Analysis and Comments
on
Draft EIS/EIR

4956

Environmental Impact Statement
USACE # NAE-2004-338-1
Environmental Impact Report
EOEA File # 12993

Submitted by:

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Section I - Personal background and relevant credentials for evaluating the Draft Environmental Impact Statement.

A. I have a Ph.D. in the area of psychology and both my master's degree and doctorate degree required conducting research using an experimental design. In addition, I was an associate professor at Hobart and William Smith Colleges from 1970 to 1987 teaching courses that often involved developing and analyzing research designs.

B. I hold a current United States Coast Guard License for Uninspected Passenger Vessel, also known as the charter boat captain's license or six-pack license. During the last 12 years I have taken charters out on Nantucket Sound fishing mostly in the area of Horseshoe Shoals. I have been hired to navigate pleasure craft offshore along the eastern seaboard from North Carolina to Hyannis, Ma and back.

C. I am a member of and teach for both the United States Coast Guard Auxiliary and the Cape Cod Power Squadron. I have taught the Junior Navigation and Navigation courses, the Piloting and Navigation Rules Sections of the Basic Boating Classes and I am presently teaching a course for the USCGAux on how to use your GPS for navigation.
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D. I hold the rank of Coxswain with the USCGAux and conduct safety patrols and ATON patrols in the areas of Bravo East and West on Nantucket Sound. (See Appendix I)

E. I consider myself a passionate environmentalist and I have read, researched and supported organizations involved in protecting our environment. I firmly believe that our country needs a Plan B for energy use that would include all types of clean alternate energy sources. I work at Cape Cod Community College known for their green campus initiatives and I support their present efforts to erect a wind turbine generator for research and training purposes.

Section II Introduction - Specific areas to be analyzed and discussed.

The EIS/EIR is an exceedingly long document covering many aspects of the proposed project. Although I could comment on a large variety of areas, I have decided to limit my analysis and discussion to specific areas that I have some expertise or appropriate background. This will include the research design or approach to choosing and evaluating alternative sites, navigation and safety concerns, commercial and recreational fishing and general boating, the removal of the WTGs when obsolete, some specific environmental effects and finally I will present some general comments on aesthetics, economics, environmental impact, etc. I have not been able to do as thorough a review as I would have liked due to the time constraints placed by the Army Corps of Engineers and the fact that I work full-time.

Section III Analysis and Comments

A. Research Design on choosing alternative sites – 3.4 Wind Park Alternatives.

In section 3.4, a great deal of time and effort went into proving that there is no other appropriate sites on the northeastern seaboard of the United States to place an offshore wind farm other than in some area of Nantucket Sound. This is a most disturbing conclusion, for if this is correct, wind energy as a viable source of offshore power is in trouble. We will need many more offshore wind farms than just the one proposed for Horseshoe Shoals, if our country is to develop a significant Plan B for alternate energy sources that would include offshore wind farms. I must disagree with the report's conclusion and I would like to point out a major flaw in the approach and reasoning.

Let me take just one of the proposed sites and indicate the problems. The public previously suggested that ESE of Nantucket in the area near Rose and Crown Shoals in depths of 9 to 25 feet and sheltered by a number of shoals like Davis Bank (class 6 wind) might be an appropriate alternate site. (See Chart of area 3-15 in the EIS) This area would not develop large waves because of the surrounding shoals, is reasonably close to land (Nantucket Island or Monomoy Island) to run the cable to, is in an area that only experienced fisherman and boaters would venture, does not have ferry traffic or located in flight paths, and is not on a direct route to any islands. It has at least as strong winds at class 6 as parts of Nantucket Sound with class 5 and class 6 (data from EIS). This location might not have the shortest convenient cable run to shore that would save capital investment, but certainly this location makes a great deal of sense and could be workable (See Appendix II). Some developers worldwide would find a location like this highly desirable as compared to some locations presently being developed, such as in the North Sea. However the EIS/EIR report, rather than take the chance and investigate an area that might work, the response of the researchers of the EIS was to select a ridiculous location south east of Nantucket in deep open waters so far from land that maybe 65 foot waves could develop in a perfect storm (See Chart 3-15 in the EIS). Their motives are obvious and very transparent. The EIS/EIR does not pass even the simplest test of critical thinking and reasoning, let alone presenting a valid objective approach to alternate sites. If this were a student paper, my comments would be "you put a great deal of time and effort into a very poor research design that is not objective." There are viable sites on the northeast seaboard and an **independent and impartial research organization needs to evaluate these sites.** They need to be creative and look at alternatives like the median strip along Route 6 that has an altitude of 190 feet in some places. Cape Cod Community College has had a test tower in the area for over a year and they have determined that the area is suitable for WTGs. There is easy access to the Nstar power grid and it would be easy to maintain. The biggest downside for the developer is they would have Mass. State regulations to follow, and they wouldn't want to do that. As the principal stated at the Property Law Section Council, Mass Bar Association Meeting on January 10, 2005 in Boston, I make no apologizes, this project is about making money, not the environment. We are not interested in looking at other sites.

B. Navigation and Safety Issues

From my personal experience of fishing Horseshoe Shoals, patrolling the area as a Coxswain for the USGC and crossing Horseshoe Shoals from Hyannis Harbor going to one of the islands or accessing shoals like Norton, Hawes or Wasque, there is no question that Horseshoe Shoals if a heavily trafficked area. The EIS states that "smaller vessels do not have navigational tools" to handle this area in restricted visibility, especially when a fog bank moves in unexpectedly. The fog can be so dense on Nantucket Sound that it is difficult to tell what direction horn blasts are coming from and lights cannot be seen. With 130 horns blowing, it would create nothing but confusion and the lights are useless in dense fog. I can attest that the majority of recreational boaters I encounter in this area are amateurs with minimal boating experience and educational background in boating. With all my boating education and experience, I would find navigating the 130 WTGs very difficult and dangerous in times of restricted visibility without a significant investment in navigational electronics. I have observed commercial fishing boats in the area with their autopilots on (which is often done out of necessity), having difficulty navigating around the boats in their vicinity, not to mention adding 130 WTGs to dodge.

The EIS report on page 3-187 (3.4.3.4.10 Navigation) quotes accurately a few of the COLREGS rules that would pertain to navigation around the proposed Wind Farm. I quote the second paragraph on page 3-188 "These rules make it very clear that properly assessing the potential risk of collision, operating at safe speeds, and taking necessary action to avoid collision is the responsibility of the vessel's captain. The mariner must remain cognizant of the presence of the WTGs, and adjust operation of his or her vessel accordingly to be in compliance with the COLREGS." The implied conclusion is that following these rules, all the boaters on Nantucket Sound will be safe. What they don't state in the EIS on page 3-188 that the COLREGS rules are 215 pages long, that there is no requirement for recreational boaters to even read or have a copy of the rules unless they are operating a vessel over 39.4 feet (12meters) in lengths. Only then does the COLREGS state you must have a copy on board, but does not state you need to have read or comprehended it. In addition, the Navigation Rules International - Inland is not given away, but must be ordered from the U.S. Government Printing Office and it is not inexpensive. I can assure you that other than the Charter Boat Captains and Commercial Vessels, probably none of your recreational boaters and fisherman have read the rules and, in fact, if they did not voluntarily take a USCG Auxiliary or US Power Squadron boating course they probably know few if any of the rules. The sad state of recreational boating is that you do not need a license, know the navigational rules or take a course in order to purchase and operate a motorboat of any size for your personal use. The average boater I have observed on Nantucket Sound is inexperienced, operating a fairly small vessel often trailered to the area, who has minimal local knowledge, has a poorly equipped boat and does not know the COLREGS even exist.

Another area of major concern is search and rescue by the USCG. The closest USCG Stations to Horseshoe Shoals are located in Woods Hole or Chatham. Response time by vessels from Woods Hole (their designated area of responsibility) has been considerable. Consequentially, in emergencies they are more likely to send a helicopter. I have observed helicopter operations in SAR situations and I can attest they were flying much lower than 417 feet trying to spot a survivor, swimmer or body in the water. For

example, I was there when they were searching for the Irish woman who fell off the "Sea Genie II" vessel offshore from Hyannisport late in the evening on July 22, 2001. Although there were a number of private boats searching the area, it was the Coast Guard Helicopter that after several high passes around the area dropped very low over the water (probably 100 to 200 feet) that spotted her. Unfortunately, in this case it was still too late and she had drowned. She was located almost one nautical mile from were she went overboard. (This was during a light SW breeze and a slight current. What if this scenario had happened in the middle of the Wind Farm?

If the above scenario had happened on Horseshoe Shoals at night, with a SW wind 10 to 15 knots or more, a current of 1.6 knots from the west and a SAR helicopter not being able to get any lower that 500 feet, the rescue would be nearly impossible. The set and drift of the individual in the water can be easily computed using Eldridge Tide and Pilot Book and using the USCG's own Leeway Worksheet and Datum Worksheet (US Coast Guard, Search and Rescue, COMDTPUBP16794.35B), inserting the data of set and drift of current, wind speed and body floating with a life jacket, one can easily compute that the speed of drift in question towards and between the WTGs. In this case, the individual would be drifting fast enough that even if spotted alive, trying to initiate a rescue while avoiding the WTGs would be next to impossible. Is loss of life being factored into the equation of the cost benefits of this project? Collateral loss is often easy when it is not you or your children.

As an additional example, on July 20, 2002, Daniel Griffin set out from Nantucket toward Cotuit Harbor on his 26-foot sailboat. He was heading across Horseshoe Shoals when his boom knocked him into Nantucket Sound and he was not wearing a life jacket. His boat continued in large circles and it was finally spotted by the passenger vessel Grey Lady with no one on board at about 7:00 PM. According to Lt. Zorman, the Coast Guard immediately launched a computerized search plan, taking wind, current and boat location into consideration. (Boston Herald, 22 July 2002) The main search area was Horseshoe Shoals. Both surface and air rescue units were launched. It was not until 6:30 am, 18 hours and 18 miles later, that the crew of an HU25 Falcon jet dropping down to 500 feet or lower that they spotted him waving his arms. "He was at the very far end of the scale of the survivability table," said Petty Officer Karl Beeman, of USCG Group Woods Hole. (Cape Cod Times, 22 July 2002) In this case, time was of the essence and this rescue was successful. Again, if the WTGs had been in place, they may have had to fly too high to locate him. Boating safety is an important issue to consider.

Further, on page 3-189, under **Proposed Aids-to-Navigation**, I quote "Installation of the Wind Park will result in the presence of additional aids-to-navigation in Nantucket Sound that can be used by mariners in the area. Each WTG will essentially serve as an ATON simply by its presence on the Nantucket Sound Alternative." With my first hand experience in boating these waters both at night and during the day under all types of conditions, one WTG is an ATON of assistance, 130 will provide confusion and a hazard. Add to this the addition of private ATONs that CWA are proposing, the confusion becomes worse. Also, the USGC does not maintain the private ATONs proposed by CWA and in my experience those are the ones often left neglected and are off the charted location, if they are even on a chart. Most charts do not include privately maintained ATONs, because they are so unreliable. Obviously, the WTGs would eventually be on a nautical chart.

Page 3-190 under **Comparative Summary of Impacts** there are two important points to make. I quote from the EIS report that "The USCG determined that the findings of the Horseshoe Shoal Navigational Risk Assessment are generally applicable to all of the offshore alternative site locations, ..." However, the impact on safety is not the same if one location, such as ESE of Nantucket as stated above has minimal boat traffic and those using the area tend to be experienced with appropriate navigational equipment on board as opposed to Nantucket Sound with heavy use by inexperienced recreational boat traffic. The chance of accidents increase exponentially by the increase of boat traffic in the area. The USCG statement in the EIS is like saying that the Southeast Expressway in Boston has the same risk assessment as a similar highway in North Dakota. In the same section, I quote boaters need "be more attentive to the types of navigational equipment needed onboard to safely operate in and around the Wind Park."(Page 3-190) What do they mean by navigational equipment? Well, if you are an experienced boater you know that you will need a radar unit for limited visibility (minimum $2000) and a GPS chartlink (another $500 - $1000). Can most boaters afford this? A small boat I towed from the area in question several years ago had no compass (not required by the USGC), no chart onboard (also not required by USCG), had no local knowledge as they were from out of town and they tried to throw me a clothesline to tow them in. Their boat, at most, was probably worth about $300. Do we tell these boaters to stay out of an area that is prime for scup, sea bass, striped bass and blue fish and is one of the best protected areas so that the inexperienced boaters in small boats can use the area. There is no question that Horseshoe Shoals is one of the prime areas for fishing for all types of boaters. When I charter, 80% of the time I go to Horseshoe Shoals to guarantee I will catch fish.

Subsequently, on page 3-237, second bullet down states, "Horseshoe is located outside established navigation channels and fairways..... The Shoal has very shallow water depths (averaging 10 to 20 feet). Ferries and larger commercial and recreational vessels with deep drafts do not cross this area." It is true that most ferries stay out of the area, but during the summer months on a regular basis, two and three trips a day, boats like the Helen H. (100 feet long), Angler, Sea Swan, Fish Hawk, Rosie S., Teachers Pet, HyLine's fishing boats to just name a few are fishing on Horseshoe Shoals. Add to this the many squid boats that work the area both day and night in early spring and sail boats crossing the area on the way to the islands. Most large ferries in the area do not even draw more than 10 feet and thus if disabled they could drift into the area.

Navigation and safety will be compromised if the WTGs are constructed on Horseshoe Shoals, there is no way to sugar coat it.

C. Commercial and Recreational Fishing

Commercial Fishing plays a big role in Nantucket Sound. The EIS/EIR states on page 5-52 "a total of 78 species were sampled through the MDMF bi-annual research trawl surveys." It goes on to state on Page 5-53 "a total of approximately 1.8 million pounds of squid were harvested from Nantucket Sound between 1994 and 2001." The report goes on to indicate that fishing weirs alone catch 1 million pounds of fish a year, and so on. The surveys definitely demonstrate the importance of commercial fishing in

this area and the large variety of species. However, there is no research to indicate the impact of the 130 WTGs on the commercial trawling and fishing in the area, other than general guessing. That is not good enough. As I am not a commercial fisherman, I will leave a more detailed analysis of the problems to them.

From the point of view of a charter boat captain, on page 3-237, fifth bullet down states "Horseshoe Shoal is not a unique habitat in Nantucket Sound and is not a significant habitat, refuge or migratory pathway for marine mammals." If the report is suggesting that the area is not a unique habitat for certain types of fish, than those writing it have never tried fishing Nantucket Sound. There are limited locations on Nantucket Sound that numerous bluefish can be found all summer long. This includes some very specific locations on Horseshoe Shoals. It took me years with a depth finder, analyzing charts, fishing the area and questioning other fisherman to locate the prolific fishing areas. These areas are unique in their bottom contours, location, effects of currents and water temperature. It is something a researcher looking at a chart would not find. The EIS 5.4.2.1 page 5-49 states that "review of the scientific literature suggests that relatively few studies pertaining to finfish resources have been conducted specifically within the proposed project location in Nantucket Sound and Lewis Bay." That is as true a statement as can be made. When I first started fishing Horseshoe Shoals I went researching for any type of studies of how and where to locate fish and the types of fish and quantities on Horseshoe Shoals. The old timers basically had the answer. There are unique areas that the fish congregate because of the very unique qualities of the location. What I have found fascinating is that you can locate on a chart a similar area of depth, condition of the bottom and current and there are no fish there. Why? I don't know and there is no research of the area that answers this question. What I do know is that 130 WTGs in this fishing area will change it forever. First, there will be some vibrations and noise from the WTGs. What effects will that have? We don't know. More important, the current in the area (refer to Eldridge Tide and Pilot Book) increases to 1.6 knots and then changes direction and increases to almost 1.6 knots in the opposite direction, which will deposit huge amounts of sand and silt on the east and west sides of each of the 16-foot diameter bases of the WTGs. This will dramatically effect the environment of the entire area. Will this make fishing better or worse? There is no research. Will the prolific commercial longfin and shortfin squid harvest continue in the early spring? There is no research. Will the fluke, flounder (summer and winter) return or will they leave the area? There is no research. Will jellyfish start to gather in this area and start eating fish eggs or the seals move in large numbers? There is no research. Just remember, once the bell is rung, it maybe impossible to unring it. Where is the research from the Marine Biological Lab, NOAA, Woods Hole Oceanographic Institution or any of the other research institutes in Woods Hole? How many times have we tried to improve our environment only to ruin the environment and create a bigger problem? Where is this type of research in the EIS/EIR? It is not there and what is attempted to be passed off as research is pathetic.

Nantucket Sound is a unique marine environment that is environmentally sensitive and it should have been designated a Marine Protected Area under Executive Order 13158. I strongly recommend this, as does the Provincetown Center for Coastal Studies.

D. Removal of WTG when obsolete Section 4.5

On page 3-23 3.2.2.6.1 Reliability "Design lifetimes of WTGs are approximately 20 years. Obviously this is a best guess by those building the WTGs, but these models are so new they might last 5 or 10 years. Just ask the people in Denmark that are already having problems with their WTGs. I only wish my cars would last as long as they claim. Whether they last 5 years or 20 years, the problem is whose responsibility will it be to remove them. We do know that they do not last forever. There is reasonable scientific evidence that wind power may be unprofitable and obsolete in 10 to 15 years with advances in hydrogen cell power research, photoelectric panels and other alternatives that may be more efficient and cost effective. Wind power is only profitable now with government subsidies. Section 4.5 of the EIS states "a financial instrument will be in place to ensure that sufficient funds are available for removal of equipment." There are no details about the instrument, how it would be administered in the event of bankruptcy or sale of the company. One can only learn from Donald Trump on how bankruptcy can get companies off the hook for all kinds of obligations. If a 100 million dollar bond is put up, does the state or federal government hold it? If the company is sold or declares bankruptcy, does it stay? Who insures the bond? This is an extremely important issue that is dismissed with a vague general description. If some unforeseeable problem is created in Nantucket Sound by the 130 WTGs, who pays to correct it, if it can be corrected? Many questions are left unaddressed. In the past, large corporations have left the general public with superfund waste sites to clean up. How quickly we forget and not learn from history. .

E. General Comments on aesthetics, economics, etc.

Aesthetics and the emotional component of Nantucket Sound. When one thinks of Cape Cod, the words that come to mind are relaxation, sun, fishing, sailing, inspiration, dreams, romance and water views. In 1974, a New Jersey minister started coming to Cape Cod every fall for what he described as time for inspiration and communing with nature and god. He and his wife have returned every year since to the shores of Nantucket Sound and now that he is retired he drives from Florida to make this special pilgrimage. He and his wife continue to spend hours viewing, reading and writing by this special shoreline. He epitomizes the feelings of many who journey to this place for the sea, salt breezes and sand. Although this is a romanticed view, it too should be considered and not just dismissed as unimportant. Would you travel to the Gulf Coast to view offshore oil and gas rigs for inspiration? Think about it.

In addition, there is a charm and romance of sitting by Nantucket Sound by night and watching the few buoys with red, green and white lights indicating their locations by specific sequences and viewing the stars for miles. However, watching hundreds of strobe and flashing lights will not only add to the light pollution but will ruin the unique ambiance of the area. Call this idealistic or romantic, but this is why people come to Cape Cod.

Economics Would anyone give you 24 square miles of free land on Cape Cod? I doubt it. That's what the wealthy private corporation is receiving by grabbing free land on Nantucket Sound to be developed for profit. This area is larger than the Island of Bermuda (20.5 square miles). There are no lease agreements and minimal federal regulations.

If you visit website www.naboertilvindmoller.dk/English/DanishLessons.pdf one can learn both that the WTGs are less reliable than often touted and even the new machines are producing less power than their proponents claim. What does this mean? It means that the power produced will cost more than originally promoted by Cape Wind and if it is true that most of the electric power generated goes to Cape Cod, our already high electricity rates will go even higher. I am not suggesting we shouldn't pay more for "green power," I'm suggesting a deceptive tactic to sell the offshore power plant to unsuspecting residences. Just be honest, Cape Wind is in this to make a big profit (the actual amount they are unwilling to share) and the consumer will be paying for it.

Section IV Summary

One major glaring error of the EIS/EIR is the lack of an objective analysis of alternate sites. The bias is transparent and lacks even the simplest of critical thinking and reasoning. The conclusion in Section III A. is that an independent and impartial research organization needs to evaluate alternative sites. This is too important a project not to do this.

As indicated in Section III B., from my experience both on the water and teaching classes in navigation, there are safe boating concerns that need to be addressed. To say that boaters using the COLREGS will be safe is pure naivety. Fog banks can move quickly and frequently engulf Nantucket Sound and the most experienced boaters without radar, GPSmap and other electronics can find it a challenge. Unfortunately, the majority of recreational boaters using Nantucket Sound are amateurs. The carefully worded statement in the EIS/EIR that says boaters need "be more attentive to the types of navigational equipment needed onboard to safely operate in and around the Wind Park"(page 3-190) is a polite and politically correct way of stating you need to purchase radar, GPSmap or Chartlink and other electronics for your vessel for $3000 or more or else WATCH OUT.

And to say that search and rescue operations by the USCG in the area of the WTGs will not be affected is an amazing statement. What the USCG really said is that it wont be anymore affected than in any other area. Think about that if a family member is in the water and needs to be rescued at night. I wouldn't want to be that person.

The fishing surveys used in the EIS/EIR clearly demonstrate what an important commercial and recreational fishing area this is with at least 78 species of fish and the millions of tons of fish taken in this area. The surveys do not indicate what the impact of 130 WTGs will have and there is no scientific data from places like the Marine Biological Labs, Woods Hole Oceanographic and the many other research organizations in Woods Hole.

Addressing the removal of the WTGs when obsolete requires special attention so that the public does not get stuck with another superfund type of clean up mess. Vague statements will not do it, as big business knows how to exploit that.

There is no denying that aesthetics plays an important role in the final analysis. Cape Cod is not some place out in the middle of a desert that people drive through to get to another location. The flashing lights and the sight of WTGs might be interesting for 10 minutes on your way by, but Cape Cod is a special romantic place that attracts everyone from honeymooners to ministers searching for inspiration. Lets honestly look at alternate sites before we spoil a national treasure for the personal profit of a few.

So the bottom line is, do the benefits of a wind farm out way the costs?

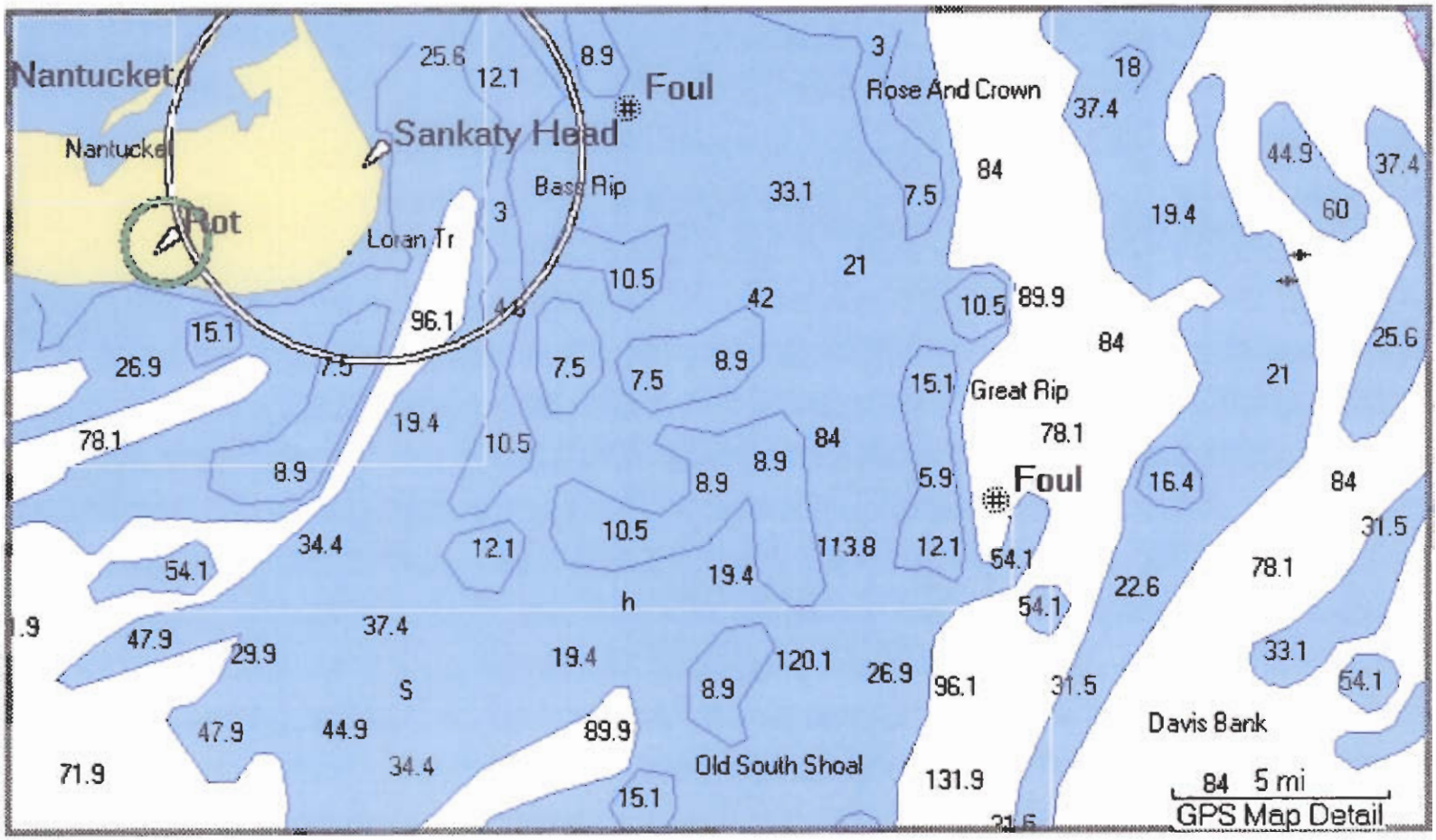
1. Will the wind farm reduce the number of oil barges coming through Buzzards Bay. Absolutely not.
2. Will it reduce the on line time of the Sandwich Power Plan? No.
3. Is it aesthetically beautiful? One WTG might be majestic, 130 is a mess.
4. Will it improve navigation and safety as stated in the EIS? No
5. Will it help or hinder the ecology of the area. We don't know. There is no scientific research. Lets not gamble on our unique ecosystem/environment until actual scientific studies are done.
6. Is this project about money or the environment? It is all about money, otherwise an honest effort would have been made to locate an alternate site.
7. Should an area that should have been designated a Marine Sanctuary be decimated? No more than Stellwagen Bank should have had oil and gas rigs.
8. President John Kennedy and Senator Saltonsalt will be remembered as men of vision and foresight. They made the bold move to preserve forever land on Cape Cod (The National Seashore Park). Lets not give away Nantucket Sound, Horseshoe Shoals, a public land trust to private developers for private profit. That is not in the public's interest. Leave as your legacy the preservation of an area that given time will be designated a Marine Sanctuary.

APPENDIX I

Safety Patrol Areas Defined. The following is a listing of safety patrol areas and controlling Coast Guard Stations.

Area	Primary Controlling Station	Boundaries
A/North	Chatham	Chatham Harbor - including Pleasant Bay
A/East	Chatham	*Nantucket Sound* - **Eastern boundary**: established by a line beginning at Hardings Beach running due south along 70 degrees longitude to the southern tip of Monomoy Island. **Western boundary**: established by a line from the entrance to Herring River due south to the southern boundary.
A/West	Chatham	*Nantucket Sound* - **Eastern boundary**: established by a line beginning at the entrance of Herring River running due south. **Western boundary**: established by a line from the southern tip of Point Gammon due south.
B/East	Woods Hole	*Nantucket Sound* - **Eastern boundary**: established by a line beginning at the southern tip of Point Gammon running due south. **Western boundary**: established by a line beginning at the entrance to East Bay running due south.
B/West	Woods Hole	*Nantucket Sound* - **Eastern boundary**: established by a line beginning at the entrance to East Bay running due south. **Western boundary**: established by Succonnesset Point.

APPENDIX II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GPS Map Detail

004957

225 Oxford Drive
Cotuit, MA 02635
February 16, 2005

U.S. Army Corps of Engineers, New England District
Co: Karen Kirk Adams, Cape Wind Energy Project EIS Project Manager
696 Virginia Road
Concord, Mass. 01742-2751

Re: USACE DEIS Cape Wind Energy Project, November, 2004 USACE # NAE-2004-338-1

Dear Army COE,

After review of the Cape Wind DEIS, it is clear that the project in the proposed location of Nantucket Sound is not in the best public interest. The negative impacts far outweigh any possible positive benefits. An evaluation of alternative sites using a more reasonable Selection Criteria and more objective analyses should yield an acceptable location which would enhance the position of wind energy in our future. A site reevaluation is also due based on the fact that about 10% of the proposed wind farm has been deemed to be in State waters.

Suggested Project Benefits

- **Global Warming** The construction of the proposed Wind Farm would provide an insignificant reduction of global emissions and an insignificant impact on global warming. An extrapolation of the Conservation Law Foundations' own analyses[1] concludes that at least 4,500 (four thousand five hundred) 420 MW wind farms would have to be built to significantly reduce global emissions.
- **Dependence on Foreign Oil** The construction of the proposed Wind Farm would have an insignificant impact on our nation's dependence on foreign oil imports. This has been made clear by numerous studies and is due in part to the fact that generation of electricity uses a small part of our national oil consumption.
- **Improvement in Cape Cod Air Quality** The construction of the proposed Wind Farm would have virtually no impact on the quality of the air on Cape Cod. The major source of any Cape Cod air problems comes on air masses from the mid-West. Also our nation and region are projected to require more and more electricity in the future. The full output of the Canal Electric plant will be needed to satisfy these needs. Construction of the wind farm is not expected to diminish the use of the Canal Electric plant nor its emissions.
- **Jobs** There has been a lot of publicity about the large number of jobs that would be created by the wind farm. But the jobs would be created no matter where the wind farm is built. Also the number of permanent jobs would be only 30-40.

Project Detriments

The sheer magnitude of the DEIS and the scope of issues involved are an indication that there are many serious potential detriments from the proposed wind farm. Some of the consequences of constructing the wind farm have been deemed "ACCEPTABLE RISKS" in the DEIS. Such decisions are very subjective and should not be allowed when the public safety is involved or if underestimating the risks would result in permanent damage to Nantucket Sound life (avian, marine life, fish and shellfish stocks, areas available to commercial and recreational boating, etc.). Some of the negative impacts which would be created by the wind farm are listed below. My brief details on the impacts follow.

[1] Conservation Law Foundation "CLF's Nuclear Wars"' Summer, 2001

1. Risk of Damage to Fish and Shellfish
2. Degradation of Boat Radar Sensitivity
3. Degradation of Shipping and Ferry Safety
4. Degradation of Avian Environment
5. Unknown Effects of Generated Heat
6. Dangers Inside A Wind Farm
7. Risks to Aviation
8. Night Time Glow

- **Risk of Damage to Fish and Shellfish** The DEIS recognizes that the wind farm will affect fish life on Horseshoe Shoal. But the DEIS is unable to answer many questions on the long term effects on fish life. The required Coast Guard lighting near the ocean surface and the noise (fog horns, tower vibration, maintenance helicopters, etc.) over 25 sq. miles will disrupt all sorts of marine life. E.g. the striped bass is mainly a nocturnal feeder and it is expected that the many warning lights near the surface of the sea would affect them. I mentioned this to a Cape Wind proponent and he said "So what, the fish will just go someplace else".

  The prospect of the "artificial reefs" is frightening. Again, certain species will flourish and others will be damaged. "Artificial reefs" created along parts of the Atlantic and Gulf coasts have attracted and stimulated large colonies of jellyfish. Jellyfish devour scallop and shellfish larvae. This could be a disaster to the famous Nantucket scallop beds and other Nantucket Sound shellfish resources.
- **Degradation Of Boat Radar Sensitivity**
  There is a good probability that the WTG towers and the Service Platform would reduce the sensitivity of shipboard radars to the point where small boats would not be visible on the radars. A paper at the recent Wind Energy Workshop[2] sponsored by the AWEA states that "The potential for disturbing radar/radio communications" needs to be taken into account. The report from Horns-Rev in DEIS Appendix 5.14-B is supposed to address this question. Study of the report shows that it <u>does not answer</u> the radar sensitivity question. This is detailed in my attached letters to the US Coast Guard dated June 14, 2004 and December 14, 2004.
- **Degradation of Shipping and Ferry Safety**
  Major shipping and passenger ferry lanes are adjacent to the edges of the proposed wind farm. Other countries and agencies require a significant distance between wind farms and shipping lanes. The Long Island Power Authority[3] requires that wind farm towers be at least 1/2 mile from the edge of shipping lanes (Section 3.4.1 Commercial Vessel Navigation). Also refer to the attached letter dated June 14, 2004. The risk to public safety is not acceptable with the proposed wind farm proximity to boating lanes.
- **Degradation of Avian Environment** The analysis of the avian impacts of the project is incomplete and includes errors. The Horseshoe Shoal site is also in conflict with many of the recommendations of the US DFW guidelines[4] on Wildlife Impacts. The guidelines state "Avoid locating turbines in known local bird migration pathways.. Avoid known daily movement flyways ... and areas with a high incidence of fog, mist, low cloud ceilings, and low visibility."

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[2] "What Has the US Wind Industry Learned From the European Example?" Proceedings of the Wind Energy and Birds/Bats Workshop Washington, D.C. May 18-19, 2004

[3] "Long Island's Offshore Wind Energy Development Potential: Phase 2 Siting Assessment" www.lioffshorewindenergy.org/study.html Phase II Siting Assessment

[4] "Service Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines", May 13, 2003

An example of an error in the DEIS analyses is found in the Executive Summary, Avian Resources which claims that "The proposed WTG lighting does not possess the characteristics that are known to attract birds.." The proposed lighting in Table 1-1 includes many flashing red lights, as required by the FAA. The DFW guidelines state that "Solid red or pulsating red incandescent lights should not be used, as they appear to attract night-migrating birds at a much higher rate than white strobe lights."
Such errors and the debatable results of the bird counts do not allow one to reach the conclusion that the wind farm presents an acceptable risk to birds and the Federally Endangered Species.

- **Unknown Effects of Generated Heat** A massive amount of heat is dissipated in the transmission cables, equipment and by the turbine blades[5]. Up to 10% of the generated electricity can be dissipated in transmission[6] and up to 30% by the turbine blades (turbulent mixing, viscous shear). The effects of this heat energy has not been addressed in the DEIS. The increases in the temperatures of the ocean bottom, ocean water and air need to be analyzed and the impact on marine life determined.
- **Risks to Aviation**
  The large numbers of low flying aircraft passing over the proposed wind farm have been documented. Every year there are a number of planes which lose power after leaving Hyannis Airport. The planes usually drift aimlessly in an attempt to find a landing place and sometimes end up in the ocean. With the large numbers of aircraft involved, many of them commuter flights, the wind farm presents an unacceptable risk to human life.
- **Dangers Inside A Wind Farm**
  The dangers of boating or fishing inside the wind farm boundaries have not been adequately addressed in the DEIS. A majority of boats do not have radars to help avoid collisions with the towers in the frequent dense fog conditions. The occurrence of the flinging of broken blades and of dead birds has not been defined. In Europe the public has been warned to stay our of some wind farms due to safety consideration. There is no assurance in the DEIS that this will not happen on Horseshoe Shoal.
- **Night Time Glow**
  Visual simulations of the wind farm have been unable to show what the appearance would be at night, with and without overlying clouds or fog. It was stated at one of the MTC meetings that night time simulations are difficult and not practical. There would certainly be detrimental effects to star gazing and enjoyment of the nighttime sky.

Alternative Site Analyses

- Assessment of Energy Generating Technologies Section 3.2

The assessment does not include nuclear power plants. The energy bill pending in Congress encourages and subsidizes nuclear power generation.

- Preliminary Site Screening Criteria Section 3.4.1

The Preliminary Site Screening Criteria does not reflect the European Peer Committee concerns[9] and statements that the project does not need to be greater than 200 MW in size. The recommendation that multiple small land-based projects be considered is also ignored.

The DEIS Criteria for offshore water depths less than 50 feet MLW with extreme storm wave (ESW) heights of less than 20 feet are too restrictive. The Peer Committee states that "70 feet seems to be the current depth limit at which projects can still be installed on an economic basis and

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[5] "Heat Generation by a Wind Turbine" G.P. Corten 14th IEA Symposium Dec 4-5, 2000, NREL
[6] "Transmission Options For Offshore Wind Farms In The United States" James F. Manwell, et al, AWEA 2002 Conference

this is even being exceeded by the depths of some projects recently awarded in the United Kingdom." The Butendiek North Sea wind farm has 65 foot water depth and 35 foot ESW[7].

The Long Island Power Authority wind farm uses 70 foot water depth criteria and will experience ESW heights in excess of 30 feet[3].

The attached Wind Farm Model foundation chart published by the Energy Center of the Netherlands shows that monopole foundations are feasible up to 35 meter (110 feet) water depth.

It is not clear why the Preliminary Site Screening Criteria has remained the same as when first proposed years ago. It was pointed out at MTC and USACE meetings that the criteria are specific to Horseshoe Shoal. It is clear that additional work is needed to provide a wind farm site selection based on sound technical decisions.

- Alternative Site Locations

Full comments on the DEIS alternative site analyses are beyond the scope of this letter. It is clear that locations south of Martha's Vineyard and Nantucket Island have far fewer environmental and safety problems than Nantucket Sound sites.

The South of Martha's Vineyard site (SMV) was found to have many favorable characteristics (3.4.2.2.2) and the Summary (3.4.2.2.1) states that this area "warranted a closer look". The site was then summarily dismissed because of "concerns regarding the potential for unexploded ordinance in the area to the south of Martha's Vineyard". The site was replaced by the south of Tuckernuck Island site (STI). It was stated that the STI site "has similar ocean conditions without the additional concerns". Other sections of the DEIS contradict this "similarity". The Extreme Storm Wave height (ESW) at STI is 52.5 feet (Table 3-13) whereas the SMV ESW is only 28 feet (Section 3.4.2.2.2). The ESW at STI put the site at a disadvantage to Horseshoe Shoal, and the South of Martha's Vineyard site should not have been eliminated from final consideration.

