud line);
- Page 4-20, 4th par.: submarine cable conduit for at WTG and ESP ".will be disconnected and pulled out of the J-tubes on both the WTG and ESP, and the cables will be cut below the seafloor." It is unclear precisely what, if anything will be left in place.

Page 4-20, 6th par. The DEIS states that "Decommissioning of the landfall transition and the upland transmission line components would consist of leaving in place the HDD conduits as well as the conduits, ductbanks and underground vaults beneath the roadways and ROW. The submarine and upland cables would be removed as describe above." Again, which specific pieces are to be left in place requires clarification.
The DEIS should have elaborated on the following:

- What particular pieces of the facility shall be left in place, including a map and description of items left behind in submarine and terrestrial environments;

- Any known long term effects of leaving decommissioned offshore facility components in place for perpetuity; and
- Anticipated impediments to use of areas where facility components are left behind.

3. Spill Risk Comments

"Solid and Hazardous Waste Materials, WTG Fluid Containment Comments" (4.6.1), pages 4-20 and 4-21. The DEIS failed to include the following information necessary to better assess potential impacts from spillage of oil and hazardous substances at each WTG:

- Identification of oil and hazardous materials on site;
- Quantities of oil and hazardous materials on site;
- Storage capacity and leak/spill secondary containment strategy for each type of oil and hazardous material on-site;
- Material Safety Data Sheets for each substance stored above reportable quantities; and
- Chemical makeup of commercial compounds, if MSDS does not contain this information.

Page 4-20, bottom. The DEIS states that "The possibility of leaks occur in two different situations: (1) during service and maintenance and (2) during operation...." A third situation should be added to this list: risk of collision by a vessel plying in Main Channel or ferry servicing the islands with a WTG. This could result in a major accident, releasing significant quantities of oil and hazardous substances carried by the vessel and on the WTG (i.e., up to 1.3 million gallons). The DEIS is grossly deficient in failing to address this issue.

"ESP Fluid Containment" (4.6.2), page 4-21. The DEIS should include the following information in order to better assess potential impacts from spillage of oil and hazardous substances at ESP:

- Identification of oil and hazardous materials on site;
- Quantities of oil and hazardous materials on site;
- Storage capacity and leak/spill secondary containment strategy for each type of oil and hazardous material on-site;
- Material Safety Data Sheets for each substance stored above reportable quantities; and
- Chemical makeup of commercial compounds, if MSDS does not contain this information.

The DEIS should have, minimally, named candidate transformer oils, if not the actual one to be used. Mineral based transformer oils, commonly in similar transformers, may have

significant health and safety effects with exposure, the degree of effects dependent on the actual oil used and concentration/dosage of exposure. CWA also should be required to expand health and safety discussion to address exposure risks during release of stored oil and hazardous substances, especially the transformer oils. Petroleum-based transformer oils commonly used in industry are complex mixtures of different organic compounds, consisting of saturated and unsaturated straight chained, cyclic and (most toxic to marine life) aromatic hydrocarbon compounds that contain up to 40 carbon atoms.

"Oil Spill Planning" (4.7), page 4-21 through 4-22, all. While the DEIS notes that CWA should develop an appropriate Spill Prevention, Control and Countermeasure (SPCC) Plan meeting all applicable State and Federal requirements for Oil Spill Response Plans (OSRP), the Corps failed to provide critically important information in the DEIS by deferring this subject. The public has been unlawfully deprived of its ability to comment on this important issue.

In support of adequate SPCC/OSRP development, CWA should conduct oil and hazardous substance spill fate and effects modeling to develop appropriate strategies/response priorities for deploying spill response equipment and personnel in a timely and effective manner. A spill fate and effects model may be used effectively to determine and quantify potential impacts from a spill release by modeling: 1) representative spill sources and scenarios (spill source); 2) how a spill travels through the environment once spilled (fate); 3) what resources it comes into contact with following the spill (exposure); and 4) the manifest impacts of those exposures (effects). A rigorous model that takes into account Nantucket Sound physical (hydrodynamic and meteorological) and sensitive biological resources (such as finfish and shellfish egg and larval sensitivity) data is necessary to adequately model spill fate and effects. Such models, including the SIMAP model by Applied Science Associates (www.appsci.com/simap/simap.htm) or the OSCAR Model by SINTEF (www.sintef.no/units/chem/environment/oscar.htm), have been developed to model—and quantify—spill impacts to coastal and nearshore resources.

Thus, it is specifically recommended that one of these models be used to develop probable and worst-case discharge scenarios in support of SPCC/OSRP development. This information must be included in a supplemental EIS made available for public comment. Spill impact modeling should be conducted, minimally during each of the four seasons of the year to reflect changes in hydrodynamic and biological regimes, or, if necessary, during each month, if the biological resources modeled during the seasonal analysis yields incomplete data results.

Based on a review of navigational risk assessments and Section 4.6, the following two scenarios should be modeled in support of SPCC/OSRP development:

- Collision of a tanker vessel (such as the *MV Gull*) with one (or more) WTG, resulting in a catastrophic/instantaneous loss of the vessel's entire petroleum cargo of nearly 1.3 million gallons of various petroleum substances such as diesel fuel (i.e., a worst case discharge);

- Collision of a tanker vessel (such as the *MV Gull*) with one (or more) WTG, resulting in a discharge of two of the vessel's petroleum cargo holds of more than 380,000 gallons of petroleum substances such as diesel fuel (i.e., a more probable discharge scenario); and
- Catastrophic/instantaneous release the 40,000 gallons of transformer oil and 1,000 gallons of diesel from the ESP.