The "additional concerns" about the SMV site were concerns about seals and unexploded ordinance near Nomans Land. The unexploded ordinance is in a very restricted area around the island of Nomans Land and is never a problem to vessels to/from the west. The nearest point of the suspected ordinance is 6.6 miles away from the SMV wind farm boundary shown in DEIS Figure 3-12. Wind farm vessels traveling to the wind farm from Providence or New Bedford would need to lengthen their voyage by a very small amount to very safely avoid the ordinance area. The distance to the SMV site would still be very significantly less than to Horseshoe Shoal.

The SMV wind farm ellipse in Figure 3-12 is much greater than the 25 square miles needed for the wind farm. This ellipse was clearly never seriously considered as a location for the wind farm because a portion of the wind farm would be within the Mass. 3-mile limit. A 25 square mile area south of Martha's Vineyard between Lo 70° 32' W and 70° 39' W and totally outside the 3-mile limit would involve water depths less than 85 feet. This location would also be well away from Muskeget Channel. The distance to navigation and shipping channels would be much greater than the distance from the Horseshoe Shoal wind farm to major shipping channels.

<u>European and Peer Experience</u>

Many Europeans experienced in offshore wind farms feel that the first U.S. offshore wind farm should not be of the size proposed (130 2.5 MWatt State-Of-The-Art wind turbines) and should not be in a sensitive area such as Nantucket Sound[8,9,10].

The DEIS attempts to take advantage of European experience with offshore wind farms by forming a Peer Committee. But much of the advice of the Peer Committee has been ignored[9] in the DEIS studies. Some examples include:

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[7] "Review of Offshore Wind Farm Project Features" DEIS Appendix 3-F

[8] "German legislators review plans" Cape Cod Times October 4, 2002

[9] Peer Review Committee "Technical Review of Preliminary Screening Criteria for the Cape Wind EIS; Consolidated comments" September 30, 2003 DEIS Appendix 3-E

- "There was some concern expressed about the 200 MW size, with reviewers noting that most wind projects were significantly smaller than that and were still utility scale." "most reviewers felt that a project didn't necessarily need to be over 200 MW to be utility-scale or to interconnect to the ISO-NE."
- "strongly recommended that USACE include multiple smaller land-based projects as an alternative"
- "concern was expressed about the environmental impacts, particularly in areas of some uncertainty, such as avian impacts, and the effect of underwater noise, vibration and electromagnetic fields on marine creatures"
- The IEC Technical Committee 88 has developed standards for offshore wind turbines. "These standards will be of paramount importance in offshore wind turbine design and should be noted in" the DEIS.
- "Serious concern was expressed about the long-term viability of the project and the possibility of project failure" "a project scaled within the limited industry offshore experience could help insure the long-term viability of the proposed wind farm."

A 2004 report from the OSPAR Commission[10] shows that experienced Europeans are concerned about the many unknowns of offshore wind farms. OSPAR is made up of representatives from 15 European countries and the EU. Members represent the Danish EPA, the Swedish EPA, etc. Their report states that "The use of offshore wind energy is a relatively new activity in the marine environment and there are, therefore, a lot of knowledge gaps with regard to both potential impacts and the scale of such impacts on the marine environment in relation to local areas .." The report goes on to list eighteen gaps in scientific knowledge and the need for future research. All of these knowledge gaps involve issues germane to Horseshoe Shoal and Nantucket Sound. The report also includes several impacts of offshore wind farms which have not be appropriately addressed in the DEIS.

All European countries with wind farms have adopted strict turbine design and manufacturing standards and requirements for certification of offshore wind farms[11]. These requirements are in recognition of the many disastrous effects possible with a project failure. Wind turbines and structures must pass and conform to the standards before being approved for installation. The proper manufacture and installation of the wind farm are detailed and professionally certified at every step of the process. Government agencies in the U.S. do not have such standards or procedures for offshore wind farms in place.

In conclusion, European experience teaches that we should be very cautious in sizing and siting offshore wind farms. The DEIS ignores much of the advice of the Peer Committee. The deficiencies in many DEIS analyses show how inexperienced U.S. companies and agencies are in offshore wind farms. Nantucket Sound is not the place to put a large industrial complex that is fraught with knowledge gaps and risks.

Sincerely,

Kenneth H. Molloy, P.E.

Cc: Cape Cod Commission
Massachusetts DEP

Attachments: K. Molloy letters to USCG 6/14, 12/14 2004
ECN Wind Farm Model foundation

[10] "Problems and Benefits Associated with the Development of Offshore Wind-Farms", OSPAR Commission 2004 www.ospar.org

[11] "Project Certification of Offshore Wind Turbines", Germanischer Lloyd WindEnergie GmbH

225 Oxford Drive
Cotuit, MA 02635
December 14, 2004

United States Coast Guard Marine Safety Office
C/o Mr. Edward LeBlanc
20 Risho Ave.
East Providence, RI 02914

Re: Army COE DEIS Cape Wind Energy Project November, 2004 USACE # NAE-2004-338-1
USCG letter to Army COE dated Feb 10, 2003 from Capt. Mary E. Landry
K.H.Molloy letter to U.S. Coast Guard c/o Mr. Ed LeBlanc dated June 14, 2004 (attached)

Dear Mr. LeBlanc,

The referenced U.S. Coast Guard letter included a variety of analyses that were required to be included in the EIS for the proposed Nantucket Sound wind farm. Assessment Element 3.b required a researched opinion concerning whether or not: The generators (WTG) could produce radar reflections, blind spots or shadow areas. My letter of June 14, 2004 detailed similar questions. In particular whether the WTG towers or the large Service Platform (SP) would reduce the sensitivity of shipboard radars to the point where small boats would not be visible on the radars. A brief response to these questions is given in Section 6.2 Radar of the Navigational Risk Assessment (DEIS Appendix 5.12-B), and the supporting report is "Horns-Rev VHF Radio and Marine Radar" (DEIS Appendix 5.14-B). These documents do not provide a scientifically thorough or definitive answer to the basic radar question - Would the sensitivity of shipboard radars in the vicinity of the proposed wind farm be reduced to the point where small boats would not be visible?

The summary in Section 6.2 states that "No radar shadows from the rotating WTG blades were observed. The only radar shadows that were observed were on small vessels when they were alongside much larger work vessels." My concern is not radar shadows from blades or shadows caused by work vessels. It is loss of radar sensitivity.

Section 6.2 and the Horns-Rev Appendix state "It was also noted that vessels in the middle of the Horns Rev park could distinguish the 80 individual WTGs as well as the 12 buoys marking the work area." That is not very astounding, but the sensitivity question regarding small boats is not answered. In fact the Horns-Rev Appendix (Section 3.1) goes on to state "they could count 80 turbines and 12 buoys marking the work area; otherwise nothing" !!

The conclusions of the Horns-Rev Appendix (Section 4) again only address "shadows on radars from rotating turbine blades". The recommendation that only first class equipment from first class suppliers be used and "the same result may not be achieved with cheaper and simpler equipment" are other indications that these results are not definitive enough to assure protection of the Massachusetts boating public. Would navigation charts need a Warning " DO NOT ENTER OR GO NEAR THE WIND FARM UNLESS YOUR VESSEL HAS A FIRST CLASS RADAR ONBOARD! " ?

Another major concern that has not been addressed in the DEIS is the multiplicity of navigation and safety problems surrounding the Service Platform. My questions regarding the SP are detailed in my June 14, 2004 letter. These factors have been completely left out of the Navigational Risk assessment.

I urge the USCG to pursue these questions and the other issues in my June 14, 2004 letter until answers are provided. If the answers indicate that the safety of the boating public is at stake, then the project should be relocated to an area where there is far less recreational and commercial boating activity. There are too many lives at stake in Nantucket Sound to do otherwise.

Sincerely,

Kenneth H. Molloy, P.E.

CC: Captain Mary E. Landry
Alliance To Protect Nantucket Sound

225 Oxford Drive
Cotuit, MA 02635
June 14, 2004

Coast Guard Marine Safety Office Providence
c/o Ed LeBlanc
20 Risho Ave.
E. Providence, RI 02914

Dear Mr. LeBlanc,

I have been studying and attending meetings concerning the proposed wind farm in Nantucket Sound since the project was first presented. Listening to people at these meetings and studying the issues in depth have convinced me that the wind farm would present serious safety problems to both commercial and recreational boating. The wind farm would also create safety challenges to the USCG which the USCG may not presently be equipped to handle.

1. Horseshoe Shoal is an active area for commercial and recreational fishing and recreational boating. This has been documented extensively. The towers would endanger fishing vessels, especially when trawling and trolling.
2. People boating to Nantucket on a direct route from points W. of Hyannis (Centerville to Falmouth) would have to pass through the wind farm. Sailing would be complicated, with the need for much tacking in many situations. It has been claimed that vessels do not enter the area of the wind farm due to shallow water. This is incorrect since most of the wind farm is in water with depths in excess of 10 feet at MLLW.
3. Some edges of the wind farm lie along shipping and ferry lanes. Last winter a large passenger ferry drifted helplessly for several hours, and this situation could easily result in hitting a tower. The selection of possible locations for a Long Island Power Authority wind farm required that the towers be <u>at least 1/2 mile from the edge of shipping lanes</u>. Refer to Section 3.4.1 Commercial Vessel Navigation[1].
4. The problems listed above are further complicated when deep fog rolls into Nantucket Sound. Fishing and boating within the wind farm and along its borders would have to come to a near standstill.
5. The complications of navigating within the wind farm would cause more boaters to use the shipping lanes, again increasing the dangers.
6. I have talked to experts in radars. They feel that the strong return signal from the large towers would <u>greatly reduce the sensitivity of radars</u> to small boats. These boats may be not be visible on radars in or near the wind farm. This creates potential disasters, especially in foggy and nighttime situations.
   The effects of the Service Platform on the operation of boat radars in displaying nearby small boats is not known.
7. Some wind farms in Europe are closed to human activities due to dangers with breaking blades and other wind turbine failures. Broken blades are known to have

[1] "Long Island's Offshore Wind Energy Development Potential: Phase 2 Siting Assessment" www.lioffshorewindenergy.org/study.html Phase II Siting Assessment

been flung up to ¼ of a mile. I have the fear that the whole 25 square miles of the wind farm would eventually be closed to all boating.

8. The April 23, 2004 issue of the Cape Cod Times reports that pods of right whales were spotted east of Martha's Vineyard in Nantucket Sound. This refutes the claim that whales are not found in the Sound. Construction of the wind farm would certainly increase the dangers to the whales due to a higher concentration of boat traffic outside the wind farm.
9. The Service Platform (SP) would create a multiplicity of problems.
   - People would be working/living on the Service Platform 24 hours a day, year round.
   - Large quantities of fuel would be stored on the SP. It would also house transformers and other electrical equipment carrying 420 megawatts of electrical power. Explosions and fires in such wind farm equipment have been documented.
   - Would the USCG be expected to provide for the safety of the people on the SP and working on the wind turbines?
   - Would the USCG be expected to fight explosions and fires on the SP or on the wind turbines?
   - Does the water depth at <u>all</u> wind turbines allow vessel access for fire fighting and other rescue purposes? Some turbines are in less than 10 feet of water.
   - Would the USCG need additional vessels or equipment?
   - Would USCG personnel require special training to handle these situations?
   - Would the USCG need a major facility closer to the SP than Woods Hole or Chatham?
10. The ESS Group "Navigational Risk Assessment" report[2] ignores the special problems of navigating near the Service Platform. The consequences of boat impacts with the Service Platform support towers is not discussed.

These issues are some of the reasons why the proposed wind farm should not be built in Nantucket Sound. There are other locations which avoid most of the problems (e.g. S. of Nantucket Island). The Long Island Power Authority has selected several locations which do not have such problems. I urge the USCG to protect all the public by rejecting Nantucket Sound as a location for a wind farm.

Sincerely,

Kenneth H. Molloy, P. E.

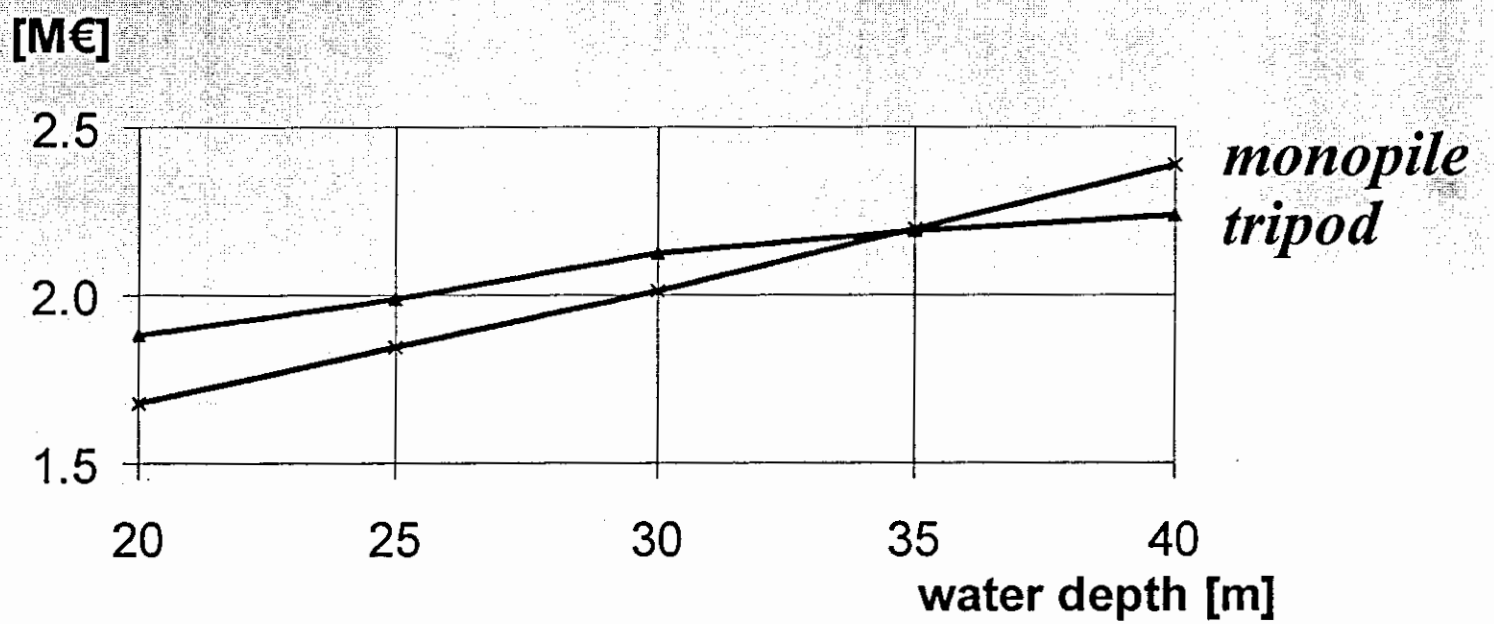
[2] "Navigational Risk Assessment Cape Wind Project Nantucket Sound" ESS Group, Inc. August 18, 2003

Wind Farm Model

foundation

trade off between monopile and tripod foundation

- hardware investment [estimated external loading]
- installation costs [database vessel properties]



ECN

February 16, 2004

Colonel Thomas L. Koning
District Engineer
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

004968

Re: Cape Wind Energy Project

Dear Colonel Koning:

I ask that you consider the Draft EIS from the perspective of the Peer Review Committee formed by six internationally recognized experts on wind energy. There are numerous issues they have raised regarding this proposed large scale wind farm, including risks associated with new technology. This Peer Group also states that the Draft EIS lacks objectivity.

I have attached the Peer Review Committee's report with my editorial re-paragraphing; with no added or changed content. There are many concerns addressed by the Peer Review Committee that seem to become otherwise lost; and I hope that this measure will draw your attention to critical concerns introduced by the Peer Review Committee's Report.

What I find most alarming is that little emphasis is being place on the statements made at the four public hearings held by the USACE. At the MIT hearing, the majority of speakers were in favor of Cape Wind. However, at the three USACE Cape and Island's hearings, the opposition comprised the majority. Why would the USACE hold public hearings only to ignore the public? The hearings were open to any entity, and the public responded. The articulated goal of the Ocean Management Task Force is to protect the public trust. I hope that the USACE will do the same.

While Federal waters are the proposed location of this World's largest, America's First offshore wind farm, the citizens most likely to be affected are the local residents whose livelihoods and rights should be paramount in this process. The whole in the donut of the regulatory process directly affects this citizenry.

Safety issues raised by the local Nantucket Steamship Authority and the Coast Guard are being ignored. I may be a Cape and Island's tourist, but I have abundant respect for the captain of any vessel; if they are concerned—so am I, and so should you be.

No good public policy can come from the reverse order of the Cape Wind process. We have the developer stating terms and conditions for use of a national treasure. How will public trust be achieved absent a comprehensive ocean resource policy? We must set our priorities and preserve the national treasure of Nantucket Sound as our first order of business. We have not defined the areas suitable for use for off-shore wind power; the business sector is identifying them. The priorities of Big Wind do not match those of the local residents who testified at the USACE hearings.

I am also concerned that Cape Wind data transmissions may have been interrupted during mid-December with intermittent or no information being transmitted. Does the Department of the Army Permit issued by the USACE for the operation of this Data Tower include a mandated continuance of use with data to be forwarded to a specified party?

Has the applicant been in compliance with the terms and conditions imposed under this permit? If not, is there a modification in existence? The Data Tower function is pertinent to the viability of the Cape Wind plan, otherwise, why is it there?

There was also a speaker at the recent Cape Cod Commission hearing on Cape Wind held in W. Yarmouth who identified himself as a sound engineer. He mentioned that a "noise refraction" study was not provided in the Draft EIS. As this proposed development is in water; it would seem to be in the public interest to provide such study so as to determine if this plan would create higher than acceptable noise levels. This gentleman adamantly stated that noise refraction contributed by the wind farm would have significant impact on the community.

I have a tourist's perspective of the Cape and Island's. My appreciation is for the scenic beauty and serenity of Nantucket Sound. It is a world renowned resort, backyard, and a national treasure. Large scale anything is not compatible with this quant aesthetic ocean community. We arrive as tourists because of the views conveyed in Cape and Island's brochures. We pay top dollar to enjoy them.

As a taxpayer, I do not wish to have decision makers ignore the international panel of wind energy experts' criticisms of the Cape Wind proposed project.

The Cape and Island's business community, as represented by the Nantucket and Hyannis Chambers of Commerce, has spoken out against the Cape Wind proposal. They know views support the hotels, and the gift shops, and every facet of economic life enjoyed by members of their communities.

The Cape and Island's mystique would forever be lost with the installation of a large scale steel forest in what Attorney General Reilly states would encompass 15% of Nantucket Sound. According to the Peer Review Committee, fishing rights in this area may become negotiable. I think it is fair to conclude that if Cape Wind gets the green light; our safety will become their issue. Boating and fishing rights may both become negotiable in at least 15% of Nantucket Sound.

The Cape and Island's residents are clearly in a position to sacrifice quality of life as well as their livelihoods. They have responded to the USACE at public hearing. I urge the USACE to value the needs of local residents; safety concerns of those responsible for local navigation; and the voice of the public at the USACE hearings. Protect the public trust and protect Horseshoe Shoal by denying Cape Wind a permit to construct wind towers in Nantucket Sound.

Respectfully,

Barbara Durkin

Barbara Durkin
48 Moore Lane
Northboro, MA 01532
(508) 393-1715

cc: all interested parties not limited to:
Cape Cod Commission; Nantucket Chamber; Hyannis Chamber;
MEPA Jim Hunt; Senator O'Leary; Alliance to Protect Nsd.

Peer Review Committee, Offshore Wind Energy, New England
Technical Review of Preliminary Screening Criteria for the Cape Wind EIS
Consolidated comments on Section 2.0 and 3.0 of the Draft EIS
September 30, 2003
Summary

The Peer Review Committee consists of six internationally recognized experts in wind energy (see below) who have kindly volunteered to review draft documents to support the decision-making process of the US Army Corps of Engineers New England District (USACE) regarding the Cape Wind project.

All six reviewed and commented upon
Sections 2.0 and 3.0 of the draft Environmental Impact Statement, and their comments have been consolidated into this document. Reviewers had nuances to their comments that would have been unfortunate to lose in the consolidation, so there is necessarily some repetition in this presentation.
There was general support for the approach to the issues taken in Section 2.0 "Project Purpose and Need" and Section 3.0 "Alternatives Analysis." The reviewers felt that the discussion of need could be expanded to further highlight the benefits of wind energy, particularly that power is produced with no CO2 emissions.

The reviewers felt that in general the document appears to reach reasonable conclusions; however, some reviewers noted that there were some cases in which there was insufficient supporting
documentation provided to reach the conclusions. Some felt that the document could be written with a more objective tone.

The reviewers felt that the screening criteria were appropriate. There were various opinions expressed on the issue of wind power classification, ranging from "it depends on the economics," to a strong belief by one reviewer that offshore wind was not viable at less than Class 6.

Most reviewers felt that using wind resource classification, per se, as
one screening criteria was too simplistic, however they saw the utility of using it. More detailed evaluation of wind resource requires more information than may be available at this stage for a possible site. Transmission capacity was viewed by several reviewers as a key criterion. Without the ability to get the power to market, a project isn't viable.

There was some concern expressed about the 200 MW minimum size, with reviewers noting that most wind projects were significantly smaller than that and were still "utility scale." One reviewer agreed, however, that a minimum size of 200 MW was practical, given that the costs of interconnection will be borne by the proponent.

One reviewer strongly recommended that USACE include multiple smaller land-based projects as an alternative. The reviewer felt that while there are advantages and disadvantages to the development of both a large offshore project and multiple small land-based projects, the cost of energy might end up to be about the same.

Under legal and regulatory constraints, concern was expressed about environmental impacts, particularly in areas of some
uncertainty, such as avian impacts, and the effect of underwater noise, vibration, and electromagnetic fields on marine creatures.

Serious concern was expressed about the long-term viability of the project and the possibility of project failure. One reviewer observed that an abandoned wind farm at sea would seem to be the worst possible environmental outcome, with no benefits to offset

the impacts. The history of wind projects in the United States has included numerous technology problems, and several failed, bankrupt projects. One reviewer was concerned about the proposed turbines, an early commercial use of turbines that size, let alone in the marine environment. The reviewer felt that a project scaled within the limited industry offshore experience base could help insure the long-term viability of the proposed wind farm.

Some comments were quite extensive and detailed, and provide additional background on the issues, which is helpful to the USACE decision-making process. These specific comments by various reviewers have been consolidated below. In addition, one reviewer offered a proposed application of the selection criteria, which is also included in this document.
Specific Comments
Section 2.0 "Project Purpose and Need"
In general, it was felt that this section succeeds at its purpose. As noted above, some attention should be given, however, to the "voice" of the section. For example, at Line 68 it is stated, "the project will help reduce cost..." It may be preferable to say: "the project is intended to help reduce cost..." Similarly, the following bullet, beginning at

Line 70, presents as fact an opinion that the project's ability to bid into the ISO-NE system with a zero marginal cost will "provide more competitive market pricing." That may well be a reasonable theory, but it has certainly not been proven that it will. Again, the following bullet, beginning Line 73, states as fact the project will provide an "economically efficient source..." It is not clear what that actually means.

The remaining bullets should also be checked to make sure that they refer to the intent of the proponent,
rather than appear to accept the proponent's statements as fact.

The first sentence in the Section (beginning on Line 5) could also use some elaboration. In particular, and as reflected later in Section 3, the purpose is clearly more than "provid[ing] utility-scale renewable power..." The purpose, as far as the proponents are concerned, is to make an acceptable return on their investments. This statement is important, since it bears on many of the assumptions implicit in Section 3.
Regarding project need, the offshore wind energy project in the first instance will serve the purpose of diversifying sources of available energy and displacement of fossil fuels (CO_2 reduction). As the wind energy resource is variable the capacity credit is limited and thus wind energy can only be used to a limited degree to meet minimum reserve capacity requirements. Based upon experience in Europe, economic laws of scale dictate offshore wind farms to be relatively large compared to land based wind farms. Indeed future offshore wind farms are likely to have utility-scale dimensions, while this is not necessarily the case with land-based systems.

It also should be noted that the electricity cost ($/kWh) of wind energy is completely independent of fuel cost and forms a pricing hedge against varying prices of fossil fuel cost.
Section 2 - Lines 70-72 reference bidding into the ISO-NE system by the project.

This implies that the price received for the energy from the project will not be known in advance. It seems highly unlikely that this will happen in the first 10-20 years of the project's life, while the project debt is being repaid.

Lenders will almost certainly require a clear definition of the prices to be paid for the energy for the life of the debt. Also, the marginal cost of operating the plant is not zero, but very low compared to non-renewable sources of energy.

Section 3.0 "Alternatives Analysis"

The consensus of the reviewers was that the screening criteria were appropriate, including wind power classification, electric transmission capacity, commercially available land or permissible use of offshore water area, engineering and design limitations, and legal/regulatory constraints. One reviewer suggested adding harbor facilities at reasonable distance. For the transport, installation and maintenance of large scale offshore WTG's these facilities are required.

Choosing to focus on potential wind energy projects within the New England region seemed quite reasonable, however as noted above, some reviewers suggested consideration of a number of smaller, land-based projects.

Section 3 - Lines 18-21
This analysis is used to imply that the scale of the project must be greater than 200 MW to connect onto the ISO system. While all the reviewers were not familiar with the ISO-NE, they noted that it seems unlikely that no projects smaller than 200 MW have been interconnected in the past 15 years. This also implies that projects need to be 200 MW or greater to be "utility scale." Many wind power plants with capacities under 100 MW are installed in the U.S., and continue to be installed in the U.S., and utilities purchase energy from wind power projects rated less than 100 MW. There is no question that, everything else being equal, a large project (onshore or offshore) will have better economics than a small project, but most reviewers feel that a project didn't necessarily need to be over 200 MW to be utility-scale or to interconnect to the ISO-NE.
Wind Power Classification of 4 or Greater.

Some reviewers believe that land based wind farms located at Class 4 sites are currently economically feasible only with the Federal Production Tax Credit (PTC), and that to consider locating an offshore wind farm with the associated higher technical risks and costs in a Class 4 wind regime would be unfeasible.

One reviewer felt that for an offshore wind farm to be technically and economically viable "today", even with the PTC, the site needs to be Class 6. The technical challenges and higher costs for offshore wind farms can only be paid for by a significant increase in energy capture. The reviewer suggested that Class 6 for offshore sites would be the minimum acceptable. Depending on how strictly the screening criteria are to be used USACE may wish to consider using a minimum wind speed, and a wind frequency distribution rather than the wind class designation. This would be the best approach if energy capture estimates need to be made as part of the screening process. For example, USACE could suggest an 8m/s minimum mean wind speed with the assumption of a Wiebull wind speed frequency distribution with a typical k parameter, selected for offshore conditions in New England.
One reviewer felt that calculating the energy capture ratio for two different wind sites using the ratio of the wind speeds cubed only works for certain special situations. For example, a wind turbine sited at a location where the wind speed is always above the turbines rated wind speed (maximum Power output wind speed) gives a constant power production, no matter how high the wind speed. On the other extreme, a turbine with a very large generator would behave according to the cubic relationship as described in Appendix 3-A. Real wind turbines are somewhere in between, and to really understand the difference that wind speed has on yearly energy capture requires a reasonable model of the wind speed distribution and a representation of the turbines power curve. In general for real turbines placed at different locations, the energy capture tends to be initially cubic at very low site mean wind speeds, and then rolls over and becomes a constant for very high mean wind speeds. The important range is in the middle, of course. The best way to estimate the energy capture would be to use actual site wind data, or theoretically derived site data, and convolve it with the approximate turbine power curve. Other estimators can also be developed depending on the degree of accuracy required.

Where it is generally true that a Class 4 wind resource is needed for projects to be economically competitive in the U.S. today, one reviewer noted that there are many wind turbines in Europe and some projects in the United States that are in lower wind resource areas. The key is whether the price paid for energy and "green attributes" is sufficient to cover the costs of generation. The wind resource is not the only relevant variable. This reviewer felt that there should be some justification for the conclusion that Class 4 or better winds are required.

Because of the fact that the power density of the wind is proportional to the wind speed cubed, the value of the wind speed at the site is the most important criterion for evaluating the feasibility of wind farms. Reviewers agreed with the general conclusion of the given analysis; in particular with the analysis of the minimum average wind speed required for economic operation of wind farms. However one reviewer did not agree with the causal relation that the author assumes between wind power classification and capacity factor. The annual energy output of a wind farm is primarily determined by the local wind speed (at hub height) and the rotor swept area. The installed power is a parameter of less importance and can be chosen to achieve a certain value of capacity factor in relation to the wind speed and rotor swept area. Within a certain interval this choice has little impact on the annual energy production. Thus in Europe there is a consequence to design offshore turbines with a relatively low specific power (= installed power per m2 swept rotor area) in order to achieve capacity factors exceeding 30%, even 35%. So the capacity factor is not a site-specific parameter or a parameter to characterize the performance or quality of a turbine, but a design parameter. The reason offshore wind farms are designed for higher capacity factors (even accepting somewhat lower energy outputs) is that the capacity of the cable connecting the wind farm to the grid is better used. This is important because cable cost of offshore wind farms tend to be relatively higher than those of land-based farms with similar capacities.

Several reviewers agreed with fact that wind power classifications is utmost important and one suggested that
USACE not use capacity factor as a site-specific criterion.

Other reviewers found some of the discussion regarding wind power classification a bit misleading,

even though the broad conclusions concerning the project are reasonable,
given the current state of the technology. One reviewer noted that there is nothing magic about wind power classification per se. The reviewer observed that to state that an area must have a wind power classification of at least a particular value makes an assumption about economics rather than technology. The fundamental concerns are (1) the installed cost of the wind turbines, (2) the amount of energy they produce, and (3) what the value of the energy is. At the present time, in the United States, given the pricing structure, the type of incentives available, and the state of the technology, the statements made in this Section are broadly correct for merchant plants of the type discussed here. The situation will change as the technology in the future and could well be different, even in the near term, if the incentives were to change. In particular, the applicant no doubt expects to take advantage of the federal Production Tax Credit and the Massachusetts Renewable Portfolio Standard via Renewable Energy Credits (REC's). If these incentives were not available, it is doubtful if the offshore project proposed would be economically viable regardless of the wind power classification. If the incentives were increased, or a different type of entity was considering a project (such as LIPA in New York), sites with a lower wind classification (or locations where it would be more expensive to build the wind farm) might be worth considering.
A fundamental issue that is implicit in discussion of wind energy economics is the matter of so-called "external costs" of energy production in general, and the presumed benefits

of wind energy in comparison with other forms of generation. There is little argument that such costs exist, although there much debate as to how large they are. These external costs are the costs associated with effect on the environment due to the energy production. Costs most commonly associated with fossil fuel based generation include those due to particulates, oxides of nitrogen or sulfur, and carbon dioxide. The presumed benefit of wind energy is that there are essentially none of those compounds produced. For the case in point, they are assumed to be reflected in the PTC and the value of the REC's. Sufficient surplus electric transmission capacity to transport 200-1500 MW to load centers throughout the ISO-NE transmission system.
Reviewers felt that this criterion is essential.

The project is not needed and has no purpose unless there is sufficient utility transmission capacity to deliver the electricity to a market. One reviewer suggested applying this criterion first, and if it is not met then there is no point in considering other criteria. This criterion could be rewritten
to make it more generic and perhaps applicable to other wind projects.

The reviewer suggested restating it as follows: "Sufficient electric transmission capacity must be available
at the planned time of the wind generating plants commissioning to transport the projects full output to
electric load centers throughout ISO-NE."

The footnote in Section 3 indicates that a preliminary screening criterion of less than 25 miles to the nearest transmission connection point will be used. This is reasonable for preliminary screening, but reviewers felt that this distance should not be used as a hard and fast rule to either allow, or exclude, a specific project. Technical and economic considerations for a specific site may allow a longer transmission tie line, or require a shorter line.

One reviewer agreed with the transmission criterion as long as energy policy considers offshore wind (or other large scale renewable energy plants) as marginal additions to the electricity supply system.

In some European countries and regions already more than
20% of the electricity demand is covered by means of wind energy. Further expansion of the supply is possible only if the grid infrastructure is strengthened or adapted to more dispersed systems. This in particular is the case in the UK (targets for 6000 MW offshore wind), Denmark (4000 MW in 2030), Northern Germany, the Netherlands (targets for 6000 MW offshore wind energy by 2020) and Sweden. Reviewers also agreed with the conclusions concerning HVAC versus HVDC technologies for grid connection in Appendix 3-C.
Commercially available land or permissible use of offshore water sheet area sufficient to accommodate a 200-1500 MW wind energy project.
Land-based projects have considerable variation in the MW per unit of land area; however, this is generally driven by the energy capture potential of the particular site and the wind conditions. For example, a site with a strong prevailing wind direction can be laid out with closer side-to-side spacing, whereas sites with good winds from two or more directions may need a wider spacing side-to-side to minimize interference effects when the wind blows along a row. This should all be part of the project feasibility study and energy capture analysis, and one reviewer didn't understand why a specific project size range needs to be specified. There may be locations where a 50-100 MW project would be reasonable, particularly for land-based projects. There simply needs to be enough commercially available land or permissible sea area to place the planned project. While it is clear that a larger project could have better economic viability, that consideration would seem to fall under a different criterion.

One alternative to a single offshore installation that has not been addressed directly is the potential to develop multiple smaller land-based projects.

A 400 MW land-based project might be difficult to site in New England, but multiple smaller projects may be feasible.
While the costs of a smaller land-based project will be larger per MW than a larger land-based project, and the wind resource may be lower than for an offshore project, the cost of energy from multiple land-based projects may not be higher than for an offshore project. Factors which make multiple land-based projects challenging include multiple permitting processes, multiple areas with environmental impact, multiple power purchase negotiations and multiple utility interconnection studies.

Advantages of multiple land-based projects may include potentially easier integration into the existing transmission
system, geographic dispersion smoothing energy delivery to the grid, and dispersed environmental impacts. If there is a specific reason that a multiple land-based alternative is not considered, that reason should be stated.

Otherwise, the study should include an evaluation of dispersed land-based projects.

Regarding wake interactions it has been correctly stated that turbulence intensity offshore is relatively lower than on land because of differences in surface roughness. For fatigue loading of the turbine rotors offshore locations have a significant advantage over land locations. Even at higher wind speeds offshore, the fatigue loading of offshore machines is lower. As a consequence of lower turbulence intensity the turbulence mixing in the wakes will be lower and it takes longer distances between the turbines before the kinetic energy of the wind at a location within the park is again close to the undisturbed value.

A disadvantage of offshore location thus is that the spacing between turbines tends to be larger than on land, thus requiring relatively larger areas. This of course has a consequence for the cost of cabling. That is why in the design phase trade-offs are being made in determining spacing between turbines in cases accepting lower energy output versus lower cabling cost. Typical distances between wind turbines vary between 5 and 10 rotor diameters. From the above discussion it can be concluded that the required open space per MW of
installed power may vary considerable.

However there is a fundamental difference between wind farms and line configurations. The generating capacity of a wind farm is
almost insensitive to the size of the wind turbines applied (as long as the mutual distances between the turbines remain relatively the same, e.g. 8 times rotor diameter). The capacity increases slightly with the tower height, as the turbines face higher wind speeds, which occur at higher heights. So it is correct to state that approximately 20 acres is needed per MW installed power. The exact figure depends on the mutual distances between the wind turbines, typically varying between 6 and 8 rotor diameters. However the installed power of wind energy plants placed in line configurations is (slightly more than) proportional to the rotor diameter, as long as the distance between the turbines remains relatively the same, e.g. 5 times rotor diameters. So one cannot say that a certain number of MW's can be installed per kilometer, without specifying the size of the rotors.

Typical figures for configurations with a mutual distance between turbines of 6 rotor diameters are:
Rotor diameter (m)
MW's per km
for p=400W/m2 (medium

wind speed areas)
MW's per km
for p=600W/m2 (high wind
speed areas)
40
2.0
3.0
80
4.2
6.3
120
6.3
9.5
N.B. p is installed power per m2 rotor swept area. Increase of wind speed with height is not taken into account.
The conclusion concerning the effect of higher wind speeds offshore on the required surface is correct. See also remarks above, on fatigue loading and cabling cost.

Section 3 - Lines 39-64
No evidence is presented that it would be impossible, or would be economically infeasible, to obtain land rights to the amount of land needed for a 400 MW land-based project, or multiple smaller projects totaling 400 MW. What would be helpful would be some analysis showing areas in New England with the required wind speeds, the amount of land required, and the costs of transmission upgrades needed for grid access. This information would allow an objective assessment of a land-based alternative.

Section 3 - Lines 48-50
The typical spacing between turbines is not sufficient to completely eliminate the wake of upwind machines. The spacing allows time for both the turbulence and energy deficit in the wake to be reduced. The former is important to minimize loads on the downwind turbines, the latter to maximize energy production while still having a reasonable project area. It is unlikely that laminar flow exists at downwind rows of turbines with typical array spacing. The following are some minor comments on Section 3. The sentence in Lines 48 and 49
refer to laminar flow. The flow does not become laminar. The effect of the spacing is to allow the wind impinging on down wind turbines to be re-energized by mixing with the more energetic winds of the upper air.
Section 3 - Lines 53, 54, 55

The amount of land required to support a project is dependent on many variables. The numbers used here appear to be biased toward large land areas being required. For example, a one-mile ridgeline (5,280 ft or 1,600 m) can hold ten 80-meter, 2 MW turbines spaced two diameters apart. This would total 20 MW not 10 MW. Two diameter spacing is only acceptable if the predominate wind direction is at right angles to the ridge, which is not uncommon.

Section 3 - Line 55
It is not clear why lower wind sites require more area per MW unless the thought is that larger spacing is needed because of larger wake losses in low wind environments. This should be explained. It is also possible that the author has confused MW (capacity or power) and MWh (energy).

Section 3 - Lines 57 to 64
This paragraph is misleading and confusing. It appears the writer has confused power

and energy, and uses averages inappropriately.

It is correct that more land will be required to get the same amount of energy at a lower wind speed site (all else being equal), but it is not correct that the wind speed will affect the rated power of the plant that can be installed. It is also correct that the power in the wind is proportional to the velocity cubed; however, the amount of energy that will be generated from a given
project is not proportional to the velocity cubed because the turbines cannot extract all of the additional energy available. In particular, once a wind turbine has reached its rated capacity in high-wind situations, it cannot produce more power as wind speeds continue to increase. Thus, the idea that you will get 20% more power (or energy) from a turbine placed in a 7.75 mps average wind speed site than from a 7.25 mps average wind speed site is incorrect.

In fact, using typical wind speed frequency distributions and wind
turbine power curves, the actual percentage increase in energy is on the order of 12%. The lack of obstructions on offshore projects would be expected to produce relatively smooth winds compared to many on-shore sites. This relatively smooth wind may have some, relatively small, impact on the performance of the machines (typical losses assumed for turbulence, when they are assumed at all, are 2% or less). The relatively smooth wind will induce lower loads on the turbines and thus increase their reliability.

The paragraph beginning on Line 57 includes a few questionable assumptions.
One significant issue has to do with wind turbine spacing in offshore applications. The question of spacing is essentially an economic one, but it is known that the distance required for the wakes to recover their energy is greater offshore than on shore, due to reduced turbulence offshore. Greater spacing reduces the impact of the wakes; on the other hand, greater spacing also results in increased cable costs within the wind farm.

At least one reviewer does not believe that there is yet a consensus on what the optimum spacing of wind turbines should be in offshore wind farms.

Section 3 - Lines 74-77
This implies that to build a state-of-the-art facility on land or water requires a 2.7 MW turbine. This is not correct.

Modern wind turbines are offered in the range of 600 kW to
over 3 MW. The proper turbine for a given application depends on many factors, one of which is the accessibility of the site and the available construction equipment. The largest wind turbine that will be installed in the U.S. in 2003 in a utility-scale project (with the exception of demonstration units) will be 1.8 MW, the smallest will be roughly 600 kW, and the majority will be between approximately 1.5 and 1.8 MW. These are all state-of-the-art for land-based applications.

Engineering and Design Limitations: Physical geological and environmental site conditions For a commercial project, this criterion should focus on eliminating alternative sites that
would push the project into engineering and design situations where there is currently no real world experience, and thereby unknowingly increasing the technical and financial risk.

From an environmental point of view the largest risk that reviewers see is a failed project leaving behind an offshore wind farm that is not operational, without sufficient income to address essential maintenance. An abandoned wind farm at sea would seem to be the worst possible environmental outcome.

To trade-off alternative sites, consideration of differing wind speed, wave height and wave period statistical correlations will be very important. Different sites many have similar significant wave height values, but the wind-wave correlations could be quite different. The site environmental characteristics are tied to the water depth, wind direction and the upwind surface roughness conditions. Another important site design parameter is the sea floor geology at the site and on the route of the undersea cable. In addition, the site environment ties directly to the environmental footprint of the project. The wind environment in particular determines the number of turbines required, and in turn the distance between turbines. The better the wind, the fewer the turbines needed, and the shorter the cabling and trenching, which minimizes the environment footprint, and improves long-term project viability. Interestingly, larger turbines also tend to minimize the environmental footprint, which conversely increases view shed concerns.

One reviewer suggested that this criterion be focused on selecting sites that are within the limited industry offshore experience base, thereby insuring "long term viability" of the wind farm. Experience in the 1980's for land-based projects has demonstrated that failed projects in bankruptcy present many unsolvable problems and offshore projects would probably present bigger challenges.

Legal and regulatory constraints
The underlying issue in considering alternatives is thus the relative environmental impact, in the broadest sense. Accordingly, there needs to some explicit recognition of the environmental issues associated with the project, both positive and negative. State and federal land and water regulations should encompass the areas of environmental effects already identified in the European EIS's, which include effects on:
Human beings, fauna and flora
Soil (seabed erosion), water quality, air quality, climate, and the view shed
Material assets and cultural assets
Other conflict of interest issues, among competing uses of a site.

In the U.S. the positive impacts of wind projects have not been well documented, so that the positives and the negatives can easily be presented side-by-side. In the case of a wind project, the positive benefits are the reductions in air emissions CO2, SOX, and NOX. These should be quantified for the ISO-NE operating area. These benefits can also be used to screen sites in a simple way. Higher energy production for a site implies a larger air emissions reduction for the region. A simple ratio of emissions reduction values to the projects environmental footprint could serve as a simple preliminary screen metric for alternative sites.
In the final analysis, it is clear from experience with land-based projects and from the EU offshore work to date that it is the detailed studies of a few biological issues which are considered to be problematic, that are the real focus of the EIS. Both EU and U.S. land-based wind experience indicates the following are likely to be important:
Collision of birds with turbines
Destruction or disruption of habitat, roosting, breeding and feeding areas of birds
Unknown effects of low frequency noise on fish and sea mammals
Unknown effect on fish larvae
Disturbances to seabed and fauna during construction
From the European work the general conclusion has been that avian effects are the major environmental concern expressed, and that a number of studies are currently in progress. However, these studies are not going to be directly applicable to U.S. projects due to the different avian species involved.

The impact of underwater noise and vibration on marine wildlife will need to be considered at various stages of the project development.
Sediment transport patterns and geotechnics will determine type of foundation to be used, the need for scour protection and the potential for the mitigation of cable impacts through

cable burial or armoring.

Further work may be required to assess the potential impacts of electromagnetic fields on certain species of fish such as elasmobranches. One reviewer noted that safety aspects concerning collisions of ships with wind turbine structures need to be addressed in the design phase.

As the North Sea in Europe is a very intensively used shipping "lane", experiences to be gained here will be very relevant to other areas.

As environmental impacts (birds, sea mammals) cannot be predicted accurately in advance, environmental monitoring after commissioning of the project might be necessary. Impact of the wind farm on transport of seabed sediments has to be taken into account. Wind farms could have a positive impact on commercial fishery. Research and development in this area indicates that wind farms could form a breeding area for certain fish species.

Some future offshore wind farm operators are negotiating fishing rights within the wind farm boundaries to the fishing industry.
Appendix 3-A

Many of the issues identified in the main document originate in this document. The following additional observations are made:
On page 2, the statement "Currently, class three wind regimes are not commercially viable for private development since infrastructure costs are greater for the larger wind turbine units of today" takes two correct statements, relates them with "since," and creates a false statement.

Class 3 wind resources are not commercially viable today using either large turbines or small turbines. If class 3 sites were ever really viable, it was because the power markets and economic climate were different at the time. Infrastructure costs are generally larger on a per turbine basis for the larger turbines, but the overall cost of energy is generally lower for modern turbines than for the smaller turbines available in 1986. This statement should be deleted.

On page 3, the statement referring to gravity foundations that states, "Experience has shown that they are not suitable for the larger offshore wind farms" is completely unsupported. It is not known if this is correct or not, but as is the case with many other general statements in the documents, it would be far stronger if supported with case studies or independent analysis.

The reviewers do not claim to be experts in offshore foundation design, but several found that pages 4 through 8 do not provide a well-supported argument for the conclusions.

The section appears to be trying to argue that for technical reasons the project must be built in areas where the Extreme Storm Wave (ESW) is less than 20 feet and the water depths are less than 50 feet.

This argument is not supported with references or the contents of these pages.

With respect to water depths, current projects have not exceeded 50 feet in depth, however, 70 feet seems to be the current depth limit at which projects can still be installed on an economic basis and this is even being exceeded by the depths of the some of the projects recently awarded in the United Kingdom. The section concludes that to design a wind turbine to withstand the forces associated with plunging

breakers is not practical; however, the case study references the Blyth project which is reported to have an ESW of 28 feet and to be experiencing breaking waves. Reviewers thought that it is technically feasible to design for breaking wave conditions; however, the costs and risks of doing so may be prohibitive. The costs are high due to the higher loads and the risks are high because of the limited experience in this area.

These factors could easily combine to make the project uneconomical. If this is the case, it should be
stated as such. As it now stands, the conclusions are poorly supported.

In Appendix 3-A, Introduction, it could be noted that the wind velocity will affect the design of the turbines as well as how and where they are sited. In Appendix 3-A, Comparison of DOE...it should be noted that the mapping referred to was commissioned and supported by the Connecticut Clean Energy Fund and Northeast Utilities as well as MTC.

In Appendix 3-A, Wind Park Economics, the comparison of production from turbines in sites with different wind classifications is not strictly correct.

Even though the power in the wind varies with the cube of the wind speed, the production from wind turbines does
not necessarily follow the same relation. To predict actual energy production one must include the affect of the wind turbine power curve, which is often closer to linear than it is to cubic. In the paragraph beginning, "Expanding the comparison..." note that the correct abbreviation for megawatt-hours is MWh, not mWh. In the paragraph beginning, "In addition to wind..." Other important factors (especially for offshore) include soil conditions, distance to shore, and water depth.
Appendix 3-B
Appendix 3-B considers in detail the hydrodynamic effects on OWT support structures by focusing on wave-induced hydrodynamics. This is welcomed but it is also important to consider the potential impact of sediment scour around the WTG foundation. Modeling will be required to ensure that all these aspects of hydrodynamics are considered fully.
For Wind Turbine Generator (WTG) Components, strictly speaking, the nacelle is the entire turbine structure above the yaw bearing but not including the rotor.
In Appendix 3-B, Transition Piece, the word meant is "monopile", not "monopole."

In Appendix 3-B, "Offshore Environment" and "Wave Characteristics", there is no discussion of reference to the design standards for offshore wind turbines which are being developed by the International Electrotechnical Commission Technical Committee 88, Working Group 3 (IEC TC88, WG3). These standards, which should be released shortly in draft form, will be of paramount importance in offshore wind turbine design, and so should be noted in this document.

In this regard, the wave models that will be used will
be either the Pierson-Moskowtiz or JONSWAP, depending on the location.
In Appendix 3-B, "Wave Characteristics", the discussion of spectral wave period needs to be checked. "Period" refers to time. As used here, Hm0 is considered to be a height. What is presumably meant is the definition that can be found at
http://sandbar.wes.army.mil/public_html/pmab2web/htdocs/dat_desc.html:
"Wave Height (Hm0): Spectrally-derived wave height, in meters; equivalent to time-domain-derived significant wave height in deep water"
Appendix 3-C
The reviewers identified no apparent technical errors or inaccuracies.

One apparent inconsistency is in the second paragraph on Page 9 where the document states that

"...the
Nantucket Shoals site has the potential to reduce the net peak output by an estimated 63 MW, if HVAC transmission is used. This is an approximate 15% reduction..."

This is inconsistent with the statement near the bottom of Page 7 "...AC losses at peak load are anticipated to be approximately 1.5% at the proposed Horseshoe Shoal location and 4.5% were the location moved 24 miles further to Nantucket Shoal." One reviewer felt that the statement on Page 9 is a worst-case example and the Page 7 statement is closer to the losses that would be expected.
Proposed Application of criteria to eliminate alternative sites
One reviewer suggested the following approach for eliminating alternative sites:
Transmission capability and a cooperating utility partner within proximity (25 miles?) of the site.
This criterion should be satisfied in order to proceed to the next criteria, otherwise drop the site from consideration.

The distance to the proposed site may need to be increased to
50-60 miles in order not to screen out excellent sites, with higher wind that could potentially pay the added transmission costs. An impractical site would be eliminated by environmental, or project viability criteria IV and V. if the transmission length or trenching requirements are excessive.

Available land or permissible sea area for the project. This criterion must also be satisfied to proceed to the next. If the required area is unavailable the site should be eliminated.

Wind energy potential for the site: Class 4 or better for land-based sites and Class 6 for offshore sites. It may be better to work with a minimum wind speed and the frequency distribution
curve, because the effect on energy capture can be dramatic, as noted earlier. This criterion should be used in conjunction with criteria IV and V. below to eliminate the least feasible sites from consideration. This is a critical criterion for site screening, because all of the environmental benefits flow out of energy production due to the associated air emissions reduction. This needs to be estimated as accurately as possible given the available site data and turbine specifications. The environmental footprint, and lifetime impacts of the proposed project at the candidate site.
The objective of this criterion is to minimize the initial and long-term environmental impacts relative to the environmental benefits. These impacts can be quantified in terms of miles of cable, numbers of turbines, disturbance area required, and rotor swept area.

The actual impacts, on avian and other species, would need to be quantified in terms of habitat loss, bird collisions, and other quantifiable impacts, and then weighed against the benefits.

Quantifiable metrics could be developed using the ratio of the impacts values to the benefit values. This criterion must be used in conjunction with criteria III and V.
Project viability over the long term considering: engineering, design limitations, and technical risks; and the projects financial viability and long-term financial risks.

Emphasis here should be on the long-term risks and unknowns. The worst possible environmental outcome would be a failed and derelict project, with the owners in bankruptcy court. This would leave an unattended wind farm exposed to the elements for an extended period of time, with no clear legal path to alternatively refurbish the project, salvage the remains, or decommission the project. This scenario has previously been played out in the late 1980's in California.

To address future unknowns, either technical or environmental, the project must have

"long-term viability". The wind industry has seen a number of unexpected technical problems after several years of initial operation.

These include rotor and gearbox failures, higher than expected O&M costs, as well as the need for unplanned
environmental studies, such as to further understand avian impacts. It is critical to have a viable project generating the financial resources with access to the technical expertise necessary to address unexpected problems, and to maintain and improve the facility over time. This also reflects back on the turbine manufacturer, and the ability to stand behind the warrantee, as well as to provide technical support for retrofit improvements.

Peer Review Committee, June 2003
Offshore Wind Energy, New England

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LIPA has undertaken a multi-phase

siting process to award a contract to
develop 100 MW of wind off the
shores of Long Island, New York.

DEPARTMENT OF THE ARMY PERMIT

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Permit No.. 199902477

Issuing Office New England District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

To construct and maintain a single fixed tower, a Scientific Measurement Devices Station (SMDS), and an associated seabed mounted Acoustic Doppler Current Profiler (ADCP) in Nantucket Sound. The tower will consist of three piles supporting a 20 ft x 26.5 ft platform with a monopole extending from the platform to 169.85 ft (60 meters) above MLLW. The SMDS and the ADCP will be placed in accordance with drawings titled "Proposed Scientific Measurement Device Station Cape Wind Project" in 4 sheets with Figures 1 and 4 dated 11/21/01 and Figures 2 and 3 dated 3/21/02 by ESS (Environmental Science Services). Figures 2 and 3 were drawn by Han-Padron Associates and were also titled Revised Platform Elevation.

Project Location:

in the waters of Nantucket Sound between Cape Cod and Nantucket, Massachusetts, in an area referred to as Horseshoe Shoals.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on August 1. 2007 **. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least** one month before the above date is reached.

MUST maintain activity

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee shall ensure that a copy of this permit is readily available whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for work.

SPECIAL CONDITIONS CONTINUED ON PAGE 4

Further Information:

1. **Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:**

( ) **Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).**

( ) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) **Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).**

2. Limits of this authorization.

a. **This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.**

b. This permit does not grant any property rights or exclusive privileges.

c. **This permit does not authorize any injury to the property or rights of others.**

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural **causes.**

b. **Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.**

c. Damages to persons, property, or to other **permitted or unpermitted activities or structures caused by the activity authorized by this permit.**

d. Design or construction deficiencies **associated with the permitted work.**

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

(PERMITTEE) *(DATE)*

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

(DISTRICT ENGINEER) *(DATE)*

Thomas L. Koning
Colonel, Corps of Engineers

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) *(DATE)*

☆U.S. GOVERNMENT PRINTING OFFICE: 1986 — 717-425

SPECIAL CONDITIONS CONTINUED FROM PAGE 2

1. continued from page 2

If the permit is issued after the construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. If the permit is issued after receipt of bids or quotes, the entire permit shall be included in the contract or sub-contract as a change order. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

2. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structures or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structures or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

3. No later than 90 days after completion of the authorized work an as-built scaled drawing shall be submitted to the New England District of the Corps showing the geographic coordinates of the actual tower location. The drawing shall show a north arrow and a horizontal grid and shall note the scale, horizontal and vertical datums and the date the survey was done. The Corps will forward the submitted information to the National Oceanic and Atmospheric Administration (NOAA) to be located on future Coast Charts. The submittal shall be marked with the words "Permit No. 199902477" and shall be addressed to "Inspection Section, CENAE-R, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751". Documents which are not marked and addressed in this manner may not reach their intended destination and do not comply with the requirements of this permit.

4. An application for a Private Aid to Navigation shall be submitted to the Coast Guard. At least ten (10) working days in advance of the start date, the First Coast Guard District, Aids to Navigation Office, 617-223-8356, shall be notified of the location and estimated duration of the construction operations.

5. The structure shall have markings, lighting and sonic warning devices that the Federal Aviation Administration and U.S. Coast Guard require.

6. The permittee shall develop an operation and maintenance plan describing maintenance and repair and emergency response procedures. Prior to the start of construction, a copy of the plan shall be forwarded to the Army Corps of Engineers and no construction shall start until the Corps approves the plan in writing.

7. The permittee shall post a bond for $300,000.00 for emergency repairs or removal of the tower as determined necessary by the Corps of Engineers. The bond shall be in the form of firm commitment, supported by corporate sureties whose names appear on the list contained in

Treasury Department Circular 570, individual sureties, or by other acceptable security such as postal money order, certified check, cashier's check, irrevocable letter of credit, or, in accordance with Treasury Department regulations, certain bonds or notes of the United States. Treasury Circular 570 is published in the Federal Register, or may be obtained from the U. S. Department of Treasury, Financial Management Service, Surety Bond Branch, 401 14th Street, NW, 2nd Floor, West Wing, Washington, DC 20227. This bond must be in place at all times the structure is in the waterway and for a year after its removal in case subsequent information reveals debris or remnants from the tower and its construction and removal are discovered in the waterway.

8. Data obtained from the authorized work shall be provided upon request, and at reproduction cost, to any governmental entity or agency, and educational institutions, such as, but not limited to the Massachusetts Maritime Academy and the Renewable Energy Department at the University of Massachusetts at Amherst.

9. Since the tower is on Federal government controlled public ocean bottom lands, the permittee shall make this data tower available for governmental entities, research institutions, non-profit public interest groups or organizations, education institutions and similar entities (such as but not limited to University of Massachusetts, Cape Cod Community College, Woods Hole Oceanographic Institute, Massachusetts Audubon Society, Manomet Center for Conservation Sciences, etc.) for reasonable installation of scientific data gathering equipment. This will be done under a rent free basis if the Corps, in consultation with the permittee, determines that such equipment installation and maintenance can be done with no impact on operational effectiveness, liability, safety risks, maintenance ability or cost to the permittee. Separate agreements for each such use will be entered into between the Corps, the permittee, and the user.

10. A National Marine Fisheries Service approved observer shall be present during the pile driving activities to document the presence of listed species. If a listed species is sighted within the vicinity of the construction area, work shall be curtailed until the animal is confirmed outside the action area.

11. If a sea turtle or other listed species is injured, all construction activities shall cease immediately and the permittee shall contact Kara Dwyer, NMFS assistant stranding coordinator, at (508) 495-2274 (Pager no. (978)585-7149) or Kim Damon-Randall, NMFS Protected Resources Division, at (978)281-9112.

12.The sound level in the water, measured in decibels shall be monitored during the pile driving procedures, and the results of this monitoring shall be forwarded to Kim Damon-Randall, NMFS, One Blackburn Drive, Gloucester, MA 01930 or transmitted via electronic mail to Kimberly.Damon-Randall@noaa.gov to confirm that the anticipated sound levels in the water during pile driving does not exceed 180 dBA. Underwater sound pressure level measurements will be made at an Initial Safety Zone radius of 500 meters to determine compliance with the 180 dB NMFS threshold. Hydrophone measurements will use the Lmax RMS "fast" setting, and data will be analyzed on a real-time basis to ensure continuing compliance. If measured levels exceed the threshold, a site-specific Safety Zone radius corresponding to the 180 dB threshold will be established and the NMFS approved observer will be advised of the expanded action area for observation of marine animals. If a listed species is sighted in the vicinity of the action area, work will be curtailed until the animal is confirmed outside of the action area. Measurement Cont,

will be reported

data will be reported real-time by phone and e-mail to Kim Damon-Randall at NMFS, Gloucester on whatever time interval NMFS requests (e.g. hourly, twice daily).

13. This permit does not supercede any authority of the Minerals Management Service, including the authority to convey rights to OCS sand, gravel, and other OCS resources in accordance with OCS Lands Act of 1953 and PL 103-426.

14. This permit shall not be transferred to any other party without the prior written approval of the Corps of Engineers. Based on current circumstances and issues that may arise, including the possibility of legislative change, the Corps may decide to require a new public interest review, including possibly a new public notice and imposition of further requirements, before approving such a transfer.

15. The data tower shall be completely disassembled and removed from the waterway within five years of the start of construction.

16. In order to more completely assess the potential for archaeological resources within the area to be impacted by the construction of the data tower, additional geophysical survey data as described below shall be collected and provided to the Corps, Massachusetts Historical Commission, and the MBUAR no later than 20 days prior to the start of work for their review and comment within 20 days of receipt. The submittal shall be marked and sent in accordance with the instructions in Special Condition 3. This additional survey shall include the use of side scan sonar, magnetometer, sub bottom profiler (using 50 foot lane spacing covering a 500 foot by 500 foot area centered on the SMDS site, which could potentially be affected by construction equipment) and visual inspection of detected anomalies if a review by a qualified marine archeologist indicates that these anomalies may represent historic or prehistoric archaeological resources in the construction area.
In the event that potentially significant historic or prehistoric archaeological resources are identified in the project area of effect, the Corps will consult with the MHC and MBUAR to avoid, minimize, or mitigate any adverse effects to National Register-eligible archaeological resources, prior to the commencement of construction.

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February 23, 2005

Cape Wind Energy Project EIS Manager, Karen Adams
U.S. Army Corps of Engineers, New England District
Regulatory Division
696 Virginia Road
Concord, MA 01742-2751

Re: Draft Environmental Impact Statement (DEIS) for the proposed Cape Wind Associates, LLC Cape Wind Energy Project
File# NAE-2004-338-1 - Comment Period Ends February 24, 2005

Dear Ms. Adams:

Cape Wind's stated goal is to erect its 23 square mile private energy facility consisting of 130 windmills each in excess of 400 feet in height. No state regulatory review sought despite the fact that under 16 U.S.C. §1856(a)(2)(B) of the FCMA it is the Commonwealth of Massachusetts that is legislatively charged with regulating the substrata, or seabed of these federal waters. Commonwealth regulatory review is needed to prevent the exploitation of the center piece of a vibrant Massachusetts Cape and Island community. The enormity of the proposed private energy facility, and the fact that it is the first of its kind to be proposed in United States waters both require review. The Responders, through their attorney, respectfully address in this document duties and obligations of Cape Wind under Massachusetts law which will be further articulated.

Please be advised that this office represents the following parties and will be identified as "Responders".

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A **Ten Taxpayer Citizen Group** organized under M.G.L. c.214, §7A. The members of the Ten Taxpayers Group are:

1. Morris I. Johnson, Jr., Chairman, 52 Run Pond Road, West Yarmouth, MA 02664
2. Liam Monahan, 29 Lakeview Drive Centerville, MA 02632
3. Timothy K. Lovelett, 11 Homestead Lane Yarmouth Port, MA 02675
4. Charles Hutchinson, 97 Pine Point Drive, Centerville, MA 02632
5. Loring W. Wordell, Jr., 208 Lincoln Road, Hyannis, MA 02601
6. Elizabeth A. Wordell, 208 Lincoln Road, Hyannis, MA 02601
7. Edward F. Lewis, 97 Edgewater Drive, East Falmouth, MA 02536
8. Steven A. Nims, 22 Eldridge Road, S. Yarmouth, MA 02664
9. Charles A. Whitcomb, 88 Greenwood Avenue, Hyannis, MA 02601
10. Linda M. Whitcomb, 88 Greenwood Avenue, Hyannis, MA 02601
11. Dean F. Meehan, 61 Channel Point Road, Hyannis, MA 02601

Raoul D. Ross ("Ross") is an individual residing at 140 Buckwood Drive, Hyannis, MA 02601. For 52 years he has worked as a commercial fisherman in Nantucket Sound. He is the principal and owner of two corporations, Shannon, Inc., and Carole R., Inc. both of which employ a total of seven employees. These corporations operate three vessels, including the "Jessica and Susan", and the "Carole R.". Ross directs his fishing business on the Horseshoe Shoals, where he fishes for squid and flounder and other fish. He utilizes dragging equipment on the said Shoals, along with scup pots. Ross is the President of the Massachusetts

Fishermens Association, Inc. which is headquartered in Sandwich, MA and consists of approximately 80 members. Ross will be adversely affected, personally and economically and through the corporations in which he operates his fishing business as the result of the construction of the Windmill Project. It poses an intolerable risk and danger to his ability to navigate prudently in the area of the proposed Windmill Project. The construction of the proposed windmills will have an adverse impact on the fishing resources located in the Horseshoe Shoals. Furthermore, the construction of the Windmill Project poses an unusual hazard to navigation which will vitally affect Ross and his employees in as they conduct fishing operations which include the dragging of nets, the placement of weirs on the seabed, and other procedures designed to efficiently target the fish for capture. The construction of the Windmill Project will result in depleted stocks of fish in the area and result in a great loss of economic revenue. The proposed windmills impedes Ross' ability and right to fish and navigate freely in the Commonwealth Tidelands.

The Cape Code Marine Trades Association, Inc. ("CCMTA"), is a Massachusetts trade association organized under M.G.L. c.180 with a usual place of business at P.O. Box 445, Harwich Port, MA 02646. CCMTA, has 103 members. Many of its members have marina facilities located on the Cape and Island Sanctuary coast, which sell, service and berth motor boats and vessels for their customers. These customers include sports fishermen and recreational boating users who use the subject area at Horseshoe Shoals for fishing and recreational boating. The proposed

Windmill Project will pose a substantial threat to the navigation of these boats through the Main Channel. The tripodal base proposed to be used on these windmills will, also, cause substantial injury and damage to the sea bed and impede the sea bed's function as a natural habitat for fisheries and wildlife. The members of CCMTA fear that the proposed windmills will cause their customers to seek alternate coastal locations and vendors in order to avoid the windmills as they threaten their navigation and fishing.

The **Massachusetts Boating and Yacht Clubs Association, Inc.** ("MBYCA") is a Massachusetts association organized under M.G.L. c.180, with a usual place of business at 173 Glenellen Road, Boston, MA 02132-5706. This association consists of 79 boating and yacht clubs, which claim as their membership 75,000 persons. This membership operate sports fishing and other recreational vessels in and around Horseshoe Shoals. Any of this membership operating vessels with a draft of 6' or more will have difficulty operating on the southwest side of Horseshoe Shoals, adjacent to the Main Channel where at low tide the depth can be as low as 1'-2' of water. In sum, these Association members and their counterparts will be adversely affected by the erection of the Windmill Project in the tight waters of the Horseshoe Shoals where such windmills will occupy approximately 28 square miles of space near the Main Channel.

CAPE WIND'S PROJECT PROPOSAL

The Applicant **Cape Wind Associates, LLC**, ("Cape Wind") is a Limited Liability Corporation, with a usual place of business at 75 Arlington Street, Suite 704, Boston, MA 02116.

Cape Wind proposes to meet the demonstrated need for new regionally-significant renewable energy projection by installing and operating a wind-powered electric generating facility comprising of 130 offshore wind turbine generators (WTGs), a centrally located Electrical Service Platform (ESP) and associated transmission cables and equipment. This offshore Wind Park will be capable of producing an average annual output of approximately 170 megawatts (MW) with a maximum deliverable capacity of approximately 454 MW. The Project will utilize offshore wind energy as its renewable fuel source.

The proposed WTGs will consist of 130 windmills, each measuring 470' in height. The proposed energy facility will occupy 28 square miles of Nantucket Sound in the area of the Horseshoe Shoals[1].

Horseshoe Shoals and the location of the proposed WTGs fall under the jurisdiction of the United States according to **United States v. Maine**, 475 U.S. 89 (1986) and the three mile limit articulated therein. Although Horseshoe Shoals falls under United States jurisdiction, it is

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[1]The Nantucket Sound has been re-measured on September 17, 2004. The results are now public and the three mile limit under the Outer Continental Shelf Land Act ("OCSLA") 43 U.S.C. §1331, et seq. It is hoped that the Corps will consider these new dimensions of Nantucket Sound.

surrounded on all sides by waters which fall under the jurisdiction of the Commonwealth of Massachusetts.

The Magnuson Fishery Conservation and Management Act ("MFCMA") 16 U.S.C. §1856(a)(2)(A)(B), gives the Commonwealth of Massachusetts the power to regulate the United States waters within Nantucket Sound for purposes related to the **"conservation and management of fishery resources"** 16 U.S.C. §1801(c)[2].

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[2]The Responders were litigants in the case of ***Ten Taxpayers v. Cape Wind***, 373 F.3d 183 (1st Cir. 2004). In that case, the Circuit Court, in describing Federal jurisdiction in Nantucket Sound under ***U.S. v. Maine***, 475 U.S. 89 (1986) ("***Maine II***"), stated: "The Magnuson-Stevens Act does not create this "exclusive economic zone," but rather incorporates by reference the 200-nautical mile exclusive economic zone that President Reagan created by executive order in 1983. See 16 U.S.C. §1802(11); Proclamation NO. 5030, 48 Fed. Reg. 10,605 (Mar. 14, 1983). Congress, however, modified that zone for purposes of the Magnuson-Stevens Act, defining it to include only that portion of the original exclusive economic zone that is seaward of the SLA boundary of state jurisdiction. See, §1802(11); ***Massachusetts ex rel Dev. of Marine Fisheries v. Daley***, 10 F.3d 23, 25 (1st Cir. 1999)."

This case involved the Responders' claim for removal to the State Court because a federal question was not involved under the above quoted MFCMA. In Its narrow ruling against State Court jurisdiction, the Circuit Court stated that interpreting the provisions of the Outer Continental Shelf Act ("OCSA") 43 U.S.C. §1333(a)(2) _____ federal law is exclusive in its regulation in this area and state law is adopted as surrogate law. This holding, however, does not diminish the full force and affect of the application of MFCMA, giving the Massachusetts Fisheries jurisdictional control over Nantucket Sound.

The Circuit Court also granted standing to the Responders in FN7, where it states: ". . . A Massachusetts statute expressly allows groups like Ten Taxpayer to bring suit to enjoin environmental harms under any "statute, ordinance, by-law or regulation the major purpose of which is to prevent or minimize damage to the environment," M.G.L. c.214, §7, and the plaintiffs here (all of whom reside in tows bordering Nantucket Sound and many of whom work in the Sound itself) allege sufficiently concrete and personal injuries from Cape Wind's activities to support standing. In addition, no party has suggested that the appeal is moot because the SMDS has already been built; indeed, Ten Taxpayers says that Massachusetts regulatory clearance of the project remains both available and required."

The Commonwealth's statutory arm to regulate the conservation and management of fishery resources is M.G.L. C. 130 and regulations thereunder.

The Commonwealth's second statutory arm to regulate the conservation and management of fishery resources is M.G.L. c.132A, §13-18 (CISL).

M.G.L. C. 130 §1 (emphasis added) states that M.G.L. C. 130 as well as the rules and regulations promulgated by the Division of Marine Fisheries, **"apply to all marine fisheries and fish *within the jurisdiction of the commonwealth."***

Since the MFCMA cedes to the Commonwealth the power over the conservation and management of fishery resources to the waters located within Horseshoe Shoals, the provisions of M.G.L. C. 130 regulate these waters for that purpose.

The Commonwealth's Coastal Fisheries Conservation and Management, 322 CMR 8:02 under M.G.L. C. 130 reflect the MFCMA's cede of power in defining Nantucket Sound as:

> **"all waters which are within an area encompassed by a straight line down from the Great Point of Nantucket to Mononomy Point in Chatham; thence following the shoreline to Succonnosett Point in Mashpee; thence following a straight line to Cape Pogue in Edgartown; thence following a straight line to Madaket Point in Nantucket; thence following the shoreline to Great Point in Nantucket."**

M.G.L. C. 130 §16 states, **"any occupation under this Chapter of tide waters or any work done therein, shall be subject to the pertinent provisions of Chapter ninety-one."**

With an average tide of 3 feet, Horseshoe Shoals is contained within **"tide waters"** as the term is has been interpreted in dicta by the

Massachusetts Supreme Judicial Court. ***Commonwealth v. Vincent***, 108 Mass 441, 447 (1871). The ***Vincent*** Court interpreted **"tide waters"** to be synonymous with "navigable waters" or waters **"wherever the ebb and flow of the tide from the sea is felt."**

M.G.L. C. 130 §16 establishes its own jurisdiction to license and permit activities in Horseshoe Shoals using the permitting procedures contained within M.G.L. c.91. Indeed, M.G.L. c.130 subjects all of Nantucket Sound to M.G.L. c.91 permitting requirements under the state's marine management authority[3].

310 C.M.R. 9.03, establishes the scope of the Department of Environmental Protection's permitting jurisdiction under Chapter 91. It provides:

> **"Written authorization in the form of a license, permit, or amendment thereto must be obtained from the DEP before the commencement of one or more of the activities specified in 310 C.M.R. 9.03(2) and (3) or 310 C.M.R. 9.05...**

310 C.M.R. 9.05 provides in relevant part:

> **"Except as provided in 310 C.M.R. 9.05(3) an application for a license or license amendment shall be submitted to the Department for the following activities involving work on or use of fill or structures:**
>
> > **(a) Any construction, placement, excavation, addition, improvement, maintenance, repair, replacement, reconstruction, demolition or removal of any fill or structures not previously authorized or for wich a previous grant or license is not presently valid."**

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[3]Despite differences of opinion concerning this area, there is no dispute that Cape Wind, at the very least, needs a Chapter 91 Permit for the cables that need to be hooked up to the 130 WTGs.

The erection of the WTGs without a permit properly issued in accordance with M.G.L. c.130 and the specific provisions outlined in M.G.L. c.91 will result in a violation of M.G.L. c.91, §23 which would make such WTGs a nuisance per se. M.G.L. c.91, §23 states:

> "Every erection made and all work done within tide water... not authorized by the general court or by the department, if a license is required as hereinfore provided, shall be considered a public nuisance. Whoever creates such nuisance, (a) shall be punished by a fine of not more than twenty-five thousand dollars for each day such nuisance occurs or continues., or by imprisonment for not more than one year, or both by such fine and imprisonment; or (b), shall be subject to a civil penalty of not more than twenty-five thousand dollars for each day such nuisance occurs or continues. The attorney general or the district attorneys within their respective district shall, at the request of the department, institute proceedings to enjoin or abate such nuisance, or to restrain the removal of material from any bar or breakwater of any harbor."

M.G.L. c.132A, §12C (CISL)states **"The department {DEM[4]} shall integrate its implementation, administration and enforcement of the act with other programs for the protection of the public health, safety, welfare and the environment."** CISL §12C would require the administration and regulation of Nantucket Sound to be integrated with the regulatory framework of M.G.L. c.130 and its administration over fisheries conservation and management.

M.G.L. c.132A, §14 (CISL) states that the DCR has care, control, and oversight over the Cape and Island Sanctuaries and is empowered to protect the same from **"any exploitation, development or activity that**

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[4]The Department of Environmental Management has been statutorily changed. The new department is known as The Department of Conservation and Recreation ("DCR").

would significantly alter or otherwise endanger the ecology or appearance of the ocean, seabed, or subsoil or the Cape Cod Natural Seashore".

M.G.L. c.132A, §15 (CISL) states: **"Except as otherwise provided herein, the following activities shall be prohibited in an ocean sanctuary: the building of any structure on the seabed or under the subsoil..."**

M.G.L. c.132A, §16 (CISL) provides limited exceptions to CISL §15. One such exception under which the WTGs could arguably be included is, **"temporary educational and scientific activities jointly permitted by appropriate state agencies."** No such additional permitting has been undertaken pursuant to CISL §16.

M.G.L. c.132A, §16 (CISL) recognizes that the Department of Fisheries plays a role in approving activities in Nantucket Sound. It allows:

> **"the harvesting and propagation of fish and shellfish in all forms so long as the DCR and the Department of Fisheries, Wildlife and Environmental Law enforcement are satisfied that such activities are carried on in accordance with sound conservation practices, . . ."**

Requiring multiple permits for the erection of the WTGs suggests no inconsistency between a federal navigation permit and state issued environmental permits. Indeed, the Permit issued by the Corps of Engineers pursuant to the RHA for the Scientific Measuring Devise Station ("SMDS") explicitly states: "This permit does not obviate the need to obtain other Federal, state or local authorizations required by law." Permit No. 199902477. Rather than creating a comprehensive regulatory

scheme, as would be necessary to support federal jurisdiction, the RHA instead explicitly states that other state and local laws are fully effective.

Furthermore, in the interest of comity and federalism, a case arising under a Massachusetts statute is appropriately decided by a Massachusetts court[5]. ***Dept. of Banking and Finance, State of Florida v. U.S. Trust Corp.***, 610 F. Supp. 919 (D.C. Fla. 1985). In the ***Department of Banking*** case, the federal district court recognized the intent of Congress to allow the Florida Legislature to choose whether or not to open its borders to out-of-state banks. Therefore, the District Court allowed Florida courts the opportunity to interpret the resulting law enacted by the Legislature. Similarly, Congress expressly desired Massachusetts to regulate fisheries in the waters of Nantucket Sound. Like the ***Department of Banking*** Court, this Court should allow Massachusetts courts the opportunity to interpret and apply the resulting state legislation as an issue of first impression.

Responders assert two state law claims. First, before building the WTGs Cape Wind should be required to obtain a Chapter 91 license. Second, Cape Wind should request Chapter 132A approval.

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[5]Although in ***Ten Taxpayer v. Cape Wind***, 373 F.3d 183 (1st Cir. 2004) respectfully disagreed with respect to the SMDS, the same Court has recently opined in the Alliance case on the SMDS #03-2604 (1st Cir) 2005 at p.19 "We do not here evaluate whether congressional authorization is necessary for construction of Cape Wind's proposed wind energy plant, a structure vastly larger in scale, complexity and duration, which is not at issue in this present action."

The Commonwealth manages the fisheries throughout Nantucket Sound; in state waters pursuant to its inherent authority as sovereign and in federal waters pursuant to its authority conferred under the FCMA.[6]

Responders ask the question whether Commonwealth fisheries regulations require Cape Wind to obtain a Massachusetts license before building its WTGs in the federally-owned waters that fall within the Commonwealth's jurisdiction.