As an example of the type of analysis that should be conducted by proponent prior to publishing the EIS, a preliminary oil spill modeling study was conducted using SINTEF's OSCAR oil spill fate and effects model (Dickens et al, 2004). APNS undertook this analysis, even though it is the Corps' and CWA's duty, to demonstrate the serious public interest threat posed by this project.

Spill scenarios described above were used to scope anticipated impacts to Nantucket Sound and surrounding environs—i.e., worst case and more probable discharges of petroleum substances from a tanker vessel colliding with a WTG, and a release from the ESP. The volumes of the modeled discharges (just over 1.29 million gallons for worst case discharge from the tanker; over 380,000 gallons for a more probable discharge from the tanker and 41,000 gallons from the ESP) are based on the volume of petroleum carried by the *MV Great Gull*, a vessel that commonly plies the Main Channel, carrying bulk petroleum products and bulk oil storage at the ESP. A worst case discharge is required for both the analysis and response planning for a marine based oil spill by The Oil Pollution Act of 1990 (OPA90.) The loss of the contents from two adjacent cargo tanks (#1Sand #2S) is a realistic and probable occurrence representing the broad-side collision of a tankship with a WTG that damages the cargo tank boundary. Diesel is used as the modeled released substance to characterize fate and effects of spilled substances since diesel (chemically similar to fuel oil number 2 and home heating fuel) is carried in bulk by tanker vessels through the Main Channel of Nantucket Sound. Additionally, diesel has similar physical and chemical characteristics to the types of transformer oils that may be used at the ESP. Diesel has a somewhat higher toxicity than most mineral transformer oils, so discussions of toxic impacts are likely conservative (i.e., protective) of impacted natural resources.

Figures 1-12 below provide summary results of the twelve sets of stochastic simulations that were performed for each scenario (i.e., three different spill scenarios conducted for each of the four seasons). Results show the probability of pollution above a given threshold. Probability of adverse impacts maps are provided for shoreline, sea surface and water column impacts, providing a total risk map for fish and wildlife resources occurring onshore, on the surface of the water and in the water column, respectively. Each set of result figures show probabilities based on multiple (at least 60) simulations. For purposes of simulations, the four seasons were defined as follows:

- Winter: January, February, March
- Spring: April, May, June

- Summer: July, August, September
- Autumn: October, November, December.

Figures 1-12 below show probability of contamination above a given threshold, but exact values for such thresholds are often not readily available, thus requiring derivation based on the type of substance spilled and site specific factors such as water temperature. The threshold for shoreline and sea surface represents a no-effect value for mortal oiling of wildlife, which in most situations translates to birds. Exposure above the no-effects level, lethal and sublethal impacts may occur. Values range from 10T/km^2 (used in the Natural Resource Damage Assessment Model for Coastal and Marine Environments, NRDAM/CME) to 0.01T/km^2. In many cases, the threshold is determined by a combination of film thickness and degree of coverage. In this analysis, results are presented, using a threshold value of 0.1 metric tons per square kilometer (T/km^2; translating into approximately 80 gallons/square mile), a reasonably protective effects threshold for Nantucket Sound shorelines and sea surface given the presence of sensitive seabird wildlife in the Sound.

For dissolved concentrations in the water column, a well-established threshold value is LC1, the concentration assumed to cause mortality to 1% of the exposed organisms. Using standard algorithms for estimation of toxicity, LC1≈0.01*LC50; LC50 being the concentration lethal to 50% of the exposed organisms. Toxicity of petroleum products is normally expressed as the LC50 for different biological groups (eggs and larvae, adult fish, zooplankton), given 96 hours of exposure at 25°C. This analysis takes a conservative approach and uses the LC50 of the most sensitive group as a basis (eggs and larvae).

The LC50 for marine diesel for eggs and larvae used as a basis for calculations is 266 ppb based on values found in NRDAM/CME. This value agrees well with several recent exposure experiments. This value is then corrected for seasonal ambient water temperatures, using the average temperature for each season, based on climatological data from NRDAM/CME.

The results of these oil spill impact simulations are presented below. Figures 1-4 address the probability of adverse impacts to shoreline, sea surface and water column organisms during each of the four seasons for a collision between an oil tanker and a WTG, resulting in spillage of over 1.29 million gallons of diesel. Figures 5-8 address the probability of adverse impacts to shoreline, sea surface and water column organisms during each season for a collision between an oil tanker and a WTG, resulting in a more probable discharge of over 380,000 gallons of diesel from two ruptured vessel holds. Figures 9-12 address the probability of adverse effects resulting from a catastrophic spill of 41,000 gallons of diesel and transformer oil (modeled as diesel). Tables 1-3 below summarize open water areas and shoreline lengths at risk of pollution exposure and adverse impacts resulting from the tanker/WTG collision worst case discharge (WCD) scenario (Table 1), a more probable tanker/WTG collision discharge scenario (Table 2) and a spill at the ESP (Table 3) during each season.