The Commonwealth manages the fisheries within its jurisdiction under M.G.L. c.130. M.G.L. c.130 applies **"to all marine fisheries and fish within the jurisdiction of the commonwealth . . ."** M.G.L. c.130, §1 (2002). Because the FCMA **"extend[s] the jurisdiction and authority of Massachusetts] with respect to the body of water commonly known as Nantucket Sound, to the pocket of water west of the seventieth meridian west of Greenwich,"** 16 USC §1856(a)(2)(B), any reference to jurisdiction under M.G.L. c.130 automatically encompasses all waters of Nantucket Sound, unless explicitly excluded.[7]

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[6]It is undisputed that the federal government holds title to the seabed of Nantucket Sound beyond the three-mile territorial limits of the state, as determined by ***Maine***. It is further undisputed that Congress through the FCMA granted the Commonwealth the authority to manage the fisheries in these federal waters. See 16 U.S.C. §1856(a)(2)(b) provides, "For purposes of this Chapter . . ., the jurisdiction and authority of a State shall extend with respect to the body of water commonly known as Nantucket Sound, to the pocket of water west of the seventieth meridian west of Greenwich."

[7]Other terms found in M.G.L. c.130 support this interpretation. For example, state law defines "coastal waters" as "all waters of the commonwealth within the rise and fall of the tide and the marine limits of the jurisdiction of the commonwealth, but not waters within or above any fishway or dam nor waters above any jurisdictional boundary legally established pursuant to [M.G.L. c.130 § 5]." M.G.L. c. 130 § 1 (emphasis

The issues presented by the Responders' lawsuit require only interpretation of state law. M.G.L. c.130 incorporates the permitting and licensing requirements of M.G.L. c.91. M.G.L. c.130, §16 provides that **"[a]ny occupation under this Chapter of tide waters[8] or any work done therein, shall be subject to the pertinent provisions of Chapter 91."** M.G.L. c.130, §16. M.G.L. c.91, in turn, authorizes the Commonwealth's Department of Environmental Protection ("DEP") to promulgate regulations governing the use of state waterways. Under M.G.L. c.91, DEP is responsible for the **"general care and supervision of the harbors and tide waters within the commonwealth . . . in order . . . to protect and develop the rights and property of the commonwealth in such interests of the commonwealth in areas described in areas described herein in issuing any license and permit authorized pursuant to this Chapter."** M.G.L. c. 91, §10.

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added). The "marine limits of the jurisdiction of the commonwealth" is clearly distinct from the "marine fisheries and fish within the jurisdiction of the commonwealth" because the marine fisheries and fish within the jurisdiction of the Commonwealth are broader by operation of federal law.

[8]Although tide waters is not defined under Massachusetts law, it is generally defined as waters subject to the rise and fall of the tides. Shalowitz, A.L., 1964. Shore and Sea Boundaries - with special reference to the interpretation and use of Coast and Geodetic Survey Data. U.S. Dept. of Commerce Publication 10-1, Two Volumes, U.S. GPO, Washington, D.C. The Supreme Court of Massachusetts in defining the term "navigable waters," has stated that it has been treated as "synonymous with 'tide waters,' being waters, whether salt or fresh, wherever the ebb and flow of the sea is felt. . . ." ***Commonwealth v. Vincent***, 108 Mass. 441, 447 (1871). The Coast Guard maintains daily records of the tides throughout Nantucket Sound, including Horseshoe Shoal, which indicate that there is as much as a three-foot difference between high and low tides in the area.

Responders ask the second question whether the Commonwealth's Ocean Sanctuary Law required Cape Wind to obtain Commonwealth approval before building its WTGs in the federally-owned waters that fall within the Commonwealth's jurisdiction.

M.G.L. c.132A, §13(c) delineates the waters of the Cape and Islands Ocean Sanctuary as including all the waters of Nantucket Sound. In furthering its aim of protecting these waters, M.G.L. c.132A §15, prohibits among other activities, **"the building of any structure on the seabed or under the subsoil".** Notwithstanding, M.G.L. c.132A, §16 provides a number of exceptions to this blanket prohibition so long as the excepted activities have first been properly authorized by the Commonwealth through permitting procedures. Notably, the language of M.G.L. c.132A, §16 provides no exception for the construction of the disputed WTGs. With no such excepting language, Cape Wind 's construction of its WTGs could be constituted a per se violation of M.G.L. c.132A even with Corp permitting approval.

As the foregoing discussion demonstrates, the above are both state law questions. Whereas the U.S. Federal District Court has acknowledged, "the Commonwealth has exclusive regulatory jurisdiction," over the federal waters of Nantucket Sound, ***Ten Taxpayers***, 278 F. Supp.2d at 101, USACE-NED should decide whether M.G.L. c.130 and M.G.L. c.132A are applicable regulatory statutes for the construction of Cape Wind's WTGs and require Cape Wind to apply for the same.

THERE IS NO REGULATORY FRAMEWORK IN PLACE THAT COMPLETELY PREEMPTS THE COMMONWEALTH'S FISHERIES JURISDICTION

Cape Wind's attempts to wield the Outer Continental Shelf Land Act ("OCSLA") 43 U.S.C. §1301 et seq., and the Coastal Zone Management Act ("CZMA") 16 U.S.C. §1451 et seq., as totally pre-empting the Commonwealth's regulation of the federal waters of Nantucket Sound defies the express language of the FCMA despite the First Circuit Court's opinion to the contrary, applied only to Cape Wind's SMDS.

As duly noted by ***Metheny v. Becker***, 352 F.3d 458, 460 (1st Cir.2003) Congress' grant of regulatory power to a state necessarily rebuts any presumption that Congress intended to totally pre-empt a state's regulation of a field. The ***Metheny*** Court noted that the Telecommunications Act specifically **"contemplated the application of at least some local procedures in zoning decisions concerning wireless communications towers..."** Therefore the Court determined "there is little reason to believe that, in passing the Act, Congress has so completely preempted plaintiffs' claims that the artful pleading doctrine is called into play (at least on complete preemption grounds -- see generally infra). See, e.g., ***Beneficial Nat'l Bank v. Anderson***, 539 U.S. 1, 156 L. Ed. 2d 1, 123 S. Ct. 2058, 2064 (2003); ***Metropolitan Life Ins. Co. v. Taylor***, 481 U.S. 58, 65-66, 95 L. Ed. 2d 55, 107 S. Ct. 1542 (1987); ***Avco Corp. v. Int'l Ass'n of Machinists & Aerospace Workers***, 390 U.S. 557, 560, 20 L. Ed. 2d 126 (1968); see also ***TCG N.Y., Inc. v. City of White Plains***, 305 F.3d 67, 76 (2d Cir.), cert. denied, 538 U.S. 923, 155 L. Ed. 2d 314, 123 S. Ct. 1582 (2002)." ***Metheny***, at 460.

Applied to the facts at bar, the FCMA's grant of "jurisdiction and authority" (see 16 U.S.C. §1856 (a)(2)(B) of the disputed waters to the Commonwealth obviously contemplated the application of state regulatory procedures to the federal waters of Nantucket Sound for the full purposes of the Act. Therefore, Cape Wind's assertion that the OCSLA and CZMA completely pre-empt state regulation of these waters is patently absurd. This absurdity is magnified when one views that Congress' passage of the OCSLA predates Congress' grant of jurisdiction to the Commonwealth to regulate the federal waters of Nantucket Sound for the purposes of the FCMA. Congress, in other words, knowing full well what protections and rights the OCSLA secured for the federal government, nevertheless chose to cede authority and jurisdiction over the federal waters of Nantucket Sound for all purposes of the FCMA. In ***Ten Taxpayer v. Cape Wind***, 373 F.3d 183 (1st Cir. 2004), the Court does not draw a contrary conclusion in the SMDS issue. It just wants to keep Federal Court jurisdiction which may not apply to other state law applications within the three mile limit as they pertain to Cape Winds WTGs. Where the separate and cumulative effect of 16 U.S.C. §1801(b)7, 16 U.S.C. §1853(b)(12), and 16 U.S.C. §1855 (b)(4)(A), require the Commonwealth to engage in an independent review of projects authorized by federal permits potentially affecting such habitats, Congress explicitly intended to have an applicant submit to the Commonwealth's authority to ensure conformance with pertinent fisheries management regulations.

Notwithstanding the instruction given by the ***Methany*** court, Cape Wind's allusion to the CZMA is the proverbial "red herring". First, not

federal waters of Nantucket Sound, it explicitly preserves it. In 16 U.S.C. §1456(e) entitled "Construction With Other Laws," the CZMA states in part: **"Nothing in this title shall be construed- (1) to diminish either federal or state jurisdiction, responsibility, or rights in the field or planning, development, or control of water resources submerged lands or navigable waters."** This language would confirm the Commonwealth's jurisdiction over the federal waters of Nantucket Sound for all purposes related to the FCMA.

Second and ultimately damning to Cape Wind's anticipated allegations, the CZMA's framework clearly identifies why the CZMA cannot be wielded to pre-empt state regulation. The CZMA is a federal law that operates only to the extent of federal permitting schemes. In other words, it imposes its provisions only upon federal agencies seeking to issue federal permits pursuant to federal permitting schemes.

In the facts at bar, Cape Wind seeks to obtain a navigability permit from the Army Corps of Engineers pursuant to §10 of the Rivers and Harbors Act of 1889, 33 U.S.C. §§401 (1889) for the windmills. Pursuant to 16 U.S.C. §1456(c) of the CZMA, the Corps is not allowed to issue a Permit to Cape Wind for its Windmill Project without first adhering to the CZMA and completing the consistency review prescribed by that provision.[11] What Cape Wind may wish to ignore, is that the CZMA is a restriction *only upon federal agencies* that exercise permit granting power. In short, the CZMA has no applicability to state authorities seeking to issue a permit 16 U.S.C. §1456(c).

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[11] 16 U.S.C. §1456(c) applies the provisions of the CZMA solely to "Each federal agency activity within or outside the coastal zone..."

Where the FCMA has placed regulatory jurisdiction over the federal waters of Nantucket Sound with the Commonwealth, no federal agency has the power to grant a permit citing conformance with the Commonwealth's fisheries management program. Such permission must inevitably come not from a federal agency, but an arm of the Commonwealth. Where the Commonwealth has clear regulatory power over the fisheries management of the federal waters of Nantucket Sound for the full purposes of the FCMA, Cape Wind will violate state laws in erecting the disputed WTGs without first seeking the appropriate permits, other than the Corps permit. Cape Wind's reliance on the OCSLA and the CMZA to avoid the result of these violations should be clearly recognized and articulated by the Corps in these proceedings.

The legend of the "1992 Ocean Sanctuaries of Massachusetts" published by the Commonwealth's Executive Office of Environmental Affairs and referred to by Cape Wind in previous litigation on the Corps permit for SMDS, in truth, confirms the Responders position that the Commonwealth regulates the disputed waters of Nantucket Sound for the purposes of the FCMA. The legend clearly states, **"{T]he Magnuson Fishery, Conservation and Management Act, 16 U.S.C. 1856 provides special jurisdiction to Massachusetts fisheries management in this central area of Nantucket Sound."** In light of the clear unambiguous language of the FCMA, and the Commonwealth's own conception of its regulatory authority under the FCMA, it cannot be reasonably stated that fisheries jurisdiction over the federal waters of Nantucket Sound lie with any other authority other than the Commonwealth. Under the FCMA 16 U.S.C. §1801(b)7 and 16 U.S.C. §1855(b)(4)(A), it is the Commonwealth's duty to

evaluate federally permitted activities for compliance with fisheries management programs in force.

EXPERT OPINIONS

Responders have had the benefit of professional and expert opinions from **Captain Morris I. Johnson, Jr.**, who is Chairman of the Ten Taxpayer Citizen Group and **Captain Barry O. Fuller.**

Captain Johnson's background includes the following:

Captain Johnson has maintained a 100-ton U.S. Coast Guard Coastal License to Operate Motor Boats and Vessels for 45 years. In 1955, he captained the Searode which was the first roll-off/roll-on ship shuttle service for heavy trucks on Nantucket Sound. This first of its kind transportation of oil trucks and other trucks filled with commercial products introduced a new way for vessels to transport goods by packing products in trucks and rolling them on and off the Searode which was based in the Village of Hyannis in the Town of Barnstable in the Inner Harbor of Hyannis. This vessel was built by the Blount Marine Corporation of Warren, RI and really represented the first commercial water transport vessels on Nantucket Sound. The vessel drew 6.5' of water when it was fully loaded, and its superstructure was 14' high off the water. In those days, it was powered by a 220 HP General Motors Diesel Engine. This experience afforded him the opportunity to understand the Nantucket Sound and the hazards of navigating this vessel over the water sheet of Nantucket Sound, not only in favorable seas, but also in unfavorable seas. The Searode became a lifeline for Nantucket residents in receiving goods and products. This initial vessel was able

to handle up to three (3) trucks and tractor trailers and the dynamics of the load and the potential shifting thereof in sever seas and waters of Nantucket Sound gave him the initial experiences that have served him well for years thereafter and in which he have navigated all kinds of commercial vessels, fishing and charter boats and head boats on the waters of Nantucket and Vineyard Sounds.

In 1964, Captain Johnson became associated with the Town of Yarmouth and its Natural Resources Department and built the Department as Director of the Yarmouth Department of Natural Resources until 1996. In that capacity, he gained great knowledge of seabeds and shell fish life and became very familiar with dredging projects and the movement of sand in our coastal waters.

As Director of the Yarmouth Department of Natural Resources, he had direct communication with the U. S. Fisheries and Wild Life Service, the Department of Environmental Management and the Massachusetts Division of Marine Fisheries, the Department of Environmental Protection and the Massachusetts Department of Endangered Species, as well as the Massachusetts Division of Water Ways.

Captain Johnson has had occasions to testify before the Committees on Natural Resources and Ways and Means of the Great and General Court on subjects of dredging, Chapter 91 Licenses for floats, wharves and other marine improvements and on various subjects of shell fish life. He, also, worked closely with the regulatory officials of Massachusetts Marine Fisheries and conducted numerous shell fish programs under substantial grants from the Commonwealth of Massachusetts.

He is very familiar with the Commonwealth's program of endangered species and has worked closely with those governmental officials. While Director of Natural Resources for the Town of Yarmouth, he still conducted activities with fishing vessels on Nantucket Sound and continued to be acquainted with all of the up-to-date equipment and difficulties of navigation in Nantucket Sound.

Captain Johnson is an appraiser of motor boats and vessels and have conducted that business for more than twenty (20) years. In pursuit of this activity, he has taken various courses and become extremely familiar with issues involving the safety of vessels, construction of commercial and recreational vessels with a great emphasis upon the engineering of sports fishing vessels and other vessels equipped to catch fish in the Shoals of Nantucket Sound.

Captain Johnson has a great familiarity with Nantucket Sound, and he can positively state that there are no **structures** in Nantucket Sound[iii] and there have never been any in his lifetime, except for Bishop Clerk Light House build in the 1800's off a ledge on Bishop Clerk Shoals off of Great Island. That structure is no longer there, having been removed and replaced by a day beacon on top of the old foundation in the 1950's.

He is also familiar with the fact that the Cape and Island Sanctuary Law, M.G.L. c.213A, §13(c) through §18 prohibits any **structure** from being erected in the Sound.

[iii] Besides the SMDS erected in Horseshoe Shoals in which he led the opposition to such structure, as Chairman of the Ten Taxpayer Citizen Group under M.G.L. c.214, §7A, through the Superior Court of the Commonwealth, which granted an injunction to the SMDS and after removal of the case to the U.S. District Court on the issue of a federal question, through the 1st Circuit Court of Appeals and on a Writ of Certiorari to the U.S. Supreme Court, which was denied in January, 2005.

As the Director of the Department of Natural Resources for the Town of Yarmouth, and as a knowledgeable Captain of motor vessels traversing the Sound, Captain Johnson was familiar with the Law when it was enacted and has attended hearings concerning the issues which have come up under the Cape and Island Sanctuary Law since its enactment in 1976. He has testified that he was struck by the enormity of this proposed Windmill Project and that he is familiar with its location in the Horseshoe Shoals adjacent to the Main Channel.

Captain Johnson testified that he has a serious concern that this Windmill Project will present a navigational hazard, not only to commercial vessels traveling in the channel, but also to recreational vessels and commercial and sport fishermen.

Captain Johnson has testified about ice conditions which exist outside from Nantucket and Martha's Vineyard and from the Mainland to the Horseshoe Shoals extending about 6 to 8 miles. These ice conditions are documented from the late 70's or early 80's through the Woods Hole Oceanographic Institute and Mariners in the area, including records from the Woods Hole, Nantucket and Martha's Vineyard Steamship Authority. Such conditions will have a devastating effect on this Windmill Project. The strong current when pushing ice masses against the windmills will destroy them. The 36" diameter poles forming the tripod holding the windmills cannot withstand the devastation which floating ice will create.

Nantucket Sound, because it is engulfed by land masses around it, namely the mainland, including the portion of Popponessett Beach, Cotuit and Osterville, near and around the Horseshoe Shoals and Martha's

Vineyard Island and even Nantucket Island, create a situation in which precipitous fog can descend in the area at a moment's notice, creating navigational hazards in and of itself, apart from the general and frequent fog conditions which frequently pervade Nantucket Sound and the Horseshoe Shoals during all season.

He has, also, testified that, during the Summer, Spring and Fall, the motor vessels operated by the Hy Line to both Martha's Vineyard and Nantucket require their respective Captains to compile Logs of their ships being operated in Nantucket Sound with wind direction and velocity at various points along their respective routes. The vessels operate from Hyannis to Nantucket and from Hyannis to Oak Bluffs, Martha's Vineyard. The Oak Bluffs run runs past the Horseshoe Shoals[4].

Captain Johnson testified that over the years, he has marveled at the technology that the Woods Hole Oceanographic Institute has brought into the marine world. Indeed, their first experimentation of understanding the characteristics of the seabed took place in Martha's Vineyard and Nantucket Sounds. They are a reservoir of information and new technology to determine every aspect of the seabed of Horseshoe Shoals and can further sharpen any information by use of torpedo-like vehicles called, **REMUS** which allow sea mapping to be made easier and which contain a navigation transducer and transmits sound waves to the transponders. This information has not been made available by Cape Wind and sought by the Corps. It should be developed by the Corps in this process.

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[4]A fast ferry will soon traverse over these waters at 40 M.P.H., creating a whole new safety problem.

In his experience as Director of the Department of Natural Resources for the Town of Yarmouth, he has become familiar with the requirements of the Migratory Bird Treaty Act ("MBTA") as well as the Endangered Species Act ("ESA") for the State and Federal Governments, the Coastal Zone Management Act ("CZM"), the Marine Mammal Protection Act ("MMPA"), the Magnuson Fishery Conservation and Management Act ("MFCMA") and the Cape and Island Sanctuary Law ("CISL"). He is also familiar with the Massachusetts Chapter 91 program which has been on the books of the Commonwealth since 1867, which program licenses all structures in the waters of the Commonwealth, including private and commonwealth tidelands.

He is further familiar with the works of the Rivers and Harbors Act of 1899 and the process in which the U. S. Army Corps of Engineers, as a permitting agency, defers to the various state agencies of the Commonwealth of Massachusetts which have jurisdiction over permitting applications.

Captain Johnson has testified that he was familiar with the fact that, in Nantucket Sound, the Commonwealth of Massachusetts and the U.S. Government have made no provisions for the control and ownership of any portion of Nantucket Sound for any private development and that when the Cape and Island Sanctuary Law was enacted, it prohibited any exploitation development or activity that would significantly alter or otherwise endanger the ecology or the appearance of the ocean, the seabed or subsoil of any ocean sanctuary.

He further testified that he was familiar with the fact that the Cape and Island Sanctuary Law states that:

> **"The building of any structure on the seabed or under the subsoil, the construction or operation of offshore or floating**

electrical generating stations are specifically and explicitly prohibited by law."

Based upon his extensive experience in navigating the waters of Martha's Vineyard and Nantucket Sounds as a licensed captain under the Rules of the Coast Guard for vessels up to 100 ton, and through his experience in other endeavors on the Nantucket water sheet, including marine activities at the Horseshoe Shoals, and as a result of his knowledge of MBTA, ESA, CZMA, MMPA, MFCMA, and CISL, he concludes that the WTGs are not needed and would be an extreme hazard to navigation in the area in which it is situated and, as such, that this could not be built in compliance with applicable state law and the CZMA. The applicant or the Corps could not comply with the dictates of MBTA, ESA, CZMA, MMPA, FCMA and particularly the CISL in permitting this Windmill Project. Accordingly, the U.S. Army Corps of Engineers' permit for such Windmill Project should be denied.

Captain Johnson is further troubled by the cabling apparatus pursuant to Cape Wind's Windmill Project which will be required to be approved under M.G.L. c.91 as a structure within the Three Mile Limit, so called. This cable will gain entrance through Hyannis Port and the Hyannis Channel traversing by Egg Island, one of the most fertile shellfish areas on Cape Cod and on down through the shallow waters of Lewis Bay to the landfall near Englewood Beach. The landfall area is completely subject to the Wetlands Protection Act and requires Conservation Approval by the Town of Yarmouth's Conservation Commission. As the former Director of the Department of Natural Resources and pursuant to his extensive experience as described herein, Captain Johnson has testified on numerous times on the delicacy and the balance of the

fragile environment, above mentioned, for procreation of shellfish. There is no question that Captain Johnson has testified that the food chain which creates the procreation of shellfish will be seriously affected, if not destroyed by the insertion of cables in the Hyannis Harbor, Lewis Bay area, as set forth in this application of Cape Wind.

Captain Johnson has not only had experience on these issues with the Department of Marine Fisheries for the Commonwealth of Massachusetts, but he has dealt with the Secretary and his agents for FCMA. In this case, the language of FCMA at 16 U.S.C.§1856(a)(2)(B) does not direct the Commonwealth to follow the regulatory schemes, the protocols or procedures of the FCMA as they have been developed for the Secretary of Commerce and the Regional Fisheries Council. Instead, the language calls for a degree of self-direction. Plainly stated, Captain Johnson has testified that the Commonwealth has been left to determine its own regulatory schemes, protocols and procedures for effecting the procedures of the FCMA. In this regard, the compelling nature of saving the food chain for shellfish propagation mandates and declares that any cable burrowing in Lewis Bay, Hyannis Harbor or within the Three Mile Limit, traversing over the areas preceding Horseshoe Shoals is an environmentally protected area, forbidding any cable insertion in those fragile and protected areas.

Captain Barry O. Fuller's background includes the following:

Captain Fuller is currently Managing Director and Chief Operating Officer of Marcon International which was established in 1995 to provide specialized consulting service to commerce and industry regarding maritime affairs in the water transportation services and operations.

He is a U.S. Coast Guard Licensed Master with qualifications to master vessels of any gross tonnage in the U. S. inland waters. He has been a Licensed Master since 1967, and a qualified Coastal Pilot with various pilotage endorsements from Boston, Massachusetts to Newport, Rhode Island and Nantucket and Vineyard Sounds.

Captain Fuller has mastered various commerce and ferry vessels in Vineyard and Nantucket Sounds for over thirty (30) years, including fifteen (15) years as Master with the Woods Hole, Martha's Vineyard and Nantucket Steamship Authority. From 1988 to 1994, he was General Manager and Chief Operating Officer for the Woods Hole, Martha's Vineyard and Nantucket Steamship Authority. He, also, served as General Manager of the Hy Line which operates, from the Ocean Street docks in Hyannis, a ferry service to Martha's Vineyard and Nantucket, from 1968 to 1972.

Captain Fuller holds a Degree of Bachelor of Science in Nautical Science from the Massachusetts Maritime Academy. He is a former Chairman and 10 year Member of its Board of Trustees, and he was appointed by His Excellency Governor Paul Cellucci as the Cape Cod and Island Representative to the Massachusetts Seaport Council.

Pursuant to his role at Marcon International, he has served recent and current clients pursuant to their needs as follows:

Commonwealth Electric
2421 Cranberry Highway
Wareham, MA
Tel: 1-800-642-7030

RE: to installation of submerged power supply cable from the mainland to Martha's Vineyard.

Freedom Cruise Lines
702 Rt. 28
Harwich, MA 02645
Tel: 508-432-8999

RE: operation expansion of privately owned ferry service, Cape Cod to Nantucket, MA.

Scituate Commuter Express
Scituate, MA
Tel: 617-544-3573

RE: operation/evaluation of State-sponsored commuter ferry service - Scituate to Boston.

Hyannis Whale Watch Cruises
Barnstable Harbor
Barnstable, MA 02361
Tel: 1-800-287-0372

RE: vessel design evaluation for expansion of private excursion operation.

Island High Speed Ferries, LLC
9 Market Place
Narragansett, RI 02882
Tel: 401-454-0700

RE: expert testimony related to application for a license to operate high speed ferry service between Galilee and Block Island, Docket No. 98 MC 16, Rhode Island Division of Public Utilities.

Hornblower Marine Service/Fox Navigation
675 VFW Highway #353
Boston, MA
Tel: 617-325-1946

RE: consultation on startup of passenger service from New London, CT to Vineyard Haven, MA - ***MV SASSACUS***

Cape Cod Commission
Barnstable, MA
Tel: 362-3828

RE: Water Transportation Feasibility Study Task #3

Marine Technical Issue Study
Northeast Marine Institute
66 Spring Street
New Bedford, MA

RE: development of high-speed vessel simulator training facility.

Packer Marine, d/b/a Tisbury Towing
South Yarmouth, MA
Tel: 508-432-2121

RE: expert testimony related to barge grounding incident and subsequent claim for damages.

Hyde Marine
2200 Eller Drive, P.O. Box 13038
Ft. Lauderdale, FL 33316
Tel: 954-524-4200, Ext. 626

Maritime Officers Protective Syndicate ("MOPS")
31 St. James Avenue
Boston, MA
Tel: 617-556-0007

RE: expert witness testimony regarding grounding incident **USCG v. Baarsvik**

Gloria M. Zeimowicz
490 Westminster Street, Suite 204
Providence, RI 02903
Tel: 401-545-0700

RE: expert witness testimony, **Zeimowicz v. USCG**

Seabulk Off Shore of New England
98 Front Street
New Bedford, MA
Tel: 508-963-1300

RE: port captain services for Ro/Ro Freight Operation, New Bedford and Vineyard Haven.

Marcon International has also served other clients including issues pertaining to Boston and other seacoast communities, both on the Atlantic and Pacific Oceans. Captain Fuller currently serves as Captain/Port Manager for Freedom Cruise Line, operating ferry passenger services between Harwichport and Nantucket, MA. He is an expert on issues concerning water transportation and water safety and has extensive knowledge with regard to all issues pertaining to Nantucket Sound and its environs.

As indicated, Captain Fuller has have had more than thirty-five (35) years of experience in actual operation and management of vessels

traversing the water sheet of Nantucket and Vineyard Sounds. He is extremely familiar with all navigational marks which are not considered structures under the term "**structure**" used in the Cape and Island Sanctuary Law set forth in M.G.L. c.213A, §13(c) through §18. In his years of familiarity with all aspects of Nantucket Sound he can emphatically state that there are no **STRUCTURES** on the water sheet of Nantucket Sound as described in M.G.L. c.1, §3 and in the Cape and Island Sanctuary Law, M.G.L. c.213A, §13(c), except for the highly contested SMDS erected by Cape Wind in Horseshoe Shoals. However, in the early 1990's to alert vessels that there was a ledge at Bishop Clerk Shoals off of Great Island, a day beacon was placed at that location.

Captain Fuller has testified that the Main Channel off of Horseshoe Shoals is a certified channel for deep draft ocean going vessels coming from Vineyard Sound down into the Main Channel and heading out toward to the great round shoal and off into the Atlantic Ocean. Frequently, cruise ships which moor off of Martha's Vineyard and some off of the Island of Nantucket use this Main Channel in traversing the water sheet of Nantucket Sound out into the Atlantic Ocean, as described above. In fact, it was this certified Channel that was used by ocean going vessels before the Cape Cod Canal was built. A deep draft ocean vessel can be considered to draw around 30' from the water line to keel.

In Captain Fuller's opinion, as he has testified, there is absolutely no need for the Windmill Project, because safety issues completely override any benefit gained from wind energy. Cape Winds has failed to really scan the ocean bed at Horseshoe Shoals. It could have easily obtain from the Woods Hole Oceanographic Institute its expertise

in setting up a remote environmental monitoring unit for a group of machines known in the scientific **circles as Autonomous Underwater Vehicles (or "AUVs")** developed by the Institute which are controlled through a cable linked to a ship and are known as remotely operated vehicles called **REMUS** which move about on their own, making it very much more portable, precise and adaptable. This torpedo-like vehicle allows sea mapping to be made easier, contains a navigation transducer and transmits sound waves to the transponders. It also has side scan transducers and other environmental sensors which can obtain all necessary data concerning the sea bottom and the environs of Horseshoe Shoals. Chris Von Alt is the head of the Oceanographic Systems Laboratory who invented the **REMUS.** An extensive article concerning this device is contained in the Sunday Cape Cod Times of August 25, 2002 featured in Section B-1 and Section B-3. This expertise was not employed. Had it been, it would have confirmed the treacherous area known as Horseshoe Shoals and calculated the extremely dangerous tidal flow and currents which would confirm the unexpected difficulties of navigation within Horseshoe Shoals and which cause difficult and unplanned tidal flows unpredictable from its presence near the Main Channel.

The Coastal Pilot Treatise in Vol. II which covers coastal information from Maine to New York, including Nantucket Sound, provides voluminous data concerning all kinds of meteorological information pertaining to the seacoast and Nantucket Sound which has been compiled by experts over the years who have knowledge of all of the seacoast areas and Sounds, including Nantucket Sound, and is an excellent source for the

kind of data which the Cape Winds people should have sought through the use of this Windmill Project. If they had, it would have confirmed the hazardous navigational problems in the Horseshoe Shoals, precluding this area as a site for its Windmill Project.

In Captain Fuller's experience as a Manager of Water Transportation, vessels of considerable size which includes the fleet of the Woods Hole, Martha's Vineyard and Nantucket Steamship Authority and the fleet of the Hy Line Vessels, he has testified that a Windmill Project of this size and at this location presents an extreme hazard, the likes of which cannot exist anywhere on Nantucket Sound and should not exist pursuant to the public safety and the potential oil and environmental cleanup that such a collision could necessitate. The slightest oil spill by any vessel at any location in any set of circumstances is considered a serious environmental problem where science, environmental cleanup and ability to contain any kind of spill is a number one priority for any Captain or Manager of Vessels involved in commercial water transportation.

Captain Fuller has testified that MV Great Gull carries as much as 1.3M gallons of fuel oil, periodically, to Nantucket for island inhabitants consumption, traversing over the Main Channel adjacent to Horseshoe Shoals. The fear has been that this vessel and similar vessels can collide into the WGTs, if unwarrantedly permitted by the Corps, and certainly can end up in the waters of Horseshoe Shoals in the event of fog or navigational difficulty and crash into the windmills. Although the waters in Horseshoe Shoals vary from 15' to 65' in depth, a barge carrying oil could easily undertow endup, crashing into the windmills and

the SMDS. This factor must bring the decision makers to the conclusion, the risk is not worth it.

It has now been determined that each generator on the 130 windmill towers will have a fifty gallon tank of oil, which could spill. Similarly, the less sophisticated recreational boaters will be held to the same set of standards in connection with such potential collision with this Windmill Project.

In Captain Fuller's opinion, based upon his extensive experience in water transportation in Nantucket Sound the WTGs are not only not needed. Its inappropriate location on the Horseshoe Shoals demands that any permit for it be denied for public safety and ecological reasons, apart from the fact that the Cape and Island Sanctuary Laws absolutely prohibit any structure whatsoever in Nantucket Sound.

It is his further opinion, based upon his years of experience in navigating the waters of Nantucket Sound, that locating fixed structures so close to a heavily traveled traffic lane and Main Channel is irresponsible, particularly given local conditions including current, wind, fog and winter ice and heavy recreational vessel activity prevalent, especially during the Summer months.

AVERAGE WIND VELOCITY DOES NOT WARRANT EFFECTIVE USE OF THE WINDMILLS

The SMDS was presumably erected to gain some kind of insight to the amount of wind over a year or two year period that was available to support the existing and effectiveness of the Windmill Project in Horseshoe Shoals. Some authorities have indicated that the most effective range of wind for these windmills to be effective runs from 12-

14 knots per hour, up to an amount not to exceed 30 knots per hour. Cape Wind had the availability of tremendous resources in the archives of the U.S. Congress from the Nantucket long Ship that was positioned in the are for over 100 years. The captains of the Steamship Authority and the Mailine vessels had been keeping wind charts and data since at least 1991 and at various times prior thereto. The wind and data information was also available from the Bishop Clerk Light House, near the entrance to Hyannis Inner Harbor other sources were also available.

For some reason, the Cape Wind SMDS was shut down for several months. Recently, both Captains Fuller and Johnson are of the opinion that the effectiveness of wind over the Horseshoe Shoals and in the operation of the windmills does not merit the use of windmills in this area. It is their opinion that the consistency of appropriate winds for the windmill operation over the years can not be substantiated. The Corp should require all sources of wind information as set forth herein for evaluation of the consistence of wind force to operate these proposed windmills.

POWERS OF THE U.S. ARMY CORP OF ENGINEERS

Although the Corp has presented the DEIS for the proposed Cape Wind Energy Project, it must be mindful of the complete lack of statutory powers that it has in permitting this first in the nation wind farm. In an article entitled ***"The Worlds Largest Wind Facility in Nantucket Sound? Deficiencies in the Current Regulatory Process for off Shore Wind Energy Development"*** by Guy R. Martin and Odin A. Smith, the authors remark that with the SMDS project coming within the ambit of Section 10, where what

is at issue is the construction of a structure that would be located in the waters of the United States and impede navigation, Cape Wind's Windmill Project is wholly inadequate for major uses of federal lands and waters for this project that will exploit natural resources for private gain. Obviously in the ***Alliance v. U.S. Department of the Army*** in the 1st Circuit Court of Appeals Docket No. 03-2604 (2005), while not successful for the Alliance, the Circuit Court has clearly indicated that the proposed wind energy plant, proposed by Cape Wind, and which is a structure vastly larger than the SMDS will not bind litigants if the Corp issues the current Permit being applied for. The Court in its considerable discussion on the issue of the control of the site under the Corps' own regulations may have covered the waterfront for the SMDS, but the issue will be totally different and considered differently if this matter is brought back to the Circuit Court of Appeals.

With these kinds of warnings, and admonitions the Corps should be wary of its very basic power to achieve the ultimate permit for Cape Wind's project. Indeed, even the Supreme Court of the United States in the ***Ten Taxpayers Citizen v. Cape Wind***, case over jurisdictional aspects of the SMDS permit is now aware of the precedent setting issues facing the Corps jurisdiction. Even though the Ten Taxpayer's Writ of Certiorari was denied by the Supreme Court, the Corp should not relax that the strained rulings of the Circuit Court in the ***Alliance*** case and the ***Ten Taxpayer Citizen*** case, have gone unnoticed by the highest Court in the land.

Denial of the Writ of Certiorari should not be interpreted as res adjudicata on the broader issue of the Corps meager 1899 statutory

authority to issue the navigational permit for the windmills currently sought by Cape Wind.

Although the Corps efforts with the current DEIS is commendable, pursuant to its volume, it is diminished in stature by its lack of specificity in critical areas. Its objectivity has already come under attack by the report of the Cape Cod Commission ("CCC").

CAPE COD COMMISSION

While the Responders, here, adopt and support the general criticisms of the CCC, the Responders are intrigued with points raised under section 4, entitled, "Natural Resources", where the CCC states,

> **"The uses of scour mats around the base of each turbine is stated to mitigate the effect of sediment scour on the sea floor. However no details on what contingencies exist if these scour mats fail."**

The CCC states further that,

> **"The DEIS/DEIR should include a discussion of this potential and a monitoring schedule should be detailed in the Operations and Maintenance Plan."**

The Responders feel that this kind of process of **scour mats** will not only exacerbate the food chain and procreation of shellfish in Horseshoe Shoals but will have the effect of eviscerating the food chain in this very sensitive area in its entirety. No where in the DEIS has it been declared by the writer that Horseshoe Shoals is considered the most fertile fishing area in the entire Cape Region. This fact should serve as a heavy anchor for the Corps in rendering an unfavorable decision on the application.

The CCC also states, pursuant to the issue entitled "Dredging Determination" that,

> **"In Section 8, (p.5-9), the DEIS/DEIR stats that jet-plow installation of the cable does not constitute a dredging operation. This determination may be important for the Commission's DRI review and therefore the DEIS/DEIR should more clearly provide the basis for this determination."**

The Responders clearly go further than the CCC and urge upon the Corps that dredging is clearly involved here and installing the cables as a structure requires a complete and vigorous review under the Commonwealth's Chapter 91 Program.

The CCC further states in its comment under "EMF" as follows:

> **"The DEIS/DEIR dismisses concerns about Electro-magnetic Field (EMF) emissions from the transmission of electricity through the buried cable. Additional data should be provided to demonstrate that EMFs and structural elements in the marine environment will have no effect on behavior or navigation of marine mammals, turtles and shark species. For example, recent studies in Europe seem to be inconclusive concerning the sensitivity of certain marine species to low-level magnetic fields."**

The Responders are pleased with CCC's comments in this regard, but they further maintain that the EMF transmissions from the transmission of electricity through the buried cable would completely violate the fragile area over which Cape Wind projects that it needs cable connections and on to and through the coastal wetland area of the landfall. The Corps should ultimately deny Cape Wind's permit application for this reason alone, and the Responders will be urging the Chapter 91 Program under the Commonwealth of Massachusetts to include this issue as a reason for the denial of such permit.

The Responders are aware of many other detailed comments including comments that will evolve around the potential of oil spillage in this

very fertile area. While the Responders do not have the resources of other participants in this process, they endorse the efforts of those parties who have retained specialists to adversely comment upon the feasibility of this Windmill Project.

Finally, the Corps should be aware that the Responders will attack and litigate any navigational permit issued by the Corps in this process. It is hoped, however, that with the volume of comments coming in to attack the DEIS, will weigh upon the Corps and its staff to either deny the applicant the requested permit, or at the very least to not grant the application until Congress can properly assess leasing arrangements on Nantucket Sound under different venues of regulatory authority.

The Responders thank the Corps for the opportunity to respond to this DEIS and their attorney and their experts remain available for any further follow up required from the presentation of this document.

TEN TAXPAYER CITIZENS GROUP,; CAPE COD MARINE TRADES ASSOCIATION, INC; RAOUL D. ROSS AND THE MASSACHUSETTS BOATING AND YACHT CLUBS ASSOCIATION, INC.

By: _____

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4960

TELECOPIER TRANSMITTAL

Date: 2/23/05 Time: 12:55

Please deliver the following pages to:

NAME: KAREN ADAMS

FIRM: US ARMY CORPS OF ENGINEERS

FAX #: 978 318 8303

RE: COMMENTS ON WINDFARM APPLICATION

FROM: ROBIN BRAY

TOTAL NUMBER OF PAGES INCLUDING THIS COVER SHEET: 4

SPECIAL INSTRUCTIONS:

February 19, 2005

Karen Kirk Adams
Cape Wind Energy Project EIS Manager
U.S. Army Corps of Engineers, New England District
696 Virginia Rd.
Concord, MA 01742-2751

Re: Cape Wind Associates permit application

Dear Ms. Adams,

I am submitting these comments as a resident of Martha's Vineyard in Edgartown, Massachusetts. In addition to being a resident of the area to be impacted by this project, I am a former program manager in the state of Connecticut where my responsibilities dealt with permitting sources of air pollution (including the energy generation sector) , waste management, hazardous waste treatment and disposal facilities, and a variety of solid waste and medical waste treatment and transfer projects. I performed these tasks, as well as enforcement responsibilities, for over 30 years and am therefore familiar with the permitting and public participation process.

The final permit decision will no doubt include many additional comments from both individuals as well as government experts in their respective fields. From a public policy perspective, it is my opinion that the U.S. Army Corps of Engineers has not been provided with a valid application in that the applicant does not have jurisdiction over the lands which it intends to utilize for its' activities. The recent federal court decision regarding the extension of the Barnstable shoreline into an area which the applicant claims for its project clearly establishes this point and should be grounds for rejection of the application. In an overall sense, the best possible decision by the Corps regarding the applicants right to utilize this site should recognize that a jurisdictional loophole has inadvertently been created. Sound public policy would again suggest that the application be denied or deemed incomplete until resolution of the proper federal or state jurisdiction over Nantucket Sound is established. This oversight in applicable law has placed the Corps in the position of being forced to regulate certain activities over which it has no jurisdiction.

The mechanism for establishing a closure surety seems exceedingly generous as pertains to the amount of time the applicant would be allowed before fully funding the closure costs. A project of this magnitude, regardless of the revenue generating potential, should be more fully funded up front even prior to any construction. The applicant did not present proper justification to make a case for any financial test demonstrating the ability to perform closure independent of this project and accordingly should be required to document the ability to fund closure activities at the one hundred percent level at any time during the life of the project. The timing for the establishment of closure funds should not be established as a function of the completed project but rather as the real costs at any stage of construction. Some of the most costly closure and clean-up activities will be occurring during the earlier stages of construction and these should be fully funded prior to commencement of construction. Comparable standards are established by the closure funding requirements in Federal law (soryy but I don't have access to the CFR cites) governing Hazardous Waste facilities and Municipal waste landfills.

Although not necessarily within the jurisdiction of the Corp's decision, the proposed decision made reference to the improvements in air quality due to the lack of emissions from this project. To the extent that these issues are considered in the final decision, any offsets from pollutants generated by local power plants should not be considered unless an enforceable and binding agreement is provided by the applicant demonstrating that they will in fact accomplish a net reduction in emissions. Notwithstanding the above, any reductions in air pollutants due to this project which are not real (i.e. not "paper reductions") and not realized locally should not be considered.

My final personal observation concerns the projects impact on wildlife, birds in particular. As noted by Ms. Robin Elray at the public hearing in Oak Bluffs, the project will have an impact on an area which is heavily utilized as a flyway by migrating birds. I have also observed this phenomenon in the fall as tens of thousands of birds travel right through Nantucket Sound every morning during the fall migration. The draft EIS did not address this matter but instead used mortality estimates based on "comparable" land-based activities. Additional studies or expert government testimony is needed to more fully address this issues.

My remaining comments will serve to highlight and repeat some of the remarks made at the above referenced hearing. Neither the applicant nor the Corps presented any site specific discussion addressing the aesthetic and economic impacts of the visual pollution which this project would cause. This was left primarily, and improperly, to the public resulting in one of the more emotional issues of this entire proceeding. If the only testimony for this issue is from comparable activities in Denmark then the applicant should be found to have failed to demonstrate that the public will not be adversely impacted on this aspect of the proposed project. Similarly, and of much greater concern, neither the applicant nor the Corps addressed the concerns and expert

testimony of a variety of recreational and commercial boaters and professionals. One of the greatest concerns for this entire project was voiced by one of the captains for the Steamship Authority who deemed the project a threat to navigation. If the Corps grants this permit it must provide that all hazards and threats to navigation testified to by these individuals are fully and safely addressed.

Thank you for providing me with the opportunity to comment.

Sincerely,

David A. Nash
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4961

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February 21, 2005

Ms. Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Re: Final Comments on the Cape Wind Project Draft EIS
Cape Wind Project File no. NAE-2004-338-1

Dear Ms. Adams:

The following comments are offered as suggestions to strengthen the Final EIS for the benefit of public understanding of the Cape Wind project.

1. Bird Impact Studies Related to Offshore Wind Projects
We suggest that you include a synopsis of conclusions of recent offshore bird impact studies with references to the studies themselves. For example, the "Visual and Radar Observations of Birds in Relation to Collision Risk at the Horns Rev Offshore Windfarm, Annual Status Report, 2003," shows that this year's study shows birds, by in large, fly around the turbines. A total of 16 dead birds were found and recorded in a 16 month period, all songbirds, primarily starlings. References are indicated in the endnotes.[i]

2. Estimated Health Benefit to Wildlife
In addition to the health benefits to humans already addressed in the DEIS, we suggest that you add a section on the estimated health benefits to wildlife. For example, statistical estimates of potential reduction in bird and shellfish harm due to oil spillage from barges and tankers delivering fuel oil to electrical generation plants that pass through the Cape Cod Canal or in waters off Massachusetts should be considered. In addition, the externalities of coal mining impact on habitat in other areas of the U.S. are another area of concern that should be addressed.

3. Estimated impact on which fossil plants may be backed off
We realize that the most productive electrical generation area in the Commonwealth is identified by ISO New England as "Southeast Massachusetts," or SEMA. New England states and

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Massachusetts itself are divided into "Locational Marginal Pricing" districts by ISO NE as related to grid transmission capabilities, each with different pricing structures. In SEMA we have two of the largest plants in the Commonwealth, i.e., Canal and Brayton Point. SEMA is also an area of "locked in" generation due to limitations on transmission interconnections to the grid system[ii]. Therefore we ask that the Corps evaluate the probable extent (on a monthly basis) of back-off of the major SEMA plants when the wind farm comes on line. Note that the Pilgrim nuclear plant and the trash conversion plant, SEMass, will not be backed off as they are on a "must run" status. This estimated backoff impact will allow better estimates of oil and gas reductions and related fuel cost implications, importation of oil, as well as anticipated health benefits.

4. Update the Le Capra Study

The Le Capra study referenced in the DEIS was completed in 2002[iii]. This report drew on forecast in the Energy Information Administration's (EIA) "Annual Energy Outlook 2002" (developed in late 2001) regarding the future cost of natural gas among other fuels. The result was an estimated yearly reduction of cost of wholesale electricity in New England was some $25 million with $10 million in Massachusetts. The EIA estimate for the cost of gas in this report for 2005 was $3.40 per mmBTU. Due to totally unforeseen world events, the current cost of natural gas now ranges from $6 to $8 per mmBTU depending on season. Since about 60% of the cost of electricity generation is dictated by fuel costs, it is evident that the conclusions of this report are substantially out-of-date. Therefore, we ask that the Final EIS utilize an updated La Capra study.

5. Impact of Carbon Dioxide Offset

The DEIS indicates some 1 million tons of carbon dioxide will be offset by the introduction of the wind energy from this project. We suggest that the Final EIS put this in perspective with respect to other CO2 sequestration efforts by the energy industry. For example, we ask that you compare the definitive wind farm offset to the only economically viable way of trapping CO2 that would otherwise be released into the atmosphere. And that is through its removal from freshly produced natural gas and injection back into depleted production fields. The only two projects in the world that do this are by Statoil who sequestering one million tons[iv] a year in the Norwegian North Sea and with BP in Algeria[v]. And at that, the long term risk of leaking out are yet undetermined. Another perspective is to state that the yearly CO2 output of the Canal Plant is 5 million tons a year[vi]. And currently there is no viable way to sequester this raw CO2 production on a local basis. Indeed, the wind farm represents the single biggest project in the United States to offset carbon dioxide.

6. Impact on Sulfur Dioxide and Nitrogen Oxides Offset

The DEIS reveals the yearly offset reduction of sulfur dioxide and nitrogen oxides. Again to put this in perspective, it would be useful to estimate the comparative capital cost of fossil plant emission control equipment and yearly operation and/or the cost of low sulfur fossil fuels to achieve the same reductions.

7. Impact on Tourism

The Final EIS should augment its discussion on the impact on tourism by citing the experience of currently operating offshore wind farms in Europe which are: Horns Rev, Nystead, Tunø Knob, and Middelgrunden in Denmark; Arklow Bank 1 in Ireland; Utgrunden in Sweden; and North

[i] A. "Visual and Radar Observations of Birds in Relation to Collision Risk at the Horns Rev Offshore Windfarm, Annual Status Report, 2003," by Christensen, Hounisen, Clausager, & Petersen, from the Ministry of the Environment, DK-4000, Denmark. 48p. This year's study shows birds, by in large, fly around the turbines. A total of 16 dead birds were found and recorded in a 16 month period, all songbirds, primarily starlings.
B. "Investigations of Birds During Construction and Operation of Nystead Offshore Wind Farm at Rodsand, Annual Status Report 2003," by Petersen, Fox, Desholm, and Clausager, from the Ministry of the Environment, DK-4000, Denmark. 82p.
C. "Bird Numbers and Distribution in the Horns Rev Offshore Windfarm, Annual Status Report 2003," by Petersen, Clausager, & Christensen, from the Ministry of the Environment, DK-4000, Denmark. 36p.
D. "Elsam. Offshore Wind Farm. Horns Rev. Annual Status Report for the Environmental Monitoring Programme," 1 January 2002 – 31 December 2002, 58p.

[ii] "Report Questions Power Line Limits," John Leaning, Cape Cod Times, November 8, 2003.

[iii] "The Cape Wind Project: Impact on New England Electricity Market Prices," February 2002 Analysis

[iv] "Coping with Climate Change - the debate," The Geological Society, BP and Climate Change, Mr. Greg Coleman, Vice President BP, March 26, 2003

[v] From Datamonitor, Comment Wire 2/13/05, "Carbon sequestration: a new road to Kyoto," http://www.commentwire.com/commwire_story.asp?commentwire_ID=6182

[vi] Canal Plant data from: "Emission Control Plan, W 025308," Table 1, December 2001, submitted to the Massachusetts DEP.

[vii] "Racing for the Wind on PEI," by Nancy Russell, Northern Sky News, February, 2005, p. 7.

4962

27 Hewing Field
Chilmark, MA 02535
February 21, 2005

Colonel Thomas Koning
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742

RE: Cape Wind Energy Project Draft EIS/EIR REFERENCE FILE No. NAE-2004-338-1

Dear Colonel Koning:

It is respectfully requested that the No Action Alternative / Permit Denial be taken with regard to the Cape Wind Energy Project. Other, less damaging alternatives are available at lower environmental and public costs to achieve the same public interest objectives as the proposed offshore wind farm in Nantucket Sound. Further, the DEIS has failed to objectively assess the costs of the proposal and, in some instances failed to document the basis for statements that are material to the conclusions it asserts. Most importantly, the hundreds of pages of discussion ignore the unique natural beauty and the sensitivity of Nantucket Sound to the residents and visitors of the Cape and Islands and the State of Massachusetts. This is a resource that once marred cannot be restored.

Much of my work involves participation in NEPA documentation for mass transit construction. In my view, the DEIS for Cape Wind is riddled with fallacious arguments and gratuitous, qualitative statements that do injustice to NEPA. My clients are public agencies proposing to build mass transit systems that will by their nature conserve energy, reduce fossil fuel consumption, improve air quality and achieve many other laudable goals; however, their projects are subjected to detailed and objective cost/benefit, environmental and alternatives analysis that far exceed the standards found in this document.

I support fully those organizations, such as the Cape Cod Commission, the Martha's Vineyard Commission and the Vineyard Conservation Society who have called for setting aside this proposal until an appropriate federal regulatory framework for offshore wind development is in place.

The following are specific concerns:

1. **The DEIS presumes that this project is necessary and has a right to go forward – the DEIS intent seems to be to affirm the developer's chosen location and business plan.** The proposer has no inherent right to construct this project. Like offshore oil and gas leases, communications bandwidth, timber rights, mineral rights, grazing rights and other tangible property offered by the federal government, private parties typically submit bids and compete for public

property in the hopes of achieving a profitable commercial activity. As noted in the DEIS, the developer has no power of eminent domain and would have to negotiate with private property owners to construct a wind farm on land. Why are valuable public rights offshore assumed to be available for free in addition to almost $27 million per year in public subsidies? This is an unsolicited proposal to obtain an environmentally sensitive location for a private enterprise – there is no overriding public interest in responding to this proposal absent a competitive process and certainly absent formal federal regulations for offshore wind development.

2. **The Purpose and Need Statement specifically states that the decision to grant a permit is driven by the public interest.** This project is not needed – the desired public benefits can be achieved more economically and with less impact on the environment through other means, such as conservation or the application of alternative renewable energy technologies, such as solar power, or dispersed, smaller-scale, land-based wind projects. Realizing Cape Wind's environmental benefits do not require utility-scale electrical generation. Comparable or greater public benefits can be achieved through modestly-scaled projects, as well as economic incentives to private individuals and commercial enterprises instead of a single developer.

3. **The Alternatives Analysis section of the DEIS is flawed because it lacks objectivity in reviewing alternative strategies for achieving the aims of the proposal (see Sec 3.2.3, 4.0 and 4.1 for unbalanced, gratuitous and unsubstantiated assertions)**. The DEIS is flawed because it sets up alternative energy strategies and locations as straw men simply to arrive at a pre-determined conclusion that the proposal is both necessary and that the preferred site is ideal. For example:

    a. Economic incentives to deploy solar energy would leverage private investment by homeowners and commercial property owners, drive down the costs of solar equipment and accelerate technology development. The economics of solar energy, its rapid rate of efficiency gains and its falling costs per kilowatt are ignored in the discussion. So too is the significant commitment to solar energy that has been made on Martha's Vineyard through a growing number of demonstration projects and private installations. Instead, the DEIS pursues a comparison between the wind farm and a public utility-scaled solar powered generation facility. The public utility scale of operation for solar is not relevant in this environment, but serves the purpose of creating a straw man that can be easily knocked down. Incredibly, the discussion in Section 3.2.2.1.5 emphasizes the hazardous material issues associated with solar panel production and disposal while making far more benign (and unbalanced) observations regarding the environmental impacts of wind power in

Section 3.2.2.6.5 – as if steel, aluminum, composite materials and lubricants are pristine in their origins or the diesel fuel consumption and marine engine pollution arising from Cape Wind's fleet of construction and maintenance work boats is not worthy of note.

b. Solar energy in the Northeast is deemed by the DEIS to be inefficient because of low intensity sunlight in the winter, yet the impact of storms, ice and saltwater conditions on turbines is completely ignored in comparing the two technologies.

c. Section 3.2.2.6 ignores the history of break-downs, scenic controversies and bird kills associated with wind power. This discussion should have mentioned the article in **USA Today** (perhaps not a sufficiently scholarly journal) on Jan 5, 2003 (Page 3-A) entitled: Wind Turbines Taking Toll on Birds of Prey – Thousands of deaths at site in Calif. spur group's lawsuit: "After years of study but little progress reducing bird kills, environmentalists have sued to force turbine owners to take tough corrective measures." After 20 years of argument and documentation, the U.S. Fish and Wildlife Service finally interceded in the Altamont Pass, CA wind farm kills involving tens of thousands of birds, including rare and endangered species of raptors. Why were the struggles in Altamont Pass not even mentioned in the discussion of wind energy? Why does p. 3-136 of the DEIS state that raptors have completely habituated themselves to turbines when golden eagles, red tailed hawks, and burrowing owls are being destroyed by wind farms in California?

d. With entire offshore wind farms in other countries being dismantled for heavy maintenance, how can an objective NEPA document state unequivocally that offshore turbine major components will have 10 – 20 year lives and operate with 95 – 98% availability with no sources cited and the proposed turbine design not even in commercial use, but operating as a prototype only? (Sections 3.2.2.6.1, 4.1.1.5) My own experience in the public transit industry is that economic and financial analyses of new projects anticipate a 20% spares ratio. Buses and railcars do not operate offshore and are a fairly mature technology at this point – suggesting a 95 – 98% availability factor for offshore windmill designs that are still in the prototype stage is too incredible not to be supported by reams of documentation. More realistic availability rates will diminish the wind farm's benefits and its competitiveness against other alternatives.

e. Why should Nantucket Sound be impacted with 130 417-foot windmills when there are still rate discounts being provided to 3,500 homes that are heated by electricity on Martha's Vineyard and residential heating and hot water accounts for almost 27% of the Island's residential electrical use (almost 50% during the winter months)? Why isn't conservation identified as an alternative to the wind farm? All of the benefits of the proposal could be achieved with greater job creation, lower cost to the public and fewer environmental impacts. The $27 million per year

subsidy for Cape Wind could go a long way to converting those homes on Martha's Vineyard to other forms of energy for heating and hot water, and a lot more. The DEIS should not conclude that the public interest is served by building a 130-turbine wind farm to address New England's energy needs in an environmentally sensitive location when other strategies are readily available to meet the goal of energy efficiency. Indeed, why wasn't the fossil fuel alternative structured to examine the steps that might be taken to conserve sufficient power to shut down one or more power stations in New England (rather than focusing on construction of new capacity) and the resulting environmental benefits accruing from reducing fossil fuel consumption for generating electricity?

f. Why aren't smaller wind farms on land-based sites posed as an alternative to a massive offshore facility? It is not the Army Corps of Engineer's job in undertaking a DEIS under NEPA to make the case for the Cape Wind single-site concept, but to see if the public interest is served. If alternative solutions can solve the problem, why must beloved and irreplaceable public resources be despoiled simply because a developer threw an unsolicited proposal into the hopper? The Cape Wind proposal will occupy about 16,000 acres of Nantucket Sound (24 square miles, not including various land based locations), while the same 130 turbines apparently would require only 6,120 acres at Otis Air Force Base – surely smaller scale wind farms broadly dispersed on land are a legitimate alternative that is not seriously treated in the Alternatives Analysis. Once again, the DEIS assumes the only solution to the problem is a large, concentrated generating facility.

g. Many sites are dismissed because of lack of access to transmission facilities. If good alternative locations for wind development are available, then it is the developer's problem to solve the transmission issue (it could be cheaper for a developer to provide the needed transmission capacity than to absorb the cost differential noted for construction and maintenance of an offshore wind farm) – it is certainly not the job of the NEPA process to resolve commercial issues for private entities.

4. **Negative impacts are assumed to be mitigated or not to exist based upon qualitative discourse that ignores or disregards other viewpoints**. For example, fisherman, recreational boaters, homeowners, business owners, birders and environmentalists on the Cape and Islands have voiced their strong opposition to this proposal. Yet, the DEIS argues that there will be no impact on view sheds, no impacts on avian resources, no impacts on fishing, no impacts on navigation, no impacts on tourism. The DEIS does not present a balanced view of what are essentially qualitative judgments and does not present factual evidence to back many of its suppositions:

a. The DEIS authors produce renderings and tell property owners and boaters there will be no significant view impairment (pp. 3-204, 205). Renderings are subject to all manner of distortion and "a visual change to the existing relatively unbroken night time view under clear sky conditions" is perhaps slight to the authors and reviewers of the DEIS, but a priceless loss for those of us who live and visit here.
b. The economists generate input/output computer models to advocate there will be 154 new jobs (Sec 3.4.3.4.19) and a few hundred thousand dollars in more property tax revenue then state: "However, other than the visual change, construction of the Wind Park would not limit the opportunities tourists currently enjoy such as shopping, eating at restaurants or overnight stays at inns, hotels and motels."(pp.3-225, 226) The natural beauty of Cape Cod and the Islands will not be enhanced by a "Wind Park" - this is not a theme park proposal and the "visual change" is indeed a big issue. Such statements are gratuitous, lack documentation, lack objectivity, and are offensive to those who live in and visit this area precisely because of the dark night-time skies, the beautiful blue seas, the fisheries, the beaches and the breath-taking vistas and <u>not</u> because of the shopping and restaurants.
c. If the Steamship Authority and the Hi-Line say the wind farm is a hazard to navigation and our lives and commerce depend upon them, where will the DEIS authors and reviewers be if one of our ferries hits a tower and there is a tragedy? Very sorry, no doubt, but unfortunately it will be too late.
d. If the Audubon Society says a longer time period is needed to study avian impacts and impacts on other species, why can't we wait and do the studies they believe are needed? Should we be rushing off to create another Altamont Pass debacle?

By what authority does the DEIS tell a fisherman who enjoys the peaceful experience of the sea that trolling under whirring, 417-foot towers is great? By what authority does the DEIS tell someone who loves the night-time sky that hundreds of blinking red lights are really cool? These are quality of life considerations that we who live and visit here hold dear – they are not scientifically debatable and certainly not available to the Army Corps of Engineers to give-away to private interests based upon the views of a DEIS consultant paid for by those same private interests.

5. **The economic and business case for the proposal in the DEIS is flawed.** None of the electricity production estimates provided in the DEIS are credible and therefore the proposed project's benefits appear to be overstated. While Section 3.2.2.6.1 reassures us that the turbines will have 95 – 98% availability planted in saltwater and enduring icy winters, why does the economic analysis (Section

3.4.3.3.2) scale-back production due to weather and the difficulties accessing offshore turbines for unscheduled maintenance?

The DEIS assumes a certain maintenance regime that is unlikely to be realized – 2.5 teams spending 2 days per turbine in scheduled maintenance and 3 days for unscheduled maintenance (Sec 4.4). With the turbines all coming on line at mostly the same time, key component failures and replacement cycles will tend to occur all at once rather than smoothly over the course of time. The combination of bad weather knocking-out more turbines and then posing difficulties accessing them creates the potential for a significant proportion of the generating capacity to be disabled at any given time. A surge in unscheduled maintenance may then result in deferral of scheduled maintenance and more break-downs will occur. The maintenance plan also relies on daily transport to the wind farm from Falmouth (9 repairmen each day) and New Bedford. Given the reality of weather conditions, this expectation is unrealistic and it is not clear if the economic and environmental costs of operating several large vessels year-round in our waters are adequately addressed in the DEIS.

At the same time, it is anticipated that most maintenance work will be performed in the summer (Section 4.4) – this contradicts the even, year-round flow concept described earlier and also means that more capacity will be lost during the peak demand season. Thus, breakdowns will be more likely and of longer duration in the winter and scheduled maintenance shut downs will be more prevalent in the summer – when will all that power be generated? What is the proportion of the 130 turbines expected to be out of service at any one time? If these were public transit buses, 20% would be undergoing scheduled or unscheduled maintenance at any time. Given the untested technology, the harsher operating conditions and the difficulty of accessing the site for maintenance, perhaps the analysis should begin from the perspective that the maximum production potential should be based on 100 or less of the turbines being in service at any one time. The DEIS is silent on this critical question and that is a material flaw for the public review of its benefits, as well as in the comparative assessment in the Alternatives Analysis.

To the general maintenance risk must be added the further probability for systemic failures attributable to the use of a prototypical, commercially unproven design – the normal "teething problems" associated with new designs, materials, manufacturing methods and technologies. This category of risks is not even acknowledged in the DEIS.

The DEIS should quantify the potential for high maintenance costs and reduced availability through a formal risk analysis that addresses New England weather conditions and the use of prototype designs. The DEIS should, at a minimum, incorporate a risk analysis of failure rates, spare ratios, construction costs, maintenance costs, and establish a range of likely generation potential, rather than

the broad use of "guesstimates" in Tables 3-45 to 3-48. Formal estimates of maintenance costs using a "build-up" method that addresses staffing, parts, vessels and crew, fuel, taxes, and other costs should be part of the DEIS and available for review by the public. Where are the facts and documentation behind the presumption that 2,000 GWhours of capacity will translate into 1,500 GW hours of net production? Table 3-48 contains a lot of back-of-the envelope speculation. Where is a real engineering estimate? Perhaps there is none because there is no data and the DEIS is advocating a massive project for which the basic economic relationships and cost/benefit statistics are unsubstantiated in this country and at this location?

If the failure probabilities are accurately accounted for, it is more than possible that offshore sites are not be competitive with onshore sites, even though the wind quality and other factors might be less favorable. An accurate and well-documented accounting might call into question the glib and unsubstantiated assertion in Section 4.1 that the proposal is economically feasible and technically efficient. According to Table 3-48, the almost 86% efficiency of a land based alternative (600 GWhrs net from 700 GWhrs gross capacity assumed at Otis) compared to the "guesstimated" 75% efficiency of the offshore alternative (1,500 out of 2,000 GWhrs and perhaps considerably less), the 66% cost premium for offshore construction ($1,913 per kW in Nantucket Sound compared to $1,153 at Otis), and the 157% premium for maintenance ($0.007 per kWhr delivered at Otis compared to $0.018 produced in Nantucket Sound and perhaps considerably more in light of the questions above) would seem to call the soundness of the Cape Wind proposal economics and its anticipated public benefits into question. The absence of sound engineering and risk analysis also calls into question the assessment done in the DEIS of the land-based alternative, which seems to hinge largely on the selection of a turbine with less than one-half the generating capacity of the off-shore units and the bias toward a single location, rather than several dispersed locations. This poor quality of analysis does a disservice to the public and the NEPA process.

Treatment of the decommissioning issue is also a serious flaw in the DEIS analysis. First, the documentation supporting the cost estimate as shown in Table 3-46 lacks adequate detail. There is no back-up for the estimate and no discussion of the cost to decommission the 100 X 200-foot Electric Service Platform (ESP). No US experience appears to be available for these back-of-the envelope "guesstimates." Independent and rigorous cost studies, not "comparables" that may or may not be relevant are a crucial part of protecting the public interest – there is a real danger that the project could prove to be an economic or technical failure resulting in bankruptcy of the developer and necessitate decommissioning the facility prior to the expiry of its intended useful life. Second, at this time, the surety industry in the United States is extremely restrictive in its willingness and ability to provide a bond extending for more than a few years after a project enters

revenue operation – 20 years is a virtual impossibility. A letter of credit from a developer who might have to exit the project due to bankruptcy does not offer the public much security that it will not have to endure 130 417-foot blue/grey elephants indefinitely. The nature of the financial instrument vaguely alluded to in Sec 4.5 and the methodology for establishing its size should be spelled out in far greater detail for the public to review. This is an important federal policy area with ample precedent – federal statutes require strip mines to reserve specific amounts for each ton of coal removed for eventual surface restoration and a similar arrangement would seem to be appropriate for offshore wind facilities. This is also an example of why federal policies for offshore wind facilities should be developed before the Cape Wind proposal is evaluated.

Another inaccurate, unsubstantiated and gratuitous statement can be found on page 4-19: "The potential for a fault occurring during the operational lifetime of a buried cable system is minimal, based upon industry experience." Obviously, the author of this statement and the technical readers at the Army Corps of Engineers are unaware that the marine electrical cables to Martha's Vineyard have suffered multiple failures, including several cables failing at one time in recent years and triggering the shipment of emergency generators to the Island. The DEIS should acknowledge this experience and recognize the likelihood that with 75 miles of cable within the turbine array and transporting the load to land, and hundreds of splices it is almost inevitable that failures will occur. Undersea cable failures impact the economics and potential benefits of the wind farm to the public and relative to other alternatives. Simply providing the pro forma description of how a cable failure might be addressed on a sunny day in May is inadequate for such an important issue. The same can be said for the treatment in the DEIS of the possibility of hazardous materials spills from the ESP or other turbine and maintenance-related sources, where reference is made to emergency response plans but no evaluation of the probability or frequency of events occurring is provided to the public.

6. **The presumption that environmental impacts will be mitigated is not supported by the record.** The clearest example of this shortcoming is the repeated references to the burial of the undersea electrical cables six feet below the surface. Burial appears to be the cure for most ills that could arise from normal boating and commercial fishing hazards, heating and cooling of the wires, danger to marine life, electromagnetic fields and other conditions. In so doing, the DEIS dismisses serious environmental concerns with the reassurance that six foot trenches dug with jet plows will take care of the problem. There is ample evidence in New England that should be acknowledged in the DEIS, some of which is under the jurisdiction of the Army Corps of Engineers, where cables and pipelines that were supposed to be similarly buried are sitting on top of seabed or exposed in some manner due to shoddy construction or failure to adhere to environmental agreements. The DEIS is silent on how the six-foot depth

requirement will be monitored and enforced. It is silent as to who would be responsible if negative environmental impacts arise because of construction inadequacies in all elements of the proposed project, be they undersea, in the turbines, in the towers, on the maintenance ships or on the ESP. The DEIS is silent on the need for independent third party oversight of the construction, commissioning and maintenance processes and the Corps' own role in enforcement.

In conclusion, this is a flawed document that is the product of a flawed and premature process. Nonetheless, the document reveals sufficient inadequacies in the proposed Cape Wind Energy Project to justify a finding of No Action / Permit Denial.

Sincerely,

Jeffrey A. Parker

THE BEACON HILL INSTITUTE AT SUFFOLK UNIVERSITY

The Beacon Hill Institute for Public Policy Research

February 22, 2005

004963

Ms. Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Re: File #NAE-2004-338-1

Dear Ms. Adams:

Attached please find The Beacon Hill Institute's Comments on the Draft Environmental Impact Statement (DEIS) for the Cape Wind Energy Project. I have also emailed a copy.

We appreciate the opportunity to provide our analyses and invite you to get back to us with any questions you might have.

Sincerely,

David G. Tuerck
Executive Director,
Professor and Chairman, Department of Economics

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Comments on the Draft Environmental Impact Statement for the Cape Wind Energy Project

Summary

The Beacon Hill Institute at Suffolk University has studied the Cape Wind proposal in considerable detail, and offers the following comments on the Draft Environmental Impact Statement (DEIS) Reference file no. NAE-2004-338-1:

1. **A systematic cost-benefit analysis – missing from the DEIS – shows that, with 90% confidence, the costs of the project outweigh the benefits by between $83 million and $333 million, with a mean measure of net cost of $209 million (equivalent to 2.0 cents/kWh produced).** This breaks down as:
   a. Cost of 9.06 cents/kWh (close to the DEIS estimate of 9.00 cents)
   b. Benefit of 7.06 cents/kWh, of which the savings are: fuel (4.95), capital and operating costs, (0.98), improvements in public health (1.02) and greater energy independence (0.10).
   The project is of interest to a private developer only because of subsidies of 4.04 cents/kWh, via accelerated depreciation allowances, Massachusetts "green credits," and a possible Federal Production Tax Credit.

2. **The DEIS conclusion of "no adverse impacts to tourism and recreation" is not supported by the data.**
   a. The only tourism study considered in the DEIS, from Scotland, used a biased sample and does not report the most relevant results (i.e. how many would be deterred, or attracted, by the windmills).
   b. A Beacon Hill Institute survey of 497 randomly-selected tourists, undertaken in the relevant Cape Cod towns in summer of 2003, found that 5% would visit the Cape less, and 1% would visit more if the windmills were built. Using spending information, and an estimate of the number attracted to the Cape, the BHI study found a net loss in spending on the Cape of at least $57 million annually.

3. **The DEIS conclusion that the project would not adversely affect property values is based on a flawed study, ignores other research, and is untenable.**
   a. The DEIS discussion relies primarily on a study by the Renewable Energy Policy Project (whose goal is to "accelerate the use of renewable energy") in 2003. Its conclusion that wind farms elsewhere in the United States did not harm property values relies on the use of an inappropriate counterfactual, and is largely based on much smaller projects.
   b. Even if wind farms are associated with higher property values, this is likely attributable to increased tax payments and royalties to local communities and owners – which makes them not comparable to the Cape Wind case (no royalties, minor local tax payments).

4. **The DEIS estimates of the value of health improvements are greatly exaggerated (at $53 million annually). Our own estimates show health improvements of $7 million, and even this may be overstated.**
   a. The DEIS assumes that the Cape Wind project would offset the dirtiest power plants in Massachusetts. This is incorrect, and it would be more appropriate to use the marginal emissions numbers from ISO-New England, which show avoided emissions that are one fifth as high for NO_x and one seventh as high for SO_2.
   b. The DEIS uses outdated emissions data (from 2000 rather than 2002).
   c. Even the $7 million may overstate the health benefits. BHI assumed that all of the output of the Cape Wind project would offset fossil fuel generation and its associated air pollution. However, it has been argued, convincingly, that the caps imposed by law and regulation on SO_2 emissions would continue to be binding, and so the wind farm output would not lead to a reduction in SO_2 emissions overall.

Introduction

The Beacon Hill Institute (BHI) is submitting the following comments and suggestions to the Army Corps of Engineers regarding Reference file #NAE-2004-338-1, the Draft Environmental Impact Statement (EIS) for the proposed Cape Wind Associates, LLC Cape Wind Energy Project.

The comments support the following four conclusions:

1. A systematic cost-benefit analysis – missing from the DEIS – shows that the costs of the project outweigh the benefits by $209 million (equivalent to 2.0 cents/kWh produced).
2. The DEIS conclusion of "no adverse impacts to tourism and recreation" is not supported by the data.
3. The DEIS conclusion that the project would not adversely affect property values is based on a flawed study, ignores other research, and is untenable.
4. The DEIS estimates of the value of health improvements are greatly exaggerated (at $53 million annually). Our own estimates show health improvements of $7 million, and even this may be overstated.

Proposition 1.
A systematic cost-benefit analysis – missing from the DEIS – shows that, with 90% confidence, the costs of the project outweigh the benefits by between $83 million and $333 million, with a mean measure of net cost of $209 million (equivalent to 2.0 cents/kWh produced).

Presidential Executive Order 12866 of September 30, 1993 states that "each agency shall … propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs." The Draft EIS itself notes (p. 2-2) that "the benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments."

Although comments on costs and benefits are to be found scattered throughout the Draft EIS, the Army Corps does not directly address the bottom-line question: "Are the social benefits of the project greater than the costs?" More importantly, when one does ask this question, the answer turns out to be, "No": The benefits do not, in fact, measure up to the costs.

That they do not is made clear in a report submitted to the Army Corps on May 14 of last year by the Beacon Hill Institute at Suffolk University.[1]

In the analysis, BHI estimates the economic costs of the project to be 9.06 cents per kWh of electricity produced, very close to the figure of 9.00 cents reported in the Draft EIS (p.3-307). This is expensive for factory-gate electricity.

But wind power has important virtues too. We estimate the economic benefits of electricity generated by Cape Wind to be 7.06 cents/kWh. This breaks down (with rounding) into:

- Savings in fuel of 4.95 cents/kWh. This figure takes into account the likelihood of periods of high energy prices in the future.
- Savings in capital and operating costs of 0.98 cents/kWh. This figure is low because backup generating capacity must still be available to offset most of the wind farm's capacity, for times when the wind stops blowing (or blows too hard).
- Health savings due to reduced emissions, worth 1.02 cents/kWh. The Draft EIS overstates these benefits tenfold because it assumes, incorrectly, that electricity from Cape Wind would offset only the dirtiest power stations in New England; and that those power stations would not become cleaner over time.
- Greater energy independence, which we value at 0.10 cents/kWh. In this context, note that even when complete, the project would provide less than 1% of the electricity generated in New England.

The bottom line is that the economic costs exceed the economic benefits by 1.99 cents/kWh, or by $209 million in present value terms (see Table 1). This is a large margin. One is left with the clear and powerful conclusion that the benefits of the intended regulation – which would allow Cape Wind to build the wind farm – do not justify its costs. This balance could change in the future, but at this point in time, this particular project is not a good one.

The key result – that economic costs exceed the economic benefits – is robust. It stands even if one ignores any aesthetic effects or makes the most pessimistic assumptions concerning the future price of oil; and it does not even

consider the effects of the project on tourism – which the Draft EIS believes, without evidence, would on balance be positive and which we, based on survey data, expect to be negative.

Table 1: ***Economic Costs and Benefits of the Nantucket Sound Wind Farm Project***

	Net Present Value (at 10%)		Cents/kWh
	Mean	90% confidence interval	
	($ millions)		
Benefits	**744**	**638-859**	**7.06**
Of which:			
Fuel saved	522	455 – 597	4.95
Capital and operating costs saved	104	85 – 122	0.98
Health benefits of emissions reduction	108	55 – 176	1.02
Greater energy independence	11	3 – 21	0.10
Costs	**952**	**888 – 1,035**	**9.06**
Of which:			
Project itself	888	824 – 969	8.45
Grid integration	26	23 – 28	0.24
Environmental effects (using royalty rates)	39	35 – 44	0.37
Benefits – Costs	**(209)**	**(333) – (83)**	**(1.99)**
Costs using expected property value	**(1,520)**	(1,647) – (1,392)	
Costs using willingness to pay measure	**(173)**	(300) – (46)	

Note: Figures are based on 10,000 drawings from underlying distributions of the variables determining costs and benefits. Totals may not add exactly, due to rounding errors. Also: The bounds of the 90% confidence interval for a total (e.g., 638-859 for benefits) will be tighter than the sum of the bounds of the components (e.g., 598-916 for benefits; note that 598 is 455 + 85 +55 + 3 and 916 is 597 + 122 + 176 +21). This statistical result occurs because the components are not perfectly correlated with each other.
Source: Table 6 from Haughton *et al.* (2004).

One puzzle remains: why would a private firm undertake an economically unattractive project? The answer is subsidies, in the form of

- accelerated depreciation allowances;
- a possible Federal production tax credit; and
- the sale of Massachusetts "green credits."

Together, we expect these to bring Cape Wind 4.04 cents/kWh, or almost half of the 9.06 cents/kWh cost of production (see Table 2). While some amount of subsidy to wind power is appropriate, we find that subsidies on such a scale are excessive and go beyond what serves the public good.

Table 2: ***Reconciling Private and Economic Returns***

	Cents/kWh	*PV, $ millions*
Private return on equity	**0.29**	**30**
Plus external benefits:		
+ Capital and operating expenditures saved	0.99	104
+ Value of emissions abated	1.03	108
+ Value of greater energy independence	0.10	11
+ Taxes paid to Federal, State and Local governments, and royalties	0.39	41
Less external costs:		
– Cost of integrating wind power with New England grid	0.24	26
– Environmental/aesthetic costs	0.37	39
– Federal production tax credit	0.94	98
– Massachusetts green credits	2.55	267
– Accelerated depreciation for tax purposes	0.55	58
And technical adjustments		
+ For value of output (economic valuation – market valuation)*	0.28	29
– For loan effect (developer can use optimal loan financing)**	0.41	43
= Net Economic Benefits (from Table 1: Benefits – Costs)	**(1.99)**	**(209)**
Memo items:		
Actual subsidy (net of taxes)	3.65	382
Optimal subsidy	2.56	268
Therefore: excess subsidy	**1.09**	**114**

*The market valuation measures what Cape Wind receives from selling the electricity from the project; the economic valuation measures this as the value of energy saved (which is slightly higher than the market valuation).

** The developer has recourse to loan financing, which raises the private return on equity since the interest rate on loans is lower than the discount rate of 10%.

Source: Table 7 from Haughton *et al.* (2004).

Accurately quantifying these benefits is important in the context of a true cost-benefit test to which this project should be subjected, given the substantial public investment required for this project ($382 million by our estimation). The public deserves a better return on its massive investment and a better analysis of its benefits and costs.

Proposition 2.
The DEIS conclusion of "no adverse impacts to tourism and recreation" is not supported by the data.

Section 5.16.5 of the DEIS concludes that "no adverse impacts on tourism and recreation are expected from the Project." In fact, the DEIS asserts that the project could have a positive net effect on tourism. We believe this to be an erroneous conclusion based on a flawed study and an incomplete analysis of the available information.

The only tourism study considered in the DEIS is a survey by Market & Opinion Research International (MORI) Scotland performed for the British Wind Energy Association (BWEA) and the Scottish Renewables Forum in 2002.[2]

Section 5.16.4.6 of the DEIS states:

> The previously-referenced study completed in September 2002 for the BWEA and Scottish Renewables Forum titled, "Tourist Attitudes towards Wind Farms" (MORI Scotland, 2002), was conducted in Argyll and Bute, two towns in Scotland that are frequently visited due to their high landscape value. The area has the highest concentration of wind farms in Scotland. The study concluded that the wind farms have had a positive effect on visitor's impressions of the local town, with 43% of those polled saying that the wind farms had either a completely positive effect or a generally positive effect and 43% saying that the wind farms made no difference. When asked if the wind farms would affect their likelihood to visit the town in the future, 91% said that it made no difference.

A Flawed Survey:
The MORI Scotland survey attempts to answer the central question of whether or not some tourists will avoid an area due to the presence of wind turbines by conducting a survey in the presence of wind turbines.

However, the survey is flawed because, in addition to some poorly framed questions, it suffers from *selection bias* and thus does not represent a truly random sample of tourists. This is because it surveyed tourists in the midst of the highest concentration of wind farms in Scotland. But the one specific group that this survey intends to test for (tourists with an aversion to wind turbines) would certainly not choose to vacation in this area and would thus be excluded from the sampling.

Instead of a truly random sample of tourists, MORI Scotland actually sampled a group of tourists that 1) have positive feelings towards wind turbines, 2) have no strong feelings either way, or 3) don't know the turbines exist. In fact, this third group is actually well represented. Despite the fact that this area has the highest concentration of wind farms in Scotland, sixty percent of respondents replied that they were not aware of any wind turbines in the area; only 20% of respondents to the survey had seen a wind turbine in the area.

Biased:
Section 5.16.4.6 of the DEIS states that:

> wind farms have had a positive effect on visitor's [sic] impressions of the local town, with 43% of those polled saying that the wind farms had either a completely positive effect or a generally positive effect and 43% saying that the wind farms made no difference.

This is misleading. The question whether wind farms have had a positive effect on visitors' positive impressions was asked only of those who said they knew the turbines were in the area, regardless of whether or not they had even seen them. Among this group that were aware of, but may or may not have seen, the turbines, 8% stated that the wind farms had a generally or completely negative effect on their impression of the area; this statistic is not mentioned in the DEIS, but it is important because this is the group that might potentially scale back its tourist spending in an area with windmills.

If a similar number were applied to Cape Cod, it would suggest that 480,000 of the 6 million tourists who visit the Cape annually would have a negative effect; and if a fifth of these were to stay away, the loss in direct spending (at $167 per tourist) would be $16 million annually, or $26 million if indirect and induced effects are included. These numbers are purely illustrative, but they show the potential importance of accurately measuring the size of the group that is turned off by windmills.

Suggestion:
In the summer of 2003, BHI surveyed 497 tourists in Cape Cod and Martha's Vineyard. Respondents were shown three pairs of photographs with different views of Nantucket Sound, first without, and then with, wind turbines on the horizon, and given a brief verbal explanation of the project. Once respondents had grasped the nature of the visual implications of the project, they were asked a series of questions about their willingness to visit the Cape.

The beauty of the region and Nantucket Sound in particular are clearly an important asset for the tourism industry on Cape Cod. Over 90% of respondents rated "The ocean views" as an important or very important reason for visiting the Cape.

After observing the visual simulations of the wind energy project, the majority (52%) of tourists believed that the turbines worsened the view either slightly or a lot. In the eyes of these respondents, the presence of a 130 turbine wind energy project lessened the area's appeal as a vacation destination. The survey found that 3.2% of tourists said they would spend approximately 3 fewer days on Cape Cod if the project were built. Another 2% said they would not visit at all. As the DEIS points out, however, there would likely be some eco-tourism as a result of the project. The BHI study estimates 1% of tourists would visit more often as a result of the project and another 0.6% would visit solely to see the turbines.

It is interesting to point out that in the BHI survey, 94% of tourists stated that the presence of wind turbines would not affect the likelihood of their returning to Cape Cod. This compares favorable to the 91% figure found in the MORI survey. Yet when we consider the impact of the small minority that is affected, the net result is an overall loss in tourism spending between $57 and $123 million annually.

While the preponderance of evidence (in both European surveys and the BHI survey) suggests that most tourists will be unaffected by the presence of wind turbines, it is wrong to assume that there will be no impact on the regional tourism industry. And while only the most pessimistic opponent of the project would argue that the presence of wind turbines would cripple the tourism industry on Cape Cod, a conservative estimate of $57 million is not negligible.

Proposition 3.
The DEIS conclusion that the project would not adversely affect property values is based on a flawed study, ignores other research, and is untenable.

The DEIS concludes that the wind energy project is not expected to adversely affect property values within the region.

Section 5.16.5 of the DEIS states:

> Based on recent studies conducted in the United States and in Europe, property and real estate values are generally not affected, or actually increase in areas near wind farm development. Based on these studies, the Project is not expected to adversely affect property values.

This conclusion relies primarily on an inappropriate extrapolation from a flawed study conducted by the Renewable Energy Policy Project (REPP) in 2003.[3] Furthermore, the Corps appears to have cherry picked studies which support the applicant's viewpoint rather than include a true review of the literature. The DEIS makes no mention of two studies (referenced in the REPP report) that report potentially negative impacts on property values.

A 1996 quantitative analysis from Denmark, which employed hedonic regression analysis, found that homes close to a wind turbine or turbines ranged in value from approximately $2,900 to $16,800 less than homes further away.[4] The study's methodology is not clearly discussed, so the results should be treated with caution, but not necessarily dismissed as the Corps has done. Another study, performed by Sinclair Knight Mertz, concluded that while properties with wind turbines on them may increase in value, other properties may be adversely affected if within sight or audible distance of the wind turbines.[5]

REPP Study

The REPP, whose goal is to "accelerate the use of renewable energy," claims to have found that wind farm development has had little negative effect on property values in the U.S. since 1998; indeed the report found that property values actually increased faster in some areas with wind turbines. This unexpected result received much attention when the study was released in May 2003. Unfortunately, the authors provide no explanation or interpretation for these results, and say they have "no idea" whether the wind farms were the reason for the increased value.[6] This is because the REPP relied on an oversimplified and imprecise model that lacked the ability to truly model the housing market.

REPP Methodology

The REPP considered property sales data around wind energy projects that came on-line after 1998 but before 2001. They employed three approaches to identifying property value impacts within the case study regions:

1. They compared the sale price of homes within five miles of wind turbines (the "view shed," whether there was a view or not) with the sale price in a comparable region between 1996 and 2002.[7] According to the authors, "If wind farms have a negative effect, we would expect to see prices increase slower (or decrease faster) in the view shed than in the comparable."

2. They compared the sale price of properties within the view shed before and after major wind energy projects came on-line. "If wind farms have a negative effect, we would expect to see prices increase slower (or decrease faster) in the view shed after the wind farm went on-line than before."

3. They considered the sale price of properties in both the view shed and comparable community after the wind energy projects came on-line.

The first problem, which is immediately apparent, involves the inclusion of Case 1 in the analysis. The report states that, in some areas, property values actually increased faster in the view shed than in the comparable area over the entire time period. For example, in Site Report 1: Riverside County, California, prices in the view shed increased by $905 more each month than in the comparable area from 1996 through 2002. But when one considers that the project came on-line in 1999, what exactly does this tell us? Without any knowledge of the conditions in both areas prior to the development, how can we make any judgment on the impact of the wind turbines?

The authors anticipated this criticism of their methodology, and hoped to answer the concerns by pointing out that Case 2 and Case 3 often produce similar results and thus support the Case 1 analysis.

This matters little, as will be shown below.

What is absent from the report is a satisfactory baseline rate of change in property values – a counterfactual – from which to make comparisons. Without knowing what is happening to property values in both areas prior to the development, it is not possible to discern any significant change. An example will help to clarify the criticism:

Consider Site Report 1: Riverside County, California. Below is a reproduction of Table 1.4 from the REPP report. It summarizes the regression results and compares the rate of change in average monthly sales prices for each Case.

- Case 1 is the entire time period of the sample, January 1996 through November 2002. As stated above, the view shed rate of change exceeds the comparable by $905. The authors recognize that this tells us little, so they hope to support it with Cases 2 & 3.
- In Case 2, they show that prices increased faster in the view shed after the project came on-line than before. Again the authors are careful not to suggest that the turbines caused this increase.
- Finally, Case 3 illustrates that after the project came on-line prices increased faster in the view shed than in the comparable area.

This seems to suggest that the turbines have had little effect on prices, and may have actually increased them to some extent. But what is missing? Notice that the authors have not included a rate of change in prices in the comparable area prior to the development. How can we compare a change in prices if we have no baseline?

The authors tell us that the rate of change in the view shed, after the development, is 63% greater than the rate of change in the comparable area, after development (See Table 1.4). But this again tells us very little; the price inflation in the view shed may historically have been much higher than the comparable area. We have no way of knowing whether or not the price inflation in the view shed had been even faster than in the comparable area prior to the development. If this were the case, 63% would imply a negative impact on prices.

We can, however, perform a simple test, by comparing the ratio of the change in prices after the development to the change in prices for the entire period. Certainly this is not an ideal comparison, but without any knowledge of the rate in the comparable area before the development or the raw data it is the best we can do.

TABLE 1.4 RIVERSIDE COUNTY, CALIFORNIA: REGRESSION RESULTS

Projects: Cabazon, Enron, Energy Unlimited, Mountain View Power Partners I & II, Westwind

Model	Dataset	Dates	Rate of Change ($/month)	Model Fit (R2)	Result
Case 1	View shed, all data Comparable, all data	Jan 96 - Nov 02 Jan 96 - Nov 02	$1,719.65 $814.17	0.92 0.81	The rate of change in average view shed sales price is 2.1 times greater than the rate of change of the comparable over the study period.
Case 2	View shed, before View shed, after	Jan 96 - Apr 99 May 99 - Nov 02	$1,062.83 $1,978.88	0.68 0.81	The rate of change in average view shed sales price is 86% greater after the on-line date than the rate of change before the on-line date.
Case 3	View shed, after Comparable, after	May 99 - Nov 02 May 99 - Nov 02	$1,978.88 $1,212.14	0.81 0.74	The rate of change in average view shed sales price after the on-line date is 63% greater than the rate of change of the comparable after the on-line date.

In the view shed, the rate of change in prices over the entire period is $1,719.65 per month. In the period following the project, the rate of change was $1,978.88. Thus, the rate is 15% higher in the post-project period. As the post-project period is embedded in the overall rate of change (thus pulling the overall rate higher), we know that the previous rate of change was lower than $1,791.65. Although we have no standard errors from which to work, it is clear that the spread in prices is not very large. It seems there is not much volatility in the view shed prices.

In the comparable area, the overall rate of change is $814.17 per month, but jumps to $1,212.14 after the project comes on-line. The rate of change in the post-project period is 49% higher than the overall rate. This implies a very low rate of price inflation in the comparable area before the project, possibly in the range of $400 per month.

Table 3: Ratio of Price Inflation, After-to-Overall

Dataset	Rate of Change($/month)		Ratio After-to-Overall
	Overall	After	
View shed	1719.65	1978.88	15.1%
Comparable	814.17	1212.14	48.9%

What does this experiment tell us? The ratio of the rate of change after the project to the rate overall is much greater in the comparable area. In other words, prices increased at a much faster rate in the comparable area (compared to its baseline), than in the view shed, following the project's on-line date. Something has occurred to rapidly increase the growth in prices in the comparable area. Without a true baseline growth rate, we cannot be sure, but this result certainly stands in stark contrast to that found by the authors.

Finally, although not conclusive, an interesting point can be made by examining the authors' graph of average residential sales prices in both the view shed and comparable areas of Riverside County (reproduced below). Recall that the authors concluded that prices increased faster in the view shed than in the comparable area in Riverside.

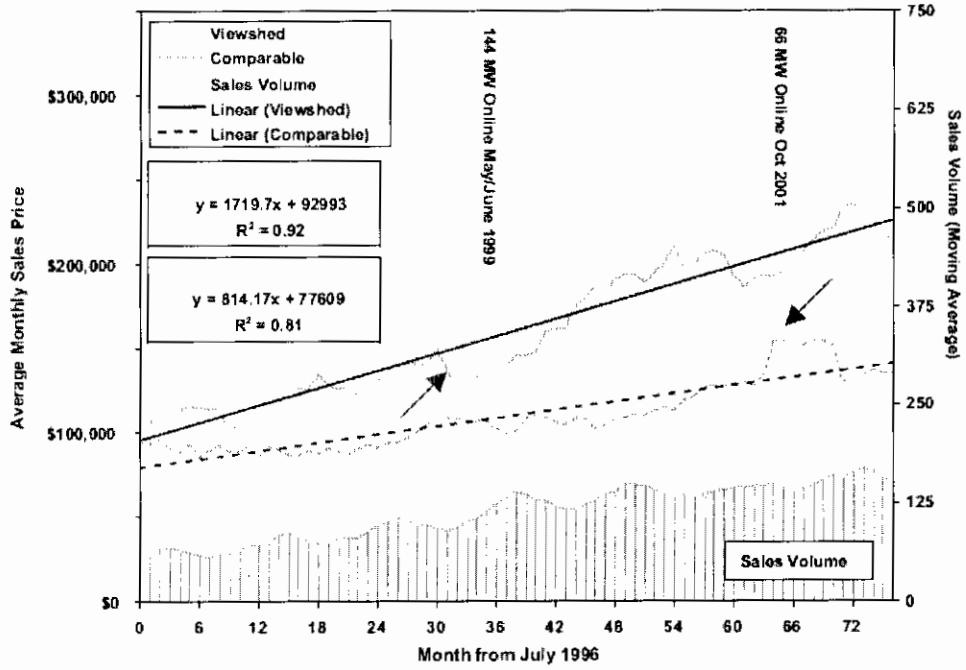


FIGURE 1.4 AVERAGE RESIDENTIAL HOUSING SALES PRICE
RIVERSIDE COUNTY, CALIFORNIA 1996-2002

In months leading up to the on-line date of May 1999, prices in the view shed area began to fall (this is indicated by an arrow in Figure 1.4). Eventually, normal market pressures lead to a general rise in the price level and the view shed prices begin to climb again, but from a reduced base. The same fall in prices can be seen prior to the October 2001 project coming on-line. This suggests that the introduction of the windmills was associated with a drop in property values, although this could be verified only with the estimation of a true hedonic model. Finally, notice the substantial spike in prices in the comparable region immediately following the project in October 2001.

Why Property Values Might Increase

As was mentioned above there is an explanation for why prices might increase when a new wind energy project is constructed. To help explain this phenomenon, consider the town of Martinsburg in Lewis County, New York. This small town of 1,249 normally meets its local obligations with about $400,000 in tax revenue. It is now, however, in line to receive payments of $1.23 million a year for 10 years from a new wind energy project. In addition to these payments, the developers have negotiated lease and royalty payments with 92 landowners that will pay them about $1.25 million a year. In total, the developers will contribute approximately $10 million a year to the local economy.[8] This enormous contribution will have a profound impact on this small, rural economy.

This is not atypical. In general, wind energy projects have a positive effect on rural communities. Beyond the revenue generated from lease payments (typically around $5,000 per turbine), wind energy projects also have an impact on a larger scale. The net increase in funds to local jurisdictions help fund local schools, police and fire departments, and ease the tax burden on local property owners. In addition, small economies will greatly benefit from the employment effects of these projects. These positive impacts may offset any visual impact and make the region more desirable, and thereby increase property values for the entire community.

This will not be the case on Cape Cod. Coastal properties derive a significant portion of their value from their view of Nantucket Sound. To the extent that it is diminished, they can expect to lose some value. Where this amenity value may not exist in rural property markets, or its diminished value is overshadowed by the economic benefits of a wind farm, the aesthetic effects of a wind farm are negligible. On Cape Cod, the economic benefits of the wind farm will be small relative to the economic base of the region. Homeowners on the Cape, particularly owners of coastal properties, have legitimate concerns about their property values.

Project-Scale is Important

In addition to the REPP report, the DEIS includes communications between the applicant and assessors in communities adjacent to four wind turbine facilities in the Northeast. Although only anecdotal, the DEIS provides a summary of each communication. According to these sources, no negative impact on property values has been observed.

The same caution must be applied in extrapolating from these experiences, however. Consider the projects about which the applicant obtained information:

1. Hull, Massachusetts (1 turbine),
2. Madison County, NY (Two projects, 25 turbines & 7 turbines): Included in the REPP report and projects pay substantial royalties and payments to town and landowners,
3. Searsburg, VT (11 turbines),
4. Princeton, MA (8 turbines).

None of these projects approach the massive scale of the Cape Wind project. A number of studies have confirmed that the negative visual effect of turbines increases with the scale of the project.[9] An offshore wind energy project consisting of ten turbines may have no discernable impact on coastal property values, but the same might not be said of a 130 turbine project.

Proposition 4:
The DEIS estimates of the value of health improvements are greatly exaggerated (at $53 million annually). Our own estimates show health improvements of $7 million, and even this may be overstated.

The Army Corps Draft Environmental Impact Statement (DEIS) concludes that the Cape Wind Project could have a "cumulative beneficial effect on public health, and result in a related reduction in the costs of adverse health impacts from existing power plant emissions....The yearly monetary savings associated with these reductions in adverse public health impacts is estimated at approximately $53 million dollars."

This estimation is based on a flawed extrapolation from the findings of a Harvard Public Health study, which focused on improving emissions at two of the nation's worst polluting power stations. This estimate largely overstates the annual monetary savings; we find the expected savings to be in the range of $7 million annually. The difference arises from the assumption, made originally by Cape Clean Air and reproduced by the Army Corps, that the wind park will offset production at either the Salem Harbor or Brayton Point power stations. This assumption, which we believe to be erroneous, is not supported by any evidence.

The Army Corps' Estimates

Below is a reproduction of Army Corps' Table 5.16-4. The table reports the estimated amount of pollutant reductions attributable to the wind park, assuming the wind park output offset production at a) the marginal producer in New England, based on an ISO-NE marginal emissions analysis, or b) each of the selected power plants on a one-for-one basis.

Note that the (average) marginal producer in New England is much cleaner than any of the selected power plants. This point is made clearer by observing the implicit emission rates of each source compared against the emission rate of the marginal producer in New England. Table 4 below illustrates these emission rates.

Table 5.16-4 – Army Corps of Engineers Measures of Emission Reductions using Wind Park Average Contributions (Tons/Year)

Reference	CO_2	SO_2	NO_X	PM	CO	VOC
ISO NE Marginal Emission Rates	1,108,039	4,606	1,415	N/A	N/A	N/A
Salem Harbor	N/A	9,800	2,600	11	N/A	N/A
Brayton Point	N/A	11,200	2,460	68	N/A	N/A
Canal Plant	1,426,886	8,098	2,152	353	1,396	44
Average of Salem, Brayton, Canal	1,426,886	9,699	2,404	177	1,396	44
Number used in Analysis	**1,108,039**	**4,606**	**1,415**	**177**	**1,396**	**44**

Source: U.S. Army Corps of Engineers. Draft Environmental Impact Statement for the Cape Wind Energy Project, Nantucket Sound, Massachusetts. http://www.nac.usace.army.mil/projects/ma/ccwf/deis.htm

As the table illustrates, the 2000 ISO-NE marginal emission rates are dramatically lower than the emission rates at the selected power plants. Lower still are the 2002 ISO-NE marginal emission rates which, although available since December 2003, have not been incorporated into the Corps' analysis. As the data illustrate, emission rates have fallen considerably over the past few years. This is a result of an increase in natural gas-fired marginal generation coupled with a decrease in coal-fired marginal generation.[10]

Estimating Health Effect Offsets and Monetary Values

Although the Army Corps reports ISO-NE marginal emission rates in its Table 5.16-4, it does not use these numbers when calculating the health effects and monetary values. Instead, the Army Corps' methodology is to 1) assume a one-for-one offset at either Salem Harbor or Brayton Point, 2) average the emission reductions between the two, and 3) attach a monetary value based on this average. The result of this estimation is an annual savings of $53.1 million.

This result is incorrect, for the following reasons:

1. Health effects and monetary value estimates are derived by assuming that the wind park's output will offset either Salem Harbor or Brayton Point power stations – two of the region's worst polluters. This assumption is flawed, and does not correspond to the way that ISO-New England distributes the marginal load across power plants. The emission rates from the marginal producers in 2000, the plants that would be offset by Cape Wind Energy, are 2-3 times lower than both Salem and Brayton Point, as Table 4 shows.

2. Where the ISO-NE marginal emission rates are used, the Army Corps relies on outdated information. The ISO-NE numbers are based on 2000 data. Since this time, cleaner power sources have come on-line and marginal emission rates have continued their considerable downward trend. Updated numbers were available in January 2003 and again in December 2003.

Table 4. Implicit Average Emission Rates (lbs/MWh)

Emission Rates	CO_2	SO_2	NO_X	PM	CO	VOC
ISO-NE Marginal Emission Rates, 2000	1,488.1	6.2	1.9	N/A	N/A	N/A
ISO-NE Marginal Emission Rates, 2002	1,337.8	3.3	1.1	N/A	N/A	N/A
ISO-NE Marginal Emission Rates, 2003	1,179.0	2.0	0.7	N/A	N/A	N/A
Salem Harbor, 2000	N/A	13.2	3.5	0.0	N/A	N/A
Brayton Point, 2000	N/A	15.0	3.3	0.1	N/A	N/A
Canal Plant, 2000	1,916.3	10.9	2.9	0.5	1.9	0.1

When we use the more appropriate assumptions about marginal emission rates – i.e. the 2003 ISO-NE marginal emission rates rather than the average of the Salem Harbor and Brayton Point plants – the value of annual health savings, based on the same assumptions about the value of lives saved as used by the Army Corps, falls from $53.1 million to $8.0 million.

An alternative approach is to use estimates of public health impacts per unit of emission ($/ton) derived by the authors of the Harvard Public Health studies. This allows a monetary savings estimate to be derived using a credible, published estimate of unit health costs, combined with the ISO-NE Marginal Emission numbers, which reliably simulate the regional energy market.

Table 5 illustrates the public health costs per unit of emission derived in "Development of a New Damage Function Model for Power Plants: Methodology and Applications," by Jonathan Levy *et al.* of the Harvard School of Public Health (1999). The values have been updated here to 2004 dollars using the Bureau of Labor Statistics Consumer Price Index.

Table 5. Public Health Costs per Unit Emission

Pollutant	$ (2004 prices)	$ (1997 prices)
SO_2	940	790
NO_2	916	770
CO_2	4.04	3.40

These values per unit of pollutant can be used to estimate the savings attributable to the wind park's production. The savings are summarized in Table 6 below, using 2002 emissions data (as was done in the BHI cost-benefit analysis published in 2004). Almost all of the health impacts are associated with SO_2 and NO_x, so the absence of information on carbon monoxide (CO) and volatile organic compounds (VOC) is unlikely to have much significance. The key result is the findings that the health savings due to the Cape Wind project, using this approach, would be $7.1 million, again well below the Army Corps estimate of $53.1 million.

Table 6. Estimated Annual Monetary Savings, by pollutant, 2004 prices

Reference	CO_2	SO_2	NO_X	PM	CO	VOC	Total Savings
ISO-NE Marginal Emission Rates, 2002	4,024,349	2,308,840	750,128	N/A	NA	NA	$7,083,317

Jonathan Haughton, Douglas Giuffre, John Barrett, David G. Tuerck

Beacon Hill Institute at Suffolk University, Boston, MA
February 17, 2005

Endnotes

[1] Jonathan Haughton, Douglas Giuffre, David G. Tuerck and John Barrett, *An Economic Analysis of a Wind Farm in Nantucket Sound* (Boston: Beacon Hill Institute at Suffolk University, May 2004).

[2] Mori Scotland, *Tourist Attitudes Towards Wind Farms- Final Report.* Prepared for Scottish Renewables Forum and the British Wind Energy Association. September 2002; available from http://www.scottishrenewables.com/data/reports/Tourist%20Attitudes%20full%20report.PDF; Internet; accessed on February 18, 2005.

[3] George Sterzinger, Fredric Beck and Damian Kostiuk. *The Effect of Wind Development on Local Property Values.* (Washington, D.C.: Renewable Energy Policy Project, May 2003).

[4] Jørgen Jordal-Jørgensen, *Social Assessment of Wind Power: Visual Effect and Noise from Windmills—Quantifying and Evaluation.* Institute of Local Government Studies, Denmark. April 1996; available from http://www.akf.dk/eng/wind0.htm; Internet; accessed February 18, 2005.

[5] See Sinclair Knight Mertz. *Social Economics and Tourism.* Environmental Effects Statement Supplement for the Pacific Hydro Limited Portland Wind Energy Project, Volume C. 2001. Cited in Sterzinger *et al.*

[6] John Leaning, "Study: Wind farms don't erode value," *Cape Cod Times*, June 20, 2003; available from http://www.capecodonline.com/special/windfarm/studywind20.htm: Internet; accessed February 22. 2005.

[7] The timeline for individual projects vary slightly depending on available data. Some project timelines span 1997-2003, for instance.

[8] Tim Knauss, "A Mighty Profitable Wind; Towns, School Districts Cash in on Renewable-Energy Project," *The Post-Standard*, March 21, 2004.

[9] See for instance, NFO System Three, *Investigation into the Potential Impact of Wind Farms on Tourism in Scotland.* Prepared for Visit Scotland. 2002; available from http://www.scotexchange.net/KnowYourMarket/kym-windfarm-report.htm; Internet; accessed February 18, 2005.

[10] ISO New England, "2003 NEPOOL Marginal Emission Rate Analysis," December 2004; available from http://www.iso-ne.com/Planning_Reports/Emissions/Marginal_Emissions_Analysis_2003.pdf; Internet; accessed February 22, 2005.

1-5-05

To: Karen Adams

re Ref. File # NAE-2004-338-1

I beg carefully read a few of thousands of people's feelings about the proposed Wind Farm in Nantucket Sound.

I pray you research carefully the alternative locations that have been proposed. None is against Wind Energy — ONLY its location.

Generously,
Eleanor Harrison

205-A Pine Lane
Osterville, MA 02655

Ms. Eleanor Harrison
205A Pine Ln
Osterville, MA 02655

Take FDA's approach, and go slow on wind

In quoting Dr. Chivian, Kathleen Kleekamp (Letters, Dec. 29) seems to suggest it is the Nantucket Sound project or none. That is patently not the case. There are many alternative sites. Nor is it Cape Wind or no one else.

Just as the controversy has a positive side to it, so, too, does taking one's time, looking at the big picture, looking at many more appropriate sites where this technology and other technologies can be installed and studied. Let's take the time to learn which technology can really produce the best results.

There simply is no solid evidence anywhere – including in Europe – that what Cape Wind says is so. We need to be right about what we do and how we do it.

Just as we study the effects of a new drug before we authorize its use, so, too, with these new technologies. The Army Corps of Engineers process and so-called findings, funded, it appears, by Cape Wind itself, can hardly be accepted as adequate.

JOHN T. RIORDAN
Cotuit

Wind farm's not a Sound idea

Editor's note: This letter was addressed to Karen Adams of the U.S. Army Corps of Engineers, with a copy to the Patriot..

We are writing to express our deepest concern for the plans Cape Wind has for Nantucket Sound.

Please note that we have lived on beautiful Cape Cod for over 55 years.

WE DO NOT live in a trophy house on the waterfront! We don't even have a boat!

WE DO NOT WANT A WIND FARM ON NANTUCKET SOUND! If Cape Wind is permitted to build these monsters there, what is to prevent other companies from doing the same thing?

Most people we know are for alternative energy, but let's keep these monsters land-based.

We were able to save the Lower Cape from development with the establishment of the National Seashore. Can't we do the same for Nantucket Sound?

PLEASE SAVE OUR SOUND!!!

004964

During a visit to the Cape last week, **Gov. Mitt Romney** said he would support wind projects in the Bay State – just not on Nantucket Sound.

Sure enough, his administration last week endorsed a plan by a company called Hoosac Wind to build 20 turbines in the towns of Florida and Monroe, in the northwestern corner of the state not far from the Vermont line.

"I've seen wind farms, and they are not pretty," the governor said during a hearing on the Cape Wind project Tuesday at Mattacheese Middle School in West Yarmouth.

"Nantucket Sound is a national treasure, and as such, should not be a factory for wind. Public interest must trump private profit."

Maritime academy sees wind in its future

■ School officials think a campus turbine could pay for itself in about 10 years.

By **CONOR BERRY**
STAFF WRITER

BUZZARDS BAY – Massachusetts Maritime Academy wants to be the site of the first state-owned wind turbine and is seeking bids for a land-based system to power the Taylors Point campus.

The plan calls for a turbine about 200 feet or taller on windswept Taylors Point to be erected by summer. School officials envision a windmill between 100 and 660 kilowatts.

The turbine would be nowhere near as large and powerful as those proposed for Nantucket Sound. Cape Wind Associates is seeking approval to erect 130 turbines, each standing 417 feet as measured to the tip of the highest blade, with a total maximum output of as much as 420 megawatts. One megawatt equals 1,000 kilowatts.

The Massachusetts Maritime Academy project is estimated to cost around $1 million.

The school is working with the Massachusetts Technology Collaborative and the Renewable Energy Research Lab at the University of Massachusetts in Amherst. The lab is providing technical assistance on the project, UMass engineer Sally Wright said.

The state Division of Capital Management has set a deadline of March 9 for bidders to propose comprehensive design and construction plans for the maritime academy's turbine.

Academy officials believe the system could generate enough electricity to power the campus. It also would bolster the maritime academy's engineering program by incorporating renewable energy studies into the curriculum.

Saving taxpayers money is another incentive propelling the project, said Commodore Richard Gurnon, acting president of the academy.

A turbine would help wean the academy from its reliance on fossil-fuel power, he said, saving the state school about $100,000 annually in energy costs. And Gurnon called that a "low-ball estimate."

Proposal

■ **What:** A land-based turbine on Massachusetts Maritime Academy's windswept campus.

■ **Size:** About 200 feet high and generating 100-660 kilowatts.

■ **Cost:** About $1 million.

■ **Expected savings:** About $100,000 a year.

■ **Why:** To power the campus, save energy costs and bolster the school's engineering program by incorporating renewable energy studies into the curriculum.

The school's annual NStar electric bill ranges from $300,000 to $400,000.

"If we intend to teach renewable energy ... then we need those resources here on campus," Gurnon said.

"We need to see them, touch them, maintain them, and develop a better understanding of how they work."

In addition to the electricity generated, the wind-powered system would produce what are known as RECs, or Renewable Energy Certificates. Gurnon said the academy could sell its RECs to potential customers, such as cash-strapped Mirant, which owns the Sandwich power plant on the Cape Cod Canal.

Following the deregulation of the state's energy marketplace, all electricity generated in Massachusetts now comes with two values – the electricity itself and RECs, which describe the characteristics of its production, such as emissions and the age of the power plant.

These certificates are desirable because of the growing demand for so-called green energy. Because of the state's requirement that 1 percent of energy producers' portfolios include renewable sources, a market has developed for trading RECs. Certificates can be sold separately or along with the energy commodity itself.

The school has no immediate plans to sell electricity.

"If we put up a turbine, we will use all of the output here on campus," Gurnon said. "It's unlikely that we'll be exporting electricity."

Elsewhere on the Cape, Provincetown, Eastham, Harwich, Yarmouth, Barnstable and Falmouth are also considering land-based wind turbine systems. In some cases, towns are moving forward with plans to erect data towers to determine whether various sites are suitable for turbines.

Hull is home to the only municipally owned turbine in the state. There, a 240-foot wind turbine – measured to the top of the highest blade – produces 660 kilowatts.

If Massachusetts Maritime Academy's plan comes together, Massachusetts would have two publicly owned turbines.

NIMBY charge is an insult

At a recent meeting of the State Energy Facilities Siting Board, a State Commissioner said that opposition to the proposed Nantucket Sound wind farm is "the worst form of NIMBYism." This is an insult to all the people of Cape Cod who have been discussing the pros and cons of the project for three years. The issues involve the jobs of hundreds of fishermen and shellfishermen and the food they produce. Another concern is the safety of boaters, ferry passengers and people in low-flying aircraft. There are so many issues that it has taken a 4,000-page Environmental Impact Statement to cover them.

When some people in Boston feel this is the worst form of NIMBYism, they are really saying – We don't care about Cape Cod issues. Just build it in your backyard.

Gail Molloy
Cotuit

Mid-Cape Highway is the spot for turbines

Just outside of Palm Springs, Calif., on both sides of Interstate 10, there are 3,300 windmills dotting the desert over hills and mountains. What a spectacular sight.

These windmills generate 59 percent of electricity for Los Angeles.

Wind farms are not about saving money for the consumer. They are about our country becoming self-sufficient and saving lives.

I don't like the idea that Cape Wind wants to put the windmills on Nantucket Sound when they can put them right down the center of the Mid-Cape Highway and on each side along the Service Road, and get the same energy benefits for 59 percent of the Cape.

If our forefathers banned electricity because of the ugly poles, where would we be today?

LAVINIA QUINN
Centerville

THINK ABOUT . . .

. . . the Bourne and Sagamore bridges, reaching high over the Cape Cod Canal. Add more than 100 feet on top. That's the height of the towers in the proposed wind power plant. Think about 130 of them.

. . . a jumbo jet. The arc of the rotating blades on each tower is 328 feet. 100 feet longer than a Boeing 747.

. . . 130 huge towers drilled 80 feet into the ocean floor.

. . . 520 flashing navigation lights on 130 towers taller than the Statue of Liberty. Think about a city skyline.

. . . a private developer taking over 24 square miles of the Sound (almost as large as Manhattan) – for free. Better than free – subsidized by millions of tax dollars. Think about paying a developer to make money.

. . . nearly five million people visiting the Cape and Islands every year, confronted by 130 huge towers in the Sound.

. . . households saving just 10 cents a month on electric bills. 10 cents at best.

. . . the cost of offshore wind power. Twice as much as gas or onshore wind power. Offshore power only works with taxpayer subsidies.

. . . millions of migrating birds on the Atlantic flyway, faced with 130 blades spinning in an arc as long as a football field. How many birds won't get through?

. . . what comes after 130 turbine towers on Horseshoe Shoal. Another 390 (or more!) in the Sound, if all sites are built.

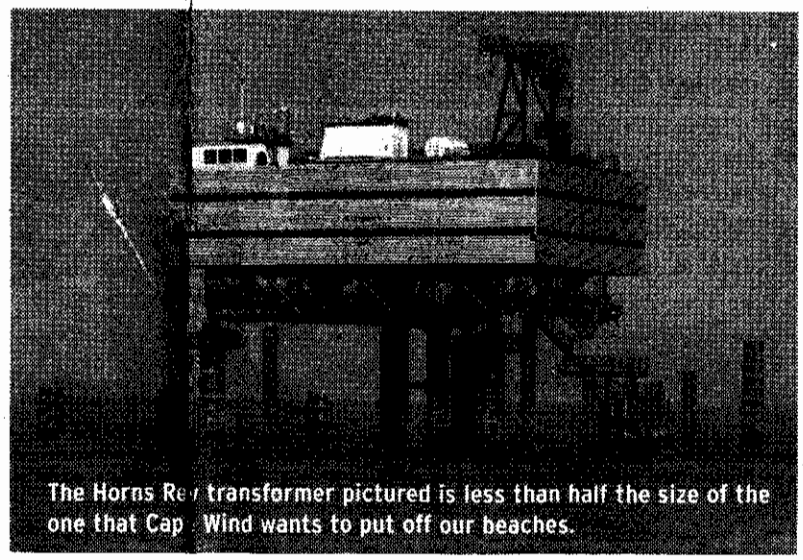
. . . a Federal agency in charge of docks and piers permitting the wind plant, despite no right to give away public land.

. . . a risky new technology and a developer who has never built a wind plant. The world's largest offshore plant, off Denmark, is being dismantled and brought to shore for repairs after only two years.

. . . who is conducting the studies in the environmental impact statement for the Cape Wind power project. Consultants paid by Cape Wind.

. . . who opposes the proposed wind power plant. Senator Edward Kennedy, Governor Mitt Romney, Senator Robert O'Leary, Congressman William Delahunt, Attorney General Tom Reilly, State Representative Demetrius Atsalis, and the majority of Cape residents.

. . . a 10-story tall oil-filled transformer station just off our beaches in Nantucket Sound.



The Horns Rev transformer pictured is less than half the size of the one that Cape Wind wants to put off our beaches.

. . . how much new energy we need. Instead of more power plants (we have an oversupply of electricity), why not serious conservation and better transmission?

. . . reducing dependence on foreign oil. Electricity represents only two percent of U.S. oil demand. Mileage efficiency would be far more significant.

. . . a balanced energy program of conservation and alternative energy sources (like land-based wind power) that doesn't compromise great natural resources.

Public had no time to ready for hearings

Regarding your Dec. 15 report on the Army Corps hearings, the reason the public was largely uninformed about the technical aspects of the 3,800-page Cape Wind Draft Environmental Impact Statement was the timing of the public hearings.

We asked that the Army Corps put off the hearings until January to give the public adequate time to digest this massive document, but it went ahead with the hearings on their timetable. In the meantime, Cape Wind Associates and the Conservation Law Foundation had the document months before the public saw it and were well prepared for the hearings.

Even the decision by the Army Corps to extend the comment deadline to Feb. 24 is insufficient to give the public enough time to comment on a document that took Cape Wind three years to prepare. What is the benefit of having the public less than fully informed on this project?

MALIA MILLIGAN
Research associate
Alliance to Protect Nantucket Sound
Hyannis

Gordon a modern-day Rockefeller

The history of the United States is replete with entrepreneurs such as Andrew Carnegie, John D Rockefeller and William Vanderbilt who enhanced and modernized the American capitalist system. Their defenders describe them as "industrial statesmen" for making the nation more productive and thus stronger. But the term robber barons suggests a different view because of their "public be damned!" attitude and ruthless business practices that earned the robber barons their disagreeable reputations.

It appears to me that the motives for developing Nantucket Sound into a large scale commercial power plant by Jim Gordon and his Cape Wind Associates rivals the motives of the 19th century robber barons which had more to do with the development of personal fortunes than the public welfare. Mr. Gordon would have us believe that New England needs to increase its energy diversity and decrease its consumption of fossil fuels, and to this end he is willing to invest hundreds of millions of dollars into the seabed to demonstrate his commitment to clean renewable energy.

I believe, however, that Mr. Gordon is a new breed of robber baron capitalizing on the lack of clear regulations and uncertain government authority to develop a private for profit power plant in the public domain of Nantucket Sound. Clearly, the 170 average Megawatt (MW) production of his project will have little impact on the total power requirement of approximately 25,000 MW for the Northeast Power Grid. It will have little or no impact on fossil fuel emissions, and little or no impact on imported oil and gas, but it would have a significant impact on the long term financial gain of the developers.

After 28 years of developing oil and gas plants, Energy Management Inc., dba Cape Wind, apparently had an epiphany that has compelled them to devote significant financial resources to developing a healthier environment, new jobs and lower energy costs. Really? Destroying 24 square miles of scenic beauty to achieve their goal in the face of significant public opposition bespeaks a "public be damned!" mentality.

When the Governor of the Commonwealth, the Attorney General, the Senior Senator, state senators and representatives and the public at large are all apposed to the project, what other conclusion can a reasonable person draw?

The ability to produce 170 Megawatts of power from a free renewable source to be sold at market prices layered with the sale of Renewable Energy Credits and the collection of Federal Energy credits would create a stream of income that conventional producers would surly envy.

Barry J. Thompson
Centerville

Project could imperil our coastal wildlife

The Cape Wind proposal to build a wind farm in Nantucket Sound would be disastrous for both the Sound and Cape Cod. It has the potential to destroy the Sound's environment, ruin the Cape's south coast beaches and significantly affect the Cape's tourist economy.

The simple fact that there will be a large oil-filled transformer in the middle of the Sound is of tremendous concern to me. It is easy to imagine an oil spill as the tank is being refilled or an oil leak caused by some vessel colliding with the transformer.

This is extremely frightening to me, as all along the Cape's south coast there is protected wildlife, which an oil spill would destroy. I am thinking about the terns on Kalmus Beach. We have protected them for years.

I am not opposed to renewable energy sources, but I do not believe the impact of this project on those of us who call Cape Cod our home is being considered. There is a right place and a wrong place for this type of project. Nantucket Sound is the wrong place.

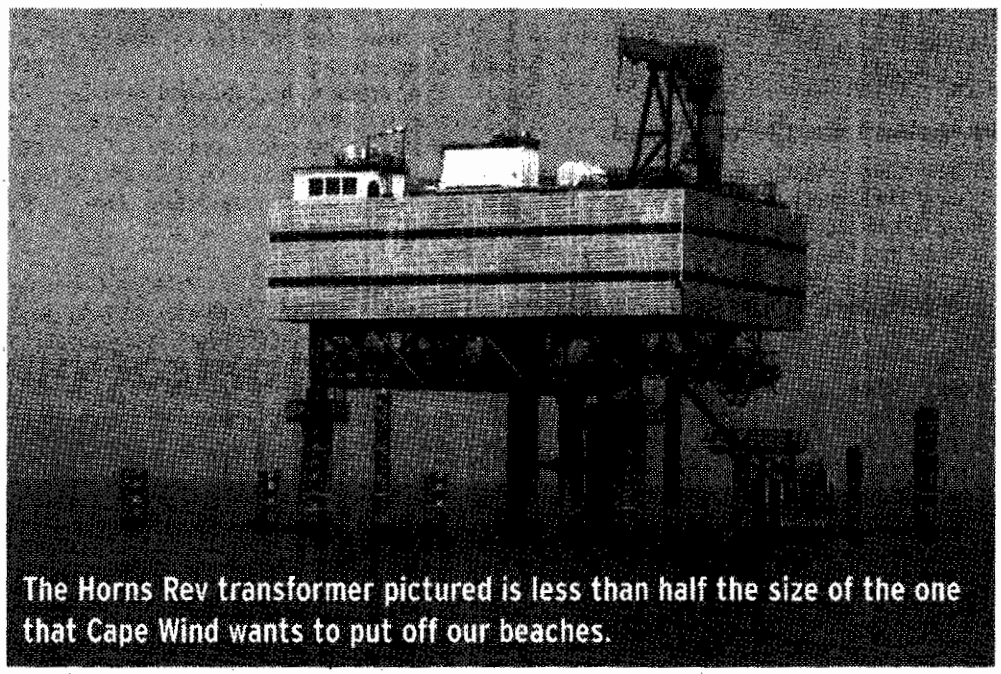
JOHN DE YOUNG
Hyannis

TIME TO TAKE ACTION!

Unless Cape residents take action now, we could have an industrial scale wind power plant right in the middle of Nantucket Sound and our beaches.

The US Army Corps of Engineers is being asked to give away 24 square miles of public land to a private developer despite overwhelming local opposition. It's time to call on our local and state agencies to defend our public property, our beaches, and our way of life.

The Cape Cod Commission is an important local voice that recognizes the Cape as a fragile and beautiful place - a place of finite resources. It is CRITICAL that we all attend the Commission's hearing on the Cape Wind project February 8th to voice our concerns.



The Horns Rev transformer pictured is less than half the size of the one that Cape Wind wants to put off our beaches.

Here are some of the voices that the Army Corps has already heard during previous public hearings.

ON LOCAL OPPOSITION

"We know that the applicant will receive a $250-million subsidy. We know that the applicant is attempting to gain control of public property for personal financial gain. We know that those who derive a living from fishing in these waters are against this

Wind farm will yield higher energy costs

Your recent editorial on energy conservation was timely, particularly in the season of Christmas lights. However, nothing reduces energy usage more effectively than to significantly increase its cost.

If the proposed wind farm project becomes reality, we can look forward to the very steep rises in electricity costs that have been experienced in all the other wind farm projects around the world. This will definitely reduce electricity usage, as those on low and fixed incomes will have to reduce their usage to balance their tight budgets. The middle classes and the rich will shrug or moan, but then continue to consume energy in their old ways.

If the hundreds of millions of taxpayer dollars to be given to Cape Wind Associates were used to install solar energy systems in the homes of those on fixed and low incomes, there would be even greater savings in energy usage, which would avoid all the negatives of wind farms. The quality of life for our disadvantaged citizens would also be enhanced rather than damaged.

It will not happen that way, because the environmental liberals really need an ugly vista that they can point to and say, "See how we are saving the world." As ever in life, for the bigots to get their warm and fuzzy feelings ... the poor and disadvantaged will have to suffer.

DAVID BATTEN
East Falmouth

All who care must protect our waters

Hey, everybody who lives here – think what is being considered – our waters, so great a part of our history.

Since man appeared here, we have depended on our waters for everything we need – joy, beauty, food, fun, etc.

I beg that all who care come now to protect it all. Please think what is planned for our waters! A wind farm taking up a huge part of it!

Please remember that open bays and oceans belong to us all – to look at, to sail, row, swim or travel over.

Don't make it impossible by stealing what means so much to us all!

ELISABETH EATON CLARK
Osterville

Wind energy's future is on the land

By BRIAN BRAGINTON-SMITH

While the debate on the offshore wind project rages, another wind effort is quietly under way: distributed wind energy, where small clusters of two to 10 turbines are being planned for community and private sites across Cape Cod.

This initiative is being pursued by Community Wind Power, LLC, a local company (not the Massachusetts Technology Collaborative). This company is owned by local people, employing local people and funded by local investors to bring the maximum combined benefit of clean renewable energy to the direct benefit of our communities. The company's motto is "Our wind, our communities, our future."

By utilizing our abundant wind resource for the benefit of our communities, and combining small, separate installations under one project umbrella, this effort can and will save hundreds of thousands of dollars per year directly for each of the host communities. While some sites will accrue more saving and collateral benefits than others, the net result will be significant revenue for landowners, an expanded tax base for local towns and a more economically and environmentally sustainable Cape Cod.

The Cape Cod Economic Development agency has identified two major areas of opportunity for our region to establish a more secure economic base: wind energy and environmental technologies such as advanced wastewater treatment. We can import the technology and development capacity and export the real economic value, or we can grow the industry here and then export the capacity to develop wind and environmental solutions to off-Cape communities and reap the resultant environmental and economic benefits.

We have the wind – that's why the debate rages and wind developers from off-Cape eye our market eagerly. We can capture it or give it away.

Make no mistake about it: Wind energy can save money. That's the reason it is the fastest-growing energy resource in the world today. To make foolish unfounded claims that it is more expensive and that it will raise our rates and hurt the most vulnerable is simply another fear-inducing erroneous statement. Our electric rates are going to give most of us sticker shock as the subsidized deregulated price ends early in 2005.

We need to embrace this locally based opportunity now, not shun it, and we need to make sure that what we do is locally based or we miss the boat and give away a substantial economic opportunity for our Cape Cod and South Coast region.

Everything we import, exports economic value; everything we export, imports economic value – it's really pretty simple when you think of it.

As a Yarmouth native who watched the carpetbagging of Cape Cod resources in the '50s, '60s and '70s, I feel comfortable stating that a lot of off-Cape people made a lot of money, developing Cape Cod and leaving us with the task of cleaning up the environmental destruction caused by the profit motive, nonsustainable development and a lack of local concern and consideration.

It's no surprise to me or other locals that people are suspicious and fearful of deeper and hidden motives of off-Cape development interests. Even the Alliance to Protect Nantucket Sound supports this local land-based wind energy effort. If it is going to succeed it will need local commitments and support as well as local roots. Remember: In the end it is "our community, our wind and our future" that is at risk.

Brian Braginton-Smith of South Yarmouth is a principal in Community Wind Power, LLC.

Romney's opposition to wind farm lauded

In response to "Romney's next step is to accept wind farm" (Letters, Dec. 29), thank heavens Gov. Romney has the backbone to oppose this project.

Does Dr. Chivian of Harvard Medical School, who was cited in the letter, really believe those who oppose the wind farm fail to understand the role large power plants play in global warming? Or, by building the wind farm, we will protect our children's health?

With all the alternative sites and other sources of energy available, it would be (in his words) a tragic and shamefully ignorant mistake to industrialize Nantucket Sound only because it is a cheaper place to build.

Offshore wind technology has been proved in Europe. I don't look forward to telling my grandchildren that Horseshoe Shoal was destroyed in order to provide a developer a one-time cost savings in site development.

GEORGE S. PETERSON
Sandwich

Apply Big Dig's lesson to Nantucket Sound

In light of the recent problems with the Big Dig, I feel it is even more important to stop the construction of the wind plant in Nantucket Sound.

America's first offshore wind plant, especially one of this magnitude, should be vetted properly with appropriate governmental oversight from federal, state and local authorities, as well as from interested civic groups and individuals. Sixty days to pore over 4,000 pages of data and hold public hearings is not enough time for a proper review, particularly during a busy holiday season.

It scares me to think of Nantucket Sound full of steel towers, turbines, and an industrial platform loaded with fuel. The Big Dig is a textbook example of a collaboration of big government and big business gone amok, big time! Let's hope Bechtel does not have a wind turbine division!

The government can redeem itself by doing the right thing on this project – forbid it in the proposed location.

LIZ EAGAN
Centerville

Hearings were timed to benefit Cape Wind

Having attended two of the four hearings on the wind farm, we strongly feel they all were cleverly scheduled by the developer to be held when summer people are not at the Cape, but also at one the busiest of times before the holidays – especially the final session held in the scientific environment of MIT in Cambridge.

Certainly this was strategically done to strengthen the developer's cause!

It is very unfortunate we who live on the Cape don't have a democratic voice by holding an actual voting referendum. These perfunctory hearings were poorly timed to have the least number of people who live here in the summer to voice their opinion on this project.

Finally, it was great to hear Gov. Romney at the Yarmouth hearing speak so forcefully against this endeavor, especially in reference to its circumventing certain necessary legalities and technicalities. Let's hope he consistently continues his opposition, and let's also hope our own Cape Cod senator, Ted Kennedy, will speak out vehemently against this project ASAP!

WOLFE and MARIAN SPRINGER
East Falmouth

Let no steel forest defile sacred Sound

I am vehemently opposed to the proposed Nantucket Sound wind farm and I am sick and tired of being labeled a NIMBY.

Put it in my back yard. Put it down the Mid-Cape Highway. But don't put it in our beautiful, historic Nantucket Sound.

We are incredibly blessed with raw, unscathed scenic vistas of natural beauty. Let's not allow an outsider to privately profit from our public property. Let's not riddle our sacred Sound with a steel forest. Cape Codders, unite, and attend the public hearing Tuesday at 7 p.m. at Mattacheese Middle School in West Yarmouth. Let your voices be heard before it's too late and preserve our precious gift from nature for our future generations.

PATRICE FALLON
Osterville

Saving Sound akin to Seashore fight

Three cheers for those strongly opposing the Cape wind farm monstrosity. How can anyone in their right mind who lives or vacations on the Cape support this project?

Like Gov. Romney says, Nantucket Sound is a national treasure and we must do all we can to protect it. God bless JFK, Tip O'Neill and others who helped save what is now the Cape Cod National Seashore from exploitation and ruin. Nearly a half century later, it is *our* responsibility to stand up and fight for what's right.

In late September, while relaxing on a beach chair on the spit leading out to Squaw Island in Hyannisport, I thought to myself of the incredible beauty of the site. Living in upstate New York, I have always considered it to be umatched.

This must be protected, for us and for our children and grandchildren.

JEFF HOW
Rochester

■ Pursuing fair winds

Nov. 9: Now that the U.S. Army Corps of Engineers has finally released its draft report on the proposed wind farm in Nantucket Sound, it's time for opponents and supporters to stop the shouting, resolve some basic differences, and agree on some guiding principles.

Let's start with the notion that this country desperately needs clean, alternative sources of energy.

...Equally important is the need for a comprehensive national ocean policy that identifies appropriate and inappropriate places for offshore and onshore wind development.

Keeping these two overriding principles in mind, we propose protecting Nantucket Sound, a national treasure, from industrial development and expediting the development of a national ocean policy.

Opponents, including Massachusetts Republican Gov. Mitt Romney, U.S. Sen. Edward Kennedy and U.S. Rep. William Delahunt, both Democrats, and many state legislators from the area, argue that while wind power is good, this project is located in the wrong place.

They also argue that no project should be built in the Outer Continental Shelf until adequate federal regulations are in place to, among other things, determine the best sites for development and to establish fair fees paid by developers to the public for use of public resources.

Delahunt and state Sen. Robert O'Leary spoke out against the proposal at the hearing, noting the state's long history of trying to protect the sound from any major development.

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
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BOARD OF
UNDERWATER
ARCHAEOLOGICAL
RESOURCES

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http://www.magnet.state.ma.us/envir

February 18, 2005

Thomas L. Koning, Colonel
New England District
US Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

001965

Dear Colonel Koning:

The staff of the Massachusetts Board of Underwater Archaeological Resources (MBUAR) has completed its review of the *Cape Wind Energy Project Draft Environmental Impact Statement (USACE # NAE-2004-338-1)/Draft Environmental Impact Report (EOEA File # 12993)* and offers the following comments.

While the MBUAR recognizes that a significant portion of the proposed project area is in federal waters, the frequent distinctions that are made throughout section 5.10 of the document between conditions and impacts inside and outside of state waters tend to portray the proposed project in a disjointed manner, hindering the cultural resources evaluation of the project as a whole. Similar distinctions regarding legal jurisdiction over the proposed project area for both the MBUAR and the Massachusetts Historical Commission (MHC) are discouraging at this level of project review and do little to promote the purpose and spirit of cultural resource preservation legislation. The MBUAR, along with the MHC, is identified as a consulting agency (page 5-175) for this project and has contributed significantly in providing data for, and developing an appropriate marine archaeological survey design. In order to provide an effective submerged cultural resource evaluation, it is critical that the MBUAR's role in the project review process not be diminished through uncertain legal posturing. As an agency with expertise on archaeological identification and survey evaluation, the MBUAR's technical advice is frequently solicited by both the SHPO and the US Army Corps of Engineers (USACE). The MBUAR hopes that its consultation will not be limited to the "permit processing" as stated the Draft EIS/EIR (Section 5.10.1.2 page 5-175), but will continue through other elements of the proposed project for the identification and evaluation of previously unidentified cultural resources, which might be discovered during construction, maintenance, decommissioning and emergency activities.

Regarding the potential impact of the proposed project on submerged cultural resources, the Draft EIS/EIR accurately reports the results of the archaeological sensitivity assessment (June 2003) and subsequent marine archaeological reconnaissance survey (March 2004) conducted by the Public Archaeology Laboratory (PAL) for Cape Wind Associates, LLC. In summation of the latter, three remote sensing targets were located in the proposed project area

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and designated as having moderate potential of representing historic period submerged cultural resources (shipwrecks). The MBUAR concurred with PAL's recommendations that a 100 –foot buffer zone be created in all directions around the detectable limits of these targets, so as to avoid impact. If avoidance is not possible, intensive marine archaeological investigations of these targets should be conducted to evaluate potential historic significance. Additionally, the marine archaeological reconnaissance survey identified 13 locations within the current project APE where intact paleaosols are present and exhibit a high sensitivity for containing buried ancient Native American cultural resources. The MBUAR also concurred with PAL's recommendations that that proposed locations of six wind turbine generators and seven portions of the interconnect cable grid in this area be modified to avoid construction activities. If avoidance of these areas is not possible, intensive marine archaeological survey utilizing a methodology developed in consultation with the USACE, the MHC and the MBUAR should be conducted.

As the Draft EIS/EIR does not report on the feasibility of avoidance of the potential submerged cultural resources identified through the marine archaeological survey, the MBUAR believes that the document's cultural resources analysis is incomplete. If additional marine archaeological investigations are necessary, the methodology and results should be made available for review by consulting agencies prior to publication of the Final EIS/EIR. A determination of effect by the USACE should also be made prior to publication of the Final EIS/EIR. Similarly, until the cultural resource identification and evaluation process is complete, the MBUAR believes that finalization of a Programmatic Agreement is not appropriate. Upon completion of the cultural resources evaluation, following a review of supporting documentation regarding the consideration of alternatives to avoidance of potential archaeological resources (should avoidance be impossible) by the MBUAR, MHC and the Tribal Historic Preservation Officer (THPO), the MBUAR requests an opportunity to comment on the Programmatic Agreement. As it appears in the Draft EIS/EIR, the Programmatic Agreement fails to recognize the MBUAR as a concurring party on any portion of the document other than the signatory section.

Finally, the MBUAR suggests that the Final EIS/EIR include formal procedures for further cultural resource consultation in the event of an emergency in the proposed project area, the proposed project is terminated during or after construction, or that proposed project, or thereof are to be dismantled.

The MBUAR appreciates the opportunity to provide these comments and looks forward to working with the USACE to ensure compliance with appropriate historic preservation laws and regulations. Should you have any questions regarding this letter, please do not hesitate contact me at the address above, by telephone at (617) 626-1141 or by email at Victor.Mastone@state.ma.us.

Sincerely,

Victor T. Mastone
Director

Cc: Brona Simon, MHC

004966

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

February 22, 2005

Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2524

Attn.: Anne Canaday, MEPA Analyst

RE: Cape Wind Energy Project. MHC #RC.29785. USACE NAE-2004-338-1. **EOEA #12643.**

Dear Secretary Herzfelder:

Staff of the Massachusetts Historical Commission (MHC), the office of the State Historic Preservation Officer, have reviewed the Draft Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) for the proposed project referenced above.

The separate discussions of existing conditions and analyses of impacts ostensibly inside and outside Massachusetts waters is disconnected and frustrates the review and evaluation of the project as a whole. Massachusetts' boundaries in Nantucket Sound are presently under review by state and federal officials. Nevertheless, the discussion of legal theories of limitations of state agency jurisdiction does not serve the spirit and purpose of the applicable environmental and historic preservation laws and regulations. For example, on pages 5-175, and 7-5 to 7-6, the Draft EIS/EIR avers that while the MHC and the BUAR would not be involved in consultation for those segments of the project which are purportedly outside Massachusetts lands and waters, the US Army Corps of Engineers has included the MHC and the Massachusetts Board of Underwater Archaeological Resources (BUAR) in consultation for the entire project area of effect.

MHC's role in consultation must necessarily extend to the complete project area of effect to effectuate the goals and purposes of state and federal laws and regulations for historic preservation and environmental review. MHC is not only a "state agency" but also the office of the State Historic Preservation Officer (MGL c. 9, s. 27B) empowered by Federal law with particular duties in relation to Federal agencies under the National Historic Preservation Act of 1966 as amended (16 USC 470a(b)). Consultation with this agency is required under Section 106 of the act and its implementing regulations (36 CFR 800).

The Draft EIS/EIR provides an accurate and well-written summary of the results of the archaeological surveys conducted for the project. In brief, for three underwater targets identified as potentially significant historic resources (likely historic period shipwrecks), MHC concurred with recommendations to create a 100-foot (30.5m) buffer zone around the interpreted limits of these targets, thereby avoiding direct impacts. If avoidance is not feasible, then additional marine archaeological investigations are warranted. Additionally, thirteen locations proposed for wind turbine generators and the inner array cable grid exhibit characteristics consistent with preserved paleosols (ancient soils) that are considered to be highly sensitive for containing now-submerged ancient Native American archaeological sites. Three options are identified in the Draft EIS/EIR to avoid direct impacts to these archaeologically sensitive areas: adjust the locations of the proposed equipment; eliminate project elements; or, undertake additional marine archaeological investigations.

The feasibility of avoidance of the potentially significant cultural resources is not further considered in the Draft EIS/EIR. The Corps has not yet submitted to the MHC a determination of effect for underwater archaeological resources. Prior to the preparation of the Final EIS/EIR, it will be important to know whether or not these potentially

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EIS/EIR for public comment. A reasonable mitigation commitment should be incorporated into the proposed Programmatic Agreement.

MHC requests the opportunity to comment more fully on the proposed Programmatic Agreement after the Tribal Historic Preservation Officer (THPO), the BUAR, other consulting and interested parties, and the public have been afforded the opportunity to review and comment and the Corps has taken those comments into account. The Final EIS/EIR will also enable the Corps to demonstrate that they have taken public comment into account concerning the project and have developed a suitable mechanism for public involvement in the resolution of the adverse effects of the proposed project.

These comments are offered to assist in compliance with Section 106 and 110 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), MGL c. 9, ss. 26-27C (950 CMR 70-71), MEPA (301 CMR 11). Please contact Edward L. Bell or Ann Lattinville of my staff if you have any immediate questions.

Sincerely,

Brona Simon

Brona Simon
State Archaeologist
Deputy State Historic Preservation Officer
Massachusetts Historical Commission

Enclosure (MHC to USACOE-NED 8/11/2004)

xc w/enclosure:
Cape Wind Associates, LLC
Don Klima, Advisory Council on Historic Preservation
Karen Kirk Adams, USACOE-NED Regulatory
Kate Atwood, USACOE-NED
Rebecca Watson, DOI/Land and Minerals
Conrad C. Lautenbacher, Jr. NOAA
John S. Wilson USFW
Cheryl Andrews-Maltais, THPO, Wampanoag Tribe of Gay Head (Aquinnah)
Massachusetts Coastal Zone Management
Victor Mastone, EOEA, Board of Underwater Archaeological Resources
Massachusetts Commission on Indian Affairs
Cape Cod Commission
Falmouth Historical Commission
Yarmouth Historical Commission
Mashpee Historical Commission
Barnstable Historical Commission
Nantucket Historical Commission
Edgartown Historical Commission
Oak Bluffs Historical Commission
Chatham Historical Commission
Alliance to Protect Nantucket Sound
Clean Power Now
Terry Orr, Environmental Science Services, Inc.
Deborah C. Cox, PAL

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

August 11, 2004

Christine A. Godfrey
Chief, Regulatory Division
US Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

ATTN.: Karen Kirk Adams

RE: Cape Wind Energy Project, Barnstable and Yarmouth, MA.
MHC #RC.29785. COENED-R #199902477. EOEA #12643. PAL #1485.01.

Dear Ms. Godfrey:

The Massachusetts Historical Commission (MHC), office of the State Historic Preservation Officer, is in receipt of your correspondence of July 14, 2004, received at this office on July 19, 2004, concerning the above referenced project and containing your determination of effect for historic properties and a draft Programmatic Agreement. The MHC is also in receipt of the technical report, *Visual Assessment of Multiple Historic Properties, Cape Wind Energy Project,* prepared by the PAL. After a review of the materials submitted, MHC has the following comments.

The MHC concurs with your determination that the preferred alternative for the Cape Wind project will have an **adverse effect** on the following historic properties: the Nobska Point Light Station (Falmouth); the Cotuit Historic District, the Col. Charles Codman Estate, the Wianno Historic District, the Wianno Club, the Hyannis Port Historic District, and the Kennedy Compound (all in Barnstable); the Monomoy Point Lighthouse (Chatham); the West Chop Light Station (Tisbury); the East Chop Light Station and the Dr. Harrison A. Tucker Cottage (both in Oak Bluffs); the Edgartown Village Historic District, the Edgartown Harbor Lighthouse, and the Cape Poge Light (Edgartown); and the Nantucket Great Point Light and the Nantucket National Historic Landmark District (Nantucket). 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 CFR 800.5(a)(2)(iv and v)).

An effect determination has not yet been prepared for archaeological properties. MHC's comments of May 19, 2004, on the results of the marine reconnaissance archaeological survey, provided recommendations, including the implementation of archaeological investigations to locate and identify National Register-eligible properties in the project Area of Potential Effect (APE). As the avoidance analysis and identification survey have not yet been advanced, and as modifications to the APE are contemplated (because of the likely adjustments in the locations of project facilities), it is not possible at this time for the MHC and consulting parties to provide substantive comments on what effects the proposed project may have on significant archaeological resources.

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www.state.ma.us/sec/mhc

A consultation process on effects to cultural resources during operation and maintenance of the facilities should also be developed as well as emergency consultation (consistent with 36 CFR 800.12) in the event that an emergency occurs during operation. The Corps should develop procedures requiring review and consultation on effects to cultural resources if the project should be terminated during or after construction, or if dismantling of the facilities is proposed.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), MGL c. 9, ss. 26-27C (950 CMR 70-71), MEPA (301 CMR 11), and the Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Fed. Reg. 190(1983)). Please contact Edward L. Bell or Ann Lattinville of my staff if you have any immediate questions.

Sincerely,

Brona Simon

Brona Simon
State Archaeologist
Deputy State Historic Preservation Officer
Massachusetts Historical Commission

xc:
Don Klima, Advisory Council on Historic Preservation
Kate Atwood, USACORPS
Rebecca Watson, DOI/Land and Minerals
Conrad C. Lautenbacher, Jr. NOAA
Cheryl Andrews-Maltais, THPO, Wampanoag Tribe of Gay Head (Aquinnah)
Massachusetts Commission on Indian Affairs
Cape Wind Associates, LLC
Terry Orr, Environmental Science Services, Inc.
Deborah C. Cox, PAL
Secretary Bob Durand, EOEA Attn. MEPA Unit
Massachusetts Coastal Zone Management
Victor Mastone, EOEA, Board of Underwater Archaeological Resources
Cape Cod Commission
Yarmouth Historical Commission
Mashpee Historical Commission
Barnstable Historical Commission
Nantucket Historical Commission
Edgartown Historical Commission
Oak Bluffs Historical Commission
Chatham Historical Commission
Alliance to Protect Nantucket Sound
Clean Power Now

U.S. Department of Homeland Security

United States Coast Guard

Commanding Officer
U.S. Coast Guard
Marine Safety Office Providence

20 Risho Ave
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Fax: 401-435-2399
Email: EleBlanc@MSOProv.uscg.mil

16670
14 February 2005

Colonel Thomas L. Koning
District Engineer
Department of the Army
New England District, Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

004967

Dear Colonel Koning:

As the Coast Guard continues to receive comments on navigation safety in connection with the proposed Nantucket Sound wind farm, we have identified several issues that require further analysis. These issues are in addition to those identified in our letter to you of 12 July 2004, which is attached. I understand the public comment period for the proposed facility ends on 24 February 2005, and once all comments have been received and cataloged, we will examine those pertaining to navigation safety and may identify additional issues requiring further analysis. However, to permit a timely review and analysis of issues we are aware of now, I request the Corps' attention to the following items:

1. Radar Interference. Page 28 of the Navigation Risk Assessment (Appendix 5.12-B to the Cape Wind Energy Draft Environmental Impact Statement (EIS)) discusses potential radar interference in the proposed Nantucket wind farm, as references radar experiences at Horns Rev wind park in the North Sea. A recently published report by the British Maritime and Coastguard Agency entitled "Results of the electromagnetic investigations and assessments of marine radar, communications and positioning systems undertaken at the North Hoyle wind farm by QinetiQ and the Maritime and Coastguard Agency" discusses radar interference experienced at the North Hoyle wind farm. The results of this study, and how it may relate to or impact the proposed Nantucket wind farm, should be included in the Final EIS. Since the Corps already has a copy of the North Hoyle study, I have not included a copy with this letter.

2. Impact Analysis: Section 4.3.3 of the Navigation Risk Assessment contains an impact analysis using the M/V *Eagle* as the largest commercial vessel that routinely operates near Horseshoe Shoal. However, the McGowan Group Report (first referenced in the attached letter) identified two vessels larger than the M/V *Eagle* that have been sighted in Nantucket Sound. I request an impact analysis similar to that done for the M/V *Eagle* also be conducted for the M/V *Clipper Adventurer* and the T/V *Great Gull*.

3. Ice Floes: Section 4.4 of the Navigational Risk Assessment discusses the potential effects of ice build up around and within the proposed Nantucket wind farm. However, in light of the severe icing experienced in January and February of 2004, there is concern that large, thick ice floes could develop in Nantucket Sound, outside of the wind farm, and drift into the wind farm where it may damage one or more towers, or otherwise affect navigation safety. I request an analysis of the potential for ice floe formation and drifting within Nantucket Sound, and the potential for ice floe damage to the towers.

4. Other Issues in the McGowan Group Report: There are many issues in the McGowan Group Report that have not been specifically addressed in my letter of July 12, 2004, or this letter. The report's relevant issues are succinctly listed in its table of contents. I request that the McGowan Group Report be examined in its entirety and that the issues raised in that report be specifically addressed in the Final EIS.

Finally, I request that this letter and my letter of 12 June 2004, along with the McGowan Group Report and the North Hoyle study, be included in the public docket for the Nantucket Sound wind farm proposal.

Thank you for your consideration. I look forward to continuing our support of the Corps in this Federal permitting process.

Sincerely,

M E Landry

M. E. LANDRY
Captain, U.S. Coast Guard
Captain of the Port

Enclosure

Copy: CGD ONE (m, oan, dgp)
GRU Woods Hole

U.S. Department of Homeland Security

United States Coast Guard

Commanding Officer
U.S. Coast Guard
Marine Safety Office Providence

20 Risho Ave
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Staff Symbol:
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Fax: 401-435-2399
Email: EleBlanc@MSOProv.uscg.mil

16670
12 July 2004

Colonel Thomas L. Koning
District Engineer
Department of the Army
New England District, Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning:

The Coast Guard has received substantial public interest and comment on the Navigational Risk Assessment of August 18, 2003, which was prepared for the Corps as part of the Nantucket Sound wind farm permitting process. Two documents in particular have raised issues that may need more examination and evaluation before a Draft Environmental Impact Statement is published.

1. The McGowan Group conducted a review of the Navigational Risk Assessment for The Alliance to Protect Nantucket Sound. One issue raised in the report is the impact, if any, that the Wind Generating Towers (WTGs) may have on the reception and accuracy of Geographic Positioning System (GPS) equipment, including Differential GPS. (See the "Electronic Interference" section beginning on page 26 of the McGowan Group report.) It would be helpful if the Navigational Risk Assessment addressed the impact, if any, that the proposed WTGs may have on shipboard GPS receivers, including commercial, recreational, and fishing vessels.

2. Both the McGowan Group report and a letter dated June 29, 2004, from The Woods Hole, Martha's Vineyard and Nantucket Sound Steamship Authority raise concerns about the impact WTGs may have on bottom contour. Specifically, The McGowan Group report questions how changes, if any, to the bottom contour may affect substructure stability, and the Steamship Authority questions whether WTG-induced bottom contour changes may cause uncharted shallow areas in the shipping channel. (See the "Environmental Influences and Impact" section beginning on page 27 of the McGowan Group report, and the first paragraph, second page, of the Steamship Authority letter, respectively.) A discussion of the effects, if any, that the WTGs may have on bottom contour is recommended.

3. The Steamship Authority letter addresses the possibility of large ice chunks being hurled from the WTG blades. An analysis of this phenomenon and its potential impact on navigation safety is recommended.

4. The Steamship Authority letter states that, due to adverse weather, its captains sometimes must use tacking maneuvers to ease a ferry's ride and improve safety. The Navigation Risk Assessment should address what impacts, if any, WTGs may have on this practice. The analysis of this issue should include a detailed discussion of tacking track lines actually used in the past, and the frequency and rationale of those tacking maneuvers.

16670
12 July 2004

Since the Corps is already in receipt of the McGowan Group report and the Steamship Authority letter, I have not included copies with this letter.

Thank you for your consideration. I look forward to continuing our support of the Corps in this Federal permitting process.

Sincerely,

M. E. Landry

M. E. LANDRY
Captain, U.S. Coast Guard
Captain of the Port

Copy: CGD ONE (m, oan, dgp)
GRU Woods Hole

DEPARTMENTS OF THE ARMY AND AIR FORCE
MASSACHUSETTS NATIONAL GUARD
50 Maple Street
Milford, Massachusetts 01757-3604

REPLY TO
ATTENTION OF:

15 February 2005

Ms. Karen K. Adams
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

004968

SUBJECT: Cape Wind Draft Environmental Impact Statement

Dear Ms Adams:

The Massachusetts National Guard has had an opportunity to participate in the Draft Environmental Impact Statement (DEIS) process for the Cape Wind proposal to locate a wind energy facility in Nantucket Sound. As you know, the Massachusetts Military Reservation (MMR) was selected by the US Army Corps of Engineers as a prospective alternative to the Nantucket Sound location for the Cape Wind representatives to analyze as part of the DEIS. MMR is the site of both Otis Air National Guard Base and Camp Edwards Army National Guard Training Site.

Incorporated into the DEIS is Appendix 3-L that includes a detailed statement by the Massachusetts National Guard as to the reasons why a wind generating energy facility at MMR would not be feasible for military training and environmental reasons. There has been nothing additional presented in the DEIS or the public input process that would refute or change this information. Therefore, the official position of the Massachusetts National Guard is to reaffirm the assertions of the statement included in the DEIS appendix and enclosed herein.

Thank you for the opportunity to comment on this important issue.

Major General George Keefe
Adjutant General
Massachusetts National Guard

cc: COL Thomas Koning, District Engineer, USACE

RECEIVED

MASSACHUSETTS NATIONAL GUARD
ENVIRONMENTAL AND READINESS CENTER

(Enclosure One)

REPORT OF ISSUES AND CONCERNS REGARDING THE PROSPECT OF A WIND ENERGY "FARM" AT THE MASSACHUSETTS MILITARY RESERVATION

The US Army Corps of Engineers (USACE) has designated the Massachusetts Military Reservation (MMR) as the only land alternative to be examined as part of the Environmental Impact Statement (EIS) for development of a proposed Nantucket Sound wind energy facility being prepared by Cape Wind Associates, LLC (Cape Wind).

The Massachusetts National Guard has not taken, nor plans to take, a position regarding the original proposal by Cape Wind for construction of the wind energy facility in Nantucket Sound. The Massachusetts National Guard, however, wishes to state its legal, readiness, environmental, cultural and safety concerns and issues regarding the alternative of using the MMR for wind energy generation as shown in plans prepared by Cape Wind for 133 wind towers at the MMR and as shown on Plan MMR-1 dated December 2, 2003.

As a result of a meeting on 29 January 2004, the Environmental & Readiness Center compiled the following draft list of issues regarding construction of a wind energy facility at the MMR (not in any intended order of importance):

I. Legal Concerns (Report of LtCol. Timothy Mullen, MANG Judge Advocate General Office):

This office has reviewed the proposed landfall [terrestrial] alternative location for a proposed wind turbine array for the Cape Wind Energy Project, Nantucket Sound and Yarmouth, Massachusetts, to be sited in the upper 15,000 acres of the Massachusetts Military Reservation. Based upon that review, this office concludes the alternate location would violate License No. DACA51-3-79-394 granted to the Commonwealth of Massachusetts from the Department of the Army; Lease No. DACA51-5-77-127 granted by the Commonwealth of Massachusetts to the United States of America, represented by the Department of the Army; and probably violate Chapter 47 of the Acts of 2002, entitled "AN ACT RELATIVE TO THE ENVIRONMENTAL PROTECTION OF THE MASSACHUSETTS MILITARY RESERVATION."

Under the license, an alternative location for a proposed wind turbine array for the proposed Cape Wind Energy Project is not a use that would provide for the year-round training and support of the Massachusetts Army National Guard. Additionally, it is not a "military use" which is a condition of the lease applicable to the license. Accordingly, the Commonwealth of Massachusetts represented by the Military Division acting

through The Adjutant General or his designated representative should object to this proposed use of the upper 15,000 acres.

Likewise, the use is objectionable under the lease since it is clearly not a "military use." Further, in that it is a private commercial undertaking, it would not be a "Governmental use" contemplated under the lease. Finally, it would be inconsistent with the purposes of permanent protection of the drinking water supply and wildlife habitat set forth in the MOA between the Commonwealth and the United States Army and National Guard Bureau which is incorporated into the lease. The lessee - the United States Government represented by the Department of the Army, should object to this proposed use on its leased land.

Finally, under Chapter 47 of the Acts of 2002 it appears the wind farm would be a use different than that of public conservation land as well as an inconsistent purpose in the use of the land, i.e., it would not appear to be a natural resource purpose consistent with water supply and wildlife habitat protection. Under the law the Environmental Management Commission (EMC) would conduct this evaluation and make the appropriate determinations. Both the EMC and the state Division of Fisheries and Wildlife could object to the proposal.

II. Army Training Concerns

A. Overall Concerns (Comments from LTC Mary Mixson and LTC Bernard Luciani) The proposal of over 130 wind turbines in the maneuver training area would eliminate Army ground and field maneuver training, for both day and night operations. Army field FM radio communications would be degraded. Eliminates any Army land navigation training. Ability to bivouac troops for training eliminated. In short, the proposal essentially eliminates the MMR as an Army training base for field and range requirements.

Regular use of the northern 15,000-acre training area is by Army and other military and public safety organizations for field navigation. That is, troops train to be able to knowledgeably move through a wooded area using learned skills to reach a specific destination at specific, predetermined times. These skills are critical in a battle situation and it is important to simulate a battle situation without unnecessary man-made landmarks. The presence of easily visible, multiple 400-foot high wind towers would seriously degrade the field-training environment. In the same way, a massive construction project will hamper military annual training at the MMR as well as reduce the land available for training in the future. Eliminating or decreasing these functions of the MMR would downgrade its status as "Major Training Area" and result in significant reduction of jobs and personnel.

B. Specific Impacts (Report from Jerrime S. Oliver, 1LT, FA, Camp Edwards Plans and Training Officer):

- A major portion of the training area would be compromised by the erection of these towers, which will severely limit the amount of land area available for maneuver capability of wheeled vehicles, tracked vehicles, and dismounted training. The total amount of land that is directly used by the towers is approximately 210 acres, however, due to the pattern and spacing in the training area, they will invariable cause some areas to become off limits because their proximity to throughways.

- Units will have to modify their training to unrealistic conditions. This will be caused by the restrictions to stay clear of these towers and the training areas will no longer represent an environment similar too where the units could be deployed too. This would constitute such an emphasis and burden on units to develop their training plan to stay well clear of these towers that the actual training mission would become a secondary priority. The primary purpose of this land is for training units that are more likely to be deployed in the current world situation.

- The training areas would lose their capability to train soldiers effectively in the skills of land navigation and map reading for both vehicular and dismounted operations. This capability would be lost because soldiers would be able to determine locations not through map reading and land navigation skills but rather through memorization of the tower patterns in various locations of the training areas.

- The proposed tower pattern will have some effect on radio communication by its coverage of most of the training area. It could possibly disrupt and interfere with communications during range firing and other critical operations which would adversely affect safety. It could also delay medical or fire response to critical situations.

- The construction of these turbines would eliminate close air support training missions. The size and dimension of the towers makes almost the entire training area completely off limits to aircraft at low altitude due to safety considerations.

- The towers would also prohibit Air Cavalry, Air Assault, Air Medical Evacuation, Airborne Troop movements, and other special operations due to the previous stated safety concerns.

- The existent road network will have to be modified to accommodate the tower pattern further degrading training opportunities. Units will have to plan routes of march based upon the tower configuration instead of tactical and operational considerations resulting in unrealistic training.

- The towers will generate noise that will not only interfere with realistic training conditions, but also leave the confines of the post into the surrounding communities.

C. Concerns for Civilian Public Safety Users. In addition to military training, training for civilian public safety organizations would be impacted or eliminated. The MMR is used regularly for civilian public safety organizations at the federal state, county and municipal level. These organizations have similar training requirements and venues as those for military units. For the same reasons this proposed wind energy development would impact training for the military, it would correspondingly have a negative impact on the training capabilities of the MMR for civilian public safety organizations.

III. Aviation Concerns

A. Eliminates Army Aviation low level flight training (Report of CW4 Edward C. Ivers, Instructor Pilot/Aviation Safety Officer, MAARNG Army Aviation): The Massachusetts Army National Guard and other military helicopter commands regularly use the entire area of MMR for low level flying exercises directly in accordance with mission essential tasks. Low-level flying means tree top level. Not only is low level flying critical to the support of troops on the ground, but also it is a standard procedure for troops being brought in by helicopters to a battle location. The presence of a large massing of windmills could significantly degrade the ability of aviation units in meeting their mission essential task requirements.

The restricted area designated as R4101 is used by all Army aviation units assigned to the MMR as well as other New England states. The three areas designated as Alpha, Bravo, and Charlie on the Otis topographical map is where we conduct extensive aviation related training. This training consists of day and night operations, Night Vision Goggle, Tactical, low level flying, and simulated Air Assault missions. We also train in the use of Water Buckets to support the State in the suppression of forest fires. Some of the organizations that rely on our ability to perform these missions are Infantry, Special Forces and various Tactical Police forces as well as the Forest Service. The purpose of this training is to train and maintain proficiency of the aircrews and ground units and to be able to respond to any possible emergencies, both military and civil at any moments notice. The construction of any towers as outlined would essentially put an end to our ability to fly in such a hazardous environment and therefore diminish our readiness to unacceptable levels.

In addition, route changes for use of helicopters would mean greater noise impacts on surrounding areas. The selection of the MMR as the favored alternative also would negatively impact instrument approaches to Otis ANGB by increasing minimum descent altitudes and, depending on how much change in minimums, it could eliminate the instrument approaches entirely.

B. Aviation Concerns for Operation of F-15s (Report from the 102nd Fighter Wing, Massachusetts Air National Guard): The southern portion of the towers paralleling Rte 28 would be inside the "primary" final approach zone for the runway 14 TACAN approach. This could significantly impact F-15 operations in low ceiling conditions in a detrimental manner.

As per Air Force Joint Manual 11-226 (Terminal Instrument Procedures – TERPS manual) and FAA Handbook 8260.3, the Required Obstacle Clearance (ROC) for the current published approach could not be met if the towers were erected and the approach would have to be redesigned with a higher minimum descent altitude.

ROC above the highest obstacle in the "primary" zone is 250 feet. Add that to the average mean sea level where the towers would be (130 ft) and the height of the towers themselves (400 ft), and you have the required "new" Minimum Descent Altitude (MDA) for the approach – 780 ft msl. The current MDA is 580 ft, so there would be a 200-foot increase. Correspondingly the AGL weather ceiling required to fly the approach would be 700 feet (830 msl), up from the current 500 feet.

As a result, the missed approach point (map) would have to be moved out at least a half mile from .8nm from the end of the runway to 1.3nm or beyond so that the standard descent gradient could be complied with. This would also mean that required visibility for the approach would move out from the current mile and a half to at least 2nm. This would give an F-15 pilot less of a chance to see the runway before having to go missed approach and possibly divert to another airfield.

C. Aviation Concerns for small aircraft operated by Civil Air Patrol (Report from the 102nd Fighter Wing, MAANG): Light aircraft departing on Runway 32 could have problems clearing the towers on a "standard" climb straight ahead, requiring the minimum 152 feet per nautical mile climb-out rate. A missed approach on Runway 32 is not a factor, as the procedure requires a climbing turn to the southwest well away from the proposed tower locations.

D. Other Aviation Concerns:

- Strobes at the top of the towers would be very confusing for flight traffic patterns at Otis ANGB
- Strobes at the top of the towers would possibly reduce night vision as well
- Strobes at the top of the towers could make MMR a very visible target for terrorist threat
- Could impact ability for Space Shuttle to use Otis ANGB

IV. Natural Resources Concerns (Report of Dr. Michael Ciaranca, Natural Resource Manager, Massachusetts Army National Guard):

The MMR contains the largest tract of undeveloped land on Cape Cod. It contains important habitats for wildlife and plants. Some of these have been identified as

endangered or threatened by the Commonwealth of Massachusetts. Heavy construction of multiple wind generating towers could have a significant impact on these species. In regards to Camp Edwards as an alternate site for Cape Winds wind farm project, the following are the primary natural resource bullets that the proponent would need to address:

MAARNG not property owner
Sikes Act (Federal) 1964 as amended 1997
Clean Water Act (Federal)
Wetlands Protection Act (Federal)
MA Endangered Species Act
MA Natural Heritage and Endangered Species Program State Priority Habitat
MA Wetlands Protection Act
DoD Army Regulation 200-1 thru 5
Cape Cod Commission
Town Government (Conservation Comms, etc..)

- Heavy construction involved
- State deems the MMR a priority location for rare habitat
- Would eliminate MAARNG ITAM program
- Violates Mass. Endangered Species Act. The MMR a globally threatened property because of pine barrens.
- Substantial site preparation for wind tower use will be required
- Environmental Performance Standards state that no new structures in the "Reserve" (northern 15,000 acres of the MMR)

V. Cultural Resources Concerns (Report of Dr. Susan Goodfellow, Regional Cultural Resource Manager, MAARNG):

A. Archaeological Issues: Comparison of the general locations of the proposed wind turbines, buried utility lines, and other project elements shown on the map provided by the USACE with the Revised Archaeological Sensitivity Map for Camp Edwards (MAARNG 2003) indicates that at least 80 percent of the proposed construction disturbance would occur in areas of Camp Edwards designated as having moderate or high archaeological sensitivity. Under the National Historic Preservation Act and Massachusetts General Laws, Chapter 9, Sections 26-27C as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00); all of the areas to be disturbed by the construction effort would need to be subjected to an intensive (locational) archaeological survey to identify any archaeological sites that might lie within the project's area of potential effect. If survey was restricted to the actual construction footprint of the turbines and utilities, the survey would involve 200-300 acres, would require 6-10 months to complete, and would cost up to $1000/acre for the field crew and EOD support. Because survey of the construction footprint limits the proponent's

options should archaeological sites be encountered, however, it's more likely that the actual acreage surveyed would be double or triple that number.

Once identified, archaeological sites that would be impacted by the proposed project would need to be evaluated for eligibility to the National Register of Historic Places, a process that requires additional research and limited excavation of archaeological site deposits. Costs of site evaluation range widely depending on the size of the site, the number of time periods represented, the depth of the deposit below the ground surface, etc; however, an average cost of $4000 per site is not unreasonable. Again, the evaluation, reporting, and review schedule for the evaluation phase could require an additional 6-10 months.

Finally, should any archaeological sites be determined eligible for the National Register, the project proponent would need to mitigate the effects of the project on those sites. Mitigation measures can include avoidance (i.e., moving a turbine or utility line); burial (unlikely, given that all of the construction disturbance requires excavation), or data recovery excavations of the site. Data recovery involves excavation of a significant portion of the archaeological site, such that the information from that site is preserved even if the site is not. Data recovery costs per site are subject to the same parameters noted for evaluation above, with an average cost per site of at least $10,000.

Regardless of the mitigation measure selected, mitigation of an adverse effect to a historic property (e.g., an eligible archaeological site), must be determined in consultation with the Massachusetts State Historic Preservation Officer, the federally recognized Wampanoag Tribe of Gay Head – Aquinnah, the National Guard Bureau, and the Army Environmental Center, and codified in a Memorandum of Agreement. Development and review of a MOA requires 4-6 months, and the selected mitigation measure must be completed and approved by all parties before construction is allowed to proceed. If data recovery is the selected option, add another 6-10 months to the process.

B. Historic Buildings and Landscape Concerns: Both the Range Control complex and the Ammunition Supply Point complex on Camp Edwards have been determined eligible for nomination to the National Register as Cold War era resources. PAVE PAWS is listed on the National Register. The proposed project has the potential to adversely impact some or all of these resources, either through construction disturbance, visual impacts, or impacts to character-defining features (e.g., if military use of these facilities is discontinued or altered significantly due to the completion of the proposed project). As noted above for impacts to eligible archaeological sites, adverse impacts to eligible or listed historic buildings and structures would need to be mitigated by the proponent, requiring an MOA and implementation of some type of mitigation measure (avoidance, documentation of the complexes by the Historic American Building Survey, etc.).

In 2003, the MAARNG Cultural Resources Program and US Army Construction Engineering Laboratory initiated a multiple year historic landscape survey of Camp Edwards under a DoD Legacy Grant. This survey, which focuses on the "built" environment at Camp Edwards (buildings, structures, roads, ranges, etc.), will likely be completed in 2005. Although most of the specific historic features being examined by the survey are not within the construction footprint for the proposed project, the military/historic landscape of Camp Edwards will be irrevocably altered by the proposed project and would be considered to represent an adverse effect should the landscape be determined eligible to the National Register.

C. Native American Concerns: Under NEPA, the National Historic Preservation Act, Executive Orders 13175 and 13007, Executive Memorandum of April 29, 1994: Government-to-Government Relations with Native American Tribal Governments; Office of the Secretary of Defense, Annotated Policy Document for the American Indian and Alaska Native Policy (27 October 1999); and the American Indian Religious Freedom Act; the USACE and/or MAARNG are required to seek input from federally recognized Native American tribes who claim ancestral lands within the area of potential effect of the project. The Wampanoag Tribe of Gay Head – Aquinnah, located on Martha's Vineyard, claim all of the MMR as part of the ancestral lands of the Wampanoag Tribe and will need to be consulted with regards to the potential for the project to impact Native American archaeological sites, sacred sites, traditional cultural properties, and specific culturally significant resources.

VI. Security Concerns (Report from Jerrime S. Oliver, 1LT, FA, Camp Edwards Plans and Training Officer):

A. Civilian Access: It is anticipated that this project will require maintenance and damage control personnel to have access on a regular basis. Civilians are not usually permitted in the training areas during training of military personnel for safety considerations. Due to the size and number of towers in this project, it will lead to contractors directly interfering with training.

B. Terrorist Interest: The project could also result in an increase in interest by terrorists or sleeper cells, as a possible target of opportunity. The proposed locations of the towers make them difficult to protect.

VII. PAVE PAWS Concerns (refer to Cape Cod Air Force Station)

VIII. NOAA tower impact:(refer to NOAA)

IX. USCG Concerns (refer to USCG)

X. Investigation and Clean-up Impacts (refer to the Impact Area Ground Water Study Office)

XI. Long Range Development Concerns

A. Potential Mobilization Platform: Use of the MMR as a mobilization platform would no longer be a viable option, due to the significant impacts outlined in this report.

B. Would degrade plans for Regional Homeland Security Training Center: The Massachusetts National Guard is currently studying the feasibility of establishing a regional homeland defense and homeland security training center at MMR. The study so far has determined that such a regional training center would be vitally dependent on the availability of the northern Training Area for field training. While urban training is expected to be the centerpiece of the center, military and civilian public safety organization also need to hone skills that would be necessary in defending and securing suburban and rural areas as well. The presence of the 133 wind turbines at MMR would limit or eliminate any training venues for these purposes.

XII. Other Concerns

A. Would require significant screening of sites for unexploded ordinance: Only a small portion of MMR has been surveyed and cleared of unexploded ordinance (UXO). Each of the 133 sites, including transmission and road corridors, would have to be surveyed and cleared of UXO. This is a time-consuming and expensive procedure.

B. Lubricants for turbines and oil for transformers are hazardous materials. Management of wind tower complex would require strict conformance to Environmental Performance Standards.

C. Traffic. Increased traffic of heavy vehicles on base and on surrounding highways. Traffic is a major concern on Cape Cod and the proposal would involve increasing this problem on the highways as well as the two bridges that serve Cape Cod.

D. Noise impacts. The MANG does not have information regarding any noise impact from the operation of 133 large wind towers. The noise impact on operations at the MMR and on surrounding private property would need to be assessed.

E. Visual impact of turbines to neighborhoods and cultural areas. Proposals for water towers near residential neighborhoods on Cape Cod typically generate neighborhood opposition. Water towers generally are less than 200 feet above ground level. Wind towers at twice that height should be expected to draw significant opposition by neighborhoods near the MMR. Furthermore, the need for nighttime lighting on these towers is likely to be a significant nuisance in residential neighborhoods. For example, numerous complaints have been made regarding the lighting on the water tower located near Route 130 in Sandwich that is owned by the Upper Cape Water Supply Cooperative. This tower is only approximately 200 feet above ground level. The

addition of 133 lighted wind towers at 400 feet above ground level are likely to be a concern to area residents.

F. Impact on aquifer. The MMR is the largest source of drinking water on Cape Cod. In addition to being a major flora and fauna habitat, the presence of this major water source makes the MMR an important environmental resource, with which current military training is wholly compatible. The impact on these environmental resources will be an important consideration in any proposal to develop the area known as the northern 15,000 acres.

G. Numerous towers would have to be re-sited based upon IAGWSP activities. The MMR is currently undergoing a massive cleanup program. Conflicts between the cleanup program and any significant construction program of wind generating towers would need to be assessed.

DEPARTMENTS OF THE ARMY AND AIR FORCE
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Adjutant General
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cc: COL Thomas Koning, District Engineer, USACE

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- The towers will generate noise that will not only interfere with realistic training conditions, but also leave the confines of the post into the surrounding communities.

C. Concerns for Civilian Public Safety Users. In addition to military training, training for civilian public safety organizations would be impacted or eliminated. The MMR is used regularly for civilian public safety organizations at the federal state, county and municipal level. These organizations have similar training requirements and venues as those for military units. For the same reasons this proposed wind energy development would impact training for the military, it would correspondingly have a negative impact on the training capabilities of the MMR for civilian public safety organizations.

III. Aviation Concerns

A. Eliminates Army Aviation low level flight training (Report of CW4 Edward C. Ivers, Instructor Pilot/Aviation Safety Officer, MAARNG Army Aviation): The Massachusetts Army National Guard and other military helicopter commands regularly use the entire area of MMR for low level flying exercises directly in accordance with mission essential tasks. Low-level flying means tree top level. Not only is low level flying critical to the support of troops on the ground, but also it is a standard procedure for troops being brought in by helicopters to a battle location. The presence of a large massing of windmills could significantly degrade the ability of aviation units in meeting their mission essential task requirements.

The restricted area designated as R4101 is used by all Army aviation units assigned to the MMR as well as other New England states. The three areas designated as Alpha, Bravo, and Charlie on the Otis topographical map is where we conduct extensive aviation related training. This training consists of day and night operations, Night Vision Goggle, Tactical, low level flying, and simulated Air Assault missions. We also train in the use of Water Buckets to support the State in the suppression of forest fires. Some of the organizations that rely on our ability to perform these missions are Infantry, Special Forces and various Tactical Police forces as well as the Forest Service. The purpose of this training is to train and maintain proficiency of the aircrews and ground units and to be able to respond to any possible emergencies, both military and civil at any moments notice. The construction of any towers as outlined would essentially put an end to our ability to fly in such a hazardous environment and therefore diminish our readiness to unacceptable levels.

In addition, route changes for use of helicopters would mean greater noise impacts on surrounding areas. The selection of the MMR as the favored alternative also would negatively impact instrument approaches to Otis ANGB by increasing minimum descent altitudes and, depending on how much change in minimums, it could eliminate the instrument approaches entirely.

B. Aviation Concerns for Operation of F-15s (Report from the 102nd Fighter Wing, Massachusetts Air National Guard): The southern portion of the towers paralleling Rte 28 would be inside the "primary" final approach zone for the runway 14 TACAN approach. This could significantly impact F-15 operations in low ceiling conditions in a detrimental manner.

As per Air Force Joint Manual 11-226 (Terminal Instrument Procedures – TERPS manual) and FAA Handbook 8260.3, the Required Obstacle Clearance (ROC) for the current published approach could not be met if the towers were erected and the approach would have to be redesigned with a higher minimum descent altitude.

ROC above the highest obstacle in the "primary" zone is 250 feet. Add that to the average mean sea level where the towers would be (130 ft) and the height of the towers themselves (400 ft), and you have the required "new" Minimum Descent Altitude (MDA) for the approach – 780 ft msl. The current MDA is 580 ft, so there would be a 200-foot increase. Correspondingly the AGL weather ceiling required to fly the approach would be 700 feet (830 msl), up from the current 500 feet.

As a result, the missed approach point (map) would have to be moved out at least a half mile from .8nm from the end of the runway to 1.3nm or beyond so that the standard descent gradient could be complied with. This would also mean that required visibility for the approach would move out from the current mile and a half to at least 2nm. This would give an F-15 pilot less of a chance to see the runway before having to go missed approach and possibly divert to another airfield.

C. Aviation Concerns for small aircraft operated by Civil Air Patrol (Report from the 102nd Fighter Wing, MAANG): Light aircraft departing on Runway 32 could have problems clearing the towers on a "standard" climb straight ahead, requiring the minimum 152 feet per nautical mile climb-out rate. A missed approach on Runway 32 is not a factor, as the procedure requires a climbing turn to the southwest well away from the proposed tower locations.

D. Other Aviation Concerns:

- Strobes at the top of the towers would be very confusing for flight traffic patterns at Otis ANGB
- Strobes at the top of the towers would possibly reduce night vision as well
- Strobes at the top of the towers could make MMR a very visible target for terrorist threat
- Could impact ability for Space Shuttle to use Otis ANGB

IV. Natural Resources Concerns (Report of Dr. Michael Ciaranca, Natural Resource Manager, Massachusetts Army National Guard):

The MMR contains the largest tract of undeveloped land on Cape Cod. It contains important habitats for wildlife and plants. Some of these have been identified as

endangered or threatened by the Commonwealth of Massachusetts. Heavy construction of multiple wind generating towers could have a significant impact on these species. In regards to Camp Edwards as an alternate site for Cape Winds wind farm project, the following are the primary natural resource bullets that the proponent would need to address:

MAARNG not property owner
Sikes Act (Federal) 1964 as amended 1997
Clean Water Act (Federal)
Wetlands Protection Act (Federal)
MA Endangered Species Act
MA Natural Heritage and Endangered Species Program State Priority Habitat
MA Wetlands Protection Act
DoD Army Regulation 200-1 thru 5
Cape Cod Commission
Town Government (Conservation Comms, etc..)

- Heavy construction involved
- State deems the MMR a priority location for rare habitat
- Would eliminate MAARNG ITAM program
- Violates Mass. Endangered Species Act. The MMR a globally threatened property because of pine barrens.
- Substantial site preparation for wind tower use will be required
- Environmental Performance Standards state that no new structures in the "Reserve" (northern 15,000 acres of the MMR)

V. Cultural Resources Concerns (Report of Dr. Susan Goodfellow, Regional Cultural Resource Manager, MAARNG):

A. Archaeological Issues: Comparison of the general locations of the proposed wind turbines, buried utility lines, and other project elements shown on the map provided by the USACE with the Revised Archaeological Sensitivity Map for Camp Edwards (MAARNG 2003) indicates that at least 80 percent of the proposed construction disturbance would occur in areas of Camp Edwards designated as having moderate or high archaeological sensitivity. Under the National Historic Preservation Act and Massachusetts General Laws, Chapter 9, Sections 26-27C as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00); all of the areas to be disturbed by the construction effort would need to be subjected to an intensive (locational) archaeological survey to identify any archaeological sites that might lie within the project's area of potential effect. If survey was restricted to the actual construction footprint of the turbines and utilities, the survey would involve 200-300 acres, would require 6-10 months to complete, and would cost up to $1000/acre for the field crew and EOD support. Because survey of the construction footprint limits the proponent's

options should archaeological sites be encountered, however, it's more likely that the actual acreage surveyed would be double or triple that number.

Once identified, archaeological sites that would be impacted by the proposed project would need to be evaluated for eligibility to the National Register of Historic Places, a process that requires additional research and limited excavation of archaeological site deposits. Costs of site evaluation range widely depending on the size of the site, the number of time periods represented, the depth of the deposit below the ground surface, etc; however, an average cost of $4000 per site is not unreasonable. Again, the evaluation, reporting, and review schedule for the evaluation phase could require an additional 6-10 months.

Finally, should any archaeological sites be determined eligible for the National Register, the project proponent would need to mitigate the effects of the project on those sites. Mitigation measures can include avoidance (i.e., moving a turbine or utility line); burial (unlikely, given that all of the construction disturbance requires excavation), or data recovery excavations of the site. Data recovery involves excavation of a significant portion of the archaeological site, such that the information from that site is preserved even if the site is not. Data recovery costs per site are subject to the same parameters noted for evaluation above, with an average cost per site of at least $10,000.

Regardless of the mitigation measure selected, mitigation of an adverse effect to a historic property (e.g., an eligible archaeological site), must be determined in consultation with the Massachusetts State Historic Preservation Officer, the federally recognized Wampanoag Tribe of Gay Head – Aquinnah, the National Guard Bureau, and the Army Environmental Center, and codified in a Memorandum of Agreement. Development and review of a MOA requires 4-6 months, and the selected mitigation measure must be completed and approved by all parties before construction is allowed to proceed. If data recovery is the selected option, add another 6-10 months to the process.

B. Historic Buildings and Landscape Concerns: Both the Range Control complex and the Ammunition Supply Point complex on Camp Edwards have been determined eligible for nomination to the National Register as Cold War era resources. PAVE PAWS is listed on the National Register. The proposed project has the potential to adversely impact some or all of these resources, either through construction disturbance, visual impacts, or impacts to character-defining features (e.g., if military use of these facilities is discontinued or altered significantly due to the completion of the proposed project). As noted above for impacts to eligible archaeological sites, adverse impacts to eligible or listed historic buildings and structures would need to be mitigated by the proponent, requiring an MOA and implementation of some type of mitigation measure (avoidance, documentation of the complexes by the Historic American Building Survey, etc.).

In 2003, the MAARNG Cultural Resources Program and US Army Construction Engineering Laboratory initiated a multiple year historic landscape survey of Camp Edwards under a DoD Legacy Grant. This survey, which focuses on the "built" environment at Camp Edwards (buildings, structures, roads, ranges, etc.), will likely be completed in 2005. Although most of the specific historic features being examined by the survey are not within the construction footprint for the proposed project, the military/historic landscape of Camp Edwards will be irrevocably altered by the proposed project and would be considered to represent an adverse effect should the landscape be determined eligible to the National Register.

C. Native American Concerns: Under NEPA, the National Historic Preservation Act, Executive Orders 13175 and 13007, Executive Memorandum of April 29, 1994: Government-to-Government Relations with Native American Tribal Governments; Office of the Secretary of Defense, Annotated Policy Document for the American Indian and Alaska Native Policy (27 October 1999); and the American Indian Religious Freedom Act; the USACE and/or MAARNG are required to seek input from federally recognized Native American tribes who claim ancestral lands within the area of potential effect of the project. The Wampanoag Tribe of Gay Head – Aquinnah, located on Martha's Vineyard, claim all of the MMR as part of the ancestral lands of the Wampanoag Tribe and will need to be consulted with regards to the potential for the project to impact Native American archaeological sites, sacred sites, traditional cultural properties, and specific culturally significant resources.

VI. Security Concerns (Report from Jerrime S. Oliver, 1LT, FA, Camp Edwards Plans and Training Officer):

A. Civilian Access: It is anticipated that this project will require maintenance and damage control personnel to have access on a regular basis. Civilians are not usually permitted in the training areas during training of military personnel for safety considerations. Due to the size and number of towers in this project, it will lead to contractors directly interfering with training.

B. Terrorist Interest: The project could also result in an increase in interest by terrorists or sleeper cells, as a possible target of opportunity. The proposed locations of the towers make them difficult to protect.

VII. PAVE PAWS Concerns (refer to Cape Cod Air Force Station)

VIII. NOAA tower impact:(refer to NOAA)

IX. USCG Concerns (refer to USCG)

X. Investigation and Clean-up Impacts (refer to the Impact Area Ground Water Study Office)

XI. Long Range Development Concerns

A. Potential Mobilization Platform: Use of the MMR as a mobilization platform would no longer be a viable option, due to the significant impacts outlined in this report.

B. Would degrade plans for Regional Homeland Security Training Center: The Massachusetts National Guard is currently studying the feasibility of establishing a regional homeland defense and homeland security training center at MMR. The study so far has determined that such a regional training center would be vitally dependent on the availability of the northern Training Area for field training. While urban training is expected to be the centerpiece of the center, military and civilian public safety organization also need to hone skills that would be necessary in defending and securing suburban and rural areas as well. The presence of the 133 wind turbines at MMR would limit or eliminate any training venues for these purposes.

XII. Other Concerns

A. Would require significant screening of sites for unexploded ordinance: Only a small portion of MMR has been surveyed and cleared of unexploded ordinance (UXO). Each of the 133 sites, including transmission and road corridors, would have to be surveyed and cleared of UXO. This is a time-consuming and expensive procedure.

B. Lubricants for turbines and oil for transformers are hazardous materials. Management of wind tower complex would require strict conformance to Environmental Performance Standards.

C. Traffic. Increased traffic of heavy vehicles on base and on surrounding highways. Traffic is a major concern on Cape Cod and the proposal would involve increasing this problem on the highways as well as the two bridges that serve Cape Cod.

D. Noise impacts. The MANG does not have information regarding any noise impact from the operation of 133 large wind towers. The noise impact on operations at the MMR and on surrounding private property would need to be assessed.

E. Visual impact of turbines to neighborhoods and cultural areas. Proposals for water towers near residential neighborhoods on Cape Cod typically generate neighborhood opposition. Water towers generally are less than 200 feet above ground level. Wind towers at twice that height should be expected to draw significant opposition by neighborhoods near the MMR. Furthermore, the need for nighttime lighting on these towers is likely to be a significant nuisance in residential neighborhoods. For example, numerous complaints have been made regarding the lighting on the water tower located near Route 130 in Sandwich that is owned by the Upper Cape Water Supply Cooperative. This tower is only approximately 200 feet above ground level. The

addition of 133 lighted wind towers at 400 feet above ground level are likely to be a concern to area residents.

F. Impact on aquifer. The MMR is the largest source of drinking water on Cape Cod. In addition to being a major flora and fauna habitat, the presence of this major water source makes the MMR an important environmental resource, with which current military training is wholly compatible. The impact on these environmental resources will be an important consideration in any proposal to develop the area known as the northern 15,000 acres.

G. Numerous towers would have to be re-sited based upon IAGWSP activities. The MMR is currently undergoing a massive cleanup program. Conflicts between the cleanup program and any significant construction program of wind generating towers would need to be assessed.

TOWN AND COUNTY OF NANTUCKET

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February 18, 2005

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Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
Attn: MEPA Office, Anne Canaday, EOEA No. 12643
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: **Cape Wind Energy Project:**
USACE Reference # NAE-2004-338-1
EOEA No. 12643

Dear Ms. Adams / Secretary Hertzfelder:

The Nantucket Board of Selectmen and County Commissioners (hereinafter collectively known as the "Board"), the Nantucket Energy Study Committee ("Energy Committee") and the Nantucket Planning & Economic Development Commission ("NP&EDC") jointly submit the following comments in connection with the Cape Wind Energy Project (the "Project"). These written comments supplement our oral comments presented by the Director of the NP&EDC at the December 8, 2004 Public Hearing held in Nantucket.

Before we proceed, we wish to extend our gratitude to the Army Corps of Engineers (the "Corps") and MEPA for scheduling a Public Hearing on this important project on-Island so that Island residents could submit their comments in person. We would also like to thank the Corps for inviting the NP&EDC to be a participating agency throughout the scope development process. We found that the process was instrumental in our better understanding of the project, and we are hopeful that our participation yielded reciprocal benefits.

Our comments are based on a reading and assessment of the released version of the Draft Environmental Impact Statement ("DEIS" or the "Report") supplemented by other reports which offer additional perspective, and in certain cases our independent research and analysis assisted by our consultant Lexecon of Cambridge, Massachusetts who has advised the Board and the NP&EDC throughout this process.

First of all, as we have reviewed the Project and DEIS we acknowledge the substantial benefits of a project such as Cape Wind for the region. These benefits include:

- Reduced air emissions from fossil fuel fired plants, and;
- Recognition that Cape Wind is an important developmental step in the commercialization of wind energy as a viable alternative to traditional sources of electric generation.

The following comments should only be construed as constructive comments aimed at assisting the Corps and MEPA in this important decision. Notwithstanding the general support that the Town of Nantucket and the NP&EDC have for wind power development as a viable alternative to traditional sources, we have identified 12 areas of concern with this project and the DEIS. These areas of concern are as follows:

1. **Scalable wind power options are seriously reduced by an adherence to a high threshold definition of "utility scale".**

   At the outset of the DEIS, the Corps "exercises independent judgment in defining the purpose and need for the Project...as to provide a utility-scale renewable energy facility providing power to the New England grid."[1] The Corps defines "utility scale" as projects between 200 MW and 1,500 MW. If permitted and constructed as planned, the Project would be the largest wind project in the world and the first of its kind in the United States. Given the uncertain impacts of the project from both an environmental and economic standpoint (please see comments below), the Corp's adherence to the proposed scale unnecessarily prevents a prudent review of scalable options.

   According to the study of offshore wind farms performed for the Corps by Garrad Hassan, the Project is an outlier in terms of its relative size. The study identifies 11 projects constructed between 2000 – 2002. These projects range in size from 4 MW to 160 MW. An additional 14 (excluding the Project) are identified as planned projects for 2004-2006. These proposed projects range in size from 4.5 MW to 216 MW, with options to scale up to 300 MW. The average for all projects is 98 MW.[2] It is evident from these data that project developers in Europe, where offshore wind projects are much further along in development, are pursuing smaller projects than that proposed for Cape Wind.

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[1] DEIS, p 2-2.

[2] Review of Offshore Wind Farm Project Features, Garrad Hassan, for the US Army Corps of Engineers, July 30, 2003.

Is it therefore prudent for the Corps to apply a much larger scale threshold to a first of its kind application in U.S. waters when other countries with far greater experience are ramping up with a demonstration, pilot, or scalable option approach? We do not believe so. More experience with the siting, economic, and environmental impacts of these projects is necessary to prudently consider projects of the scale proposed for Cape Wind. As noted in the Garrad Hassan study, referring to all of the offshore projects in its survey, "The projects in Table 1 and 2 are, in practically all cases, of a demonstration nature and it is arguable that none should be considered as being a truly commercial development." [3]

Further evidence is found in onshore windfarm developments. Typical onshore wind farm development for the newest projects in the U.S. are in the 30 – 150 MW range, with only a few running from 200 MW to a maximum size of 400 MW. The larger projects, in particular, are most often proposed or developed in phases.

A recent study that examined the feasibility of installing wind energy turbines in a site on the island of Salina, Italy utilized a multi-criteria method to evaluate the trade-offs between optimal energy production and local siting impacts. The study concluded "The option at the top of the ranking refers to the installation of a plant with 150 kW and this emerged as the right compromise between the costs of realization, local energy requirements and the need to conserve the area and the environment especially in view of the high/medium bracket tourism business on the island."[4]

Another relevant datapoint is the size of the Project in contrast to projects approved by the Massachusetts Division of Energy Resources under its Renewable Portfolio Standard. There are currently 30 projects approved under the standard, including landfill gas, biomass, wind and photovoltaic technologies. The projects range in size from .04 MW to 27 MW. The average project is 7.4 MW. [5] It is evident that a host of renewable project developers are pursuing projects of a much smaller scale than that imposed on the EIR process by the Corps. We believe it is appropriate and prudent for the Corps to reconsider its adherence to "utility scale" as it currently defines the term.

2. The Corps' site screening criteria unduly limits consideration of alternative sites.

From its consideration of alternative generation technologies, the DEIS proceeds to evaluate 17 alternative sites for a wind-based project. The DEIS characterizes this phase of the process as "a qualitative, flexible approach to site screening,"[6] yet concludes that there are only four sites worthy of further detailed evaluation. While

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[3] Ibid, p 6.
[4] A Multicriteria Approach to Evaluate Wind Energy Plants on an Italian Island, Energy Policy, January 1, 2005, V. 33, Issue 2, Fausto Cavallaro and Luigi Ciraolo
[5] Massachusetts Division of Energy Resources, RPS-Qualified New Renewable Generation Units, http://www.mass.gov/doer/rps/approved.htm
[6] DEIS, p.3-1.

the scope purports to include all of New England, with sites considered extending from Vermont and Maine to Rhode Island, all but one of the final four includes waters surrounding Nantucket. Given the generally favorable wind resources of New England cited in the Report, we question the seriousness of attempts to identify viable alternatives to Nantucket Sound in this analysis.

The engineering and design screening criteria are "sufficient surplus electric transmission capacity to transport 200 - 1,500 MW to several projects in the ISO-NE transmission system," and "commercially available land or permissible use of offshore watersheet area sufficient to accommodate a 200 - 1,500 MW wind energy project."[7] The imposition of these criteria is problematic for several reasons. It is not clear why the Corps would consider up to a 1,500 MW project need when one which is a third of that size has been proposed. Transmission availability is a complex and dynamic issue, typically addressed by a transmission study performed by the ISO. It is not evident such studies have been conducted to establish the actual availability of spare capacity. It is also the case that project developers, the ISO, or transmission owners in the ISO will propose transmission projects to meet demand, including projects to accommodate new generation. The scale and transmission requirements unnecessarily eliminate sites that might have been appropriate for further consideration.

The engineering and design screening criteria were also unduly limiting. The Corps used water depth of 50 feet or less (mean low) and extreme storm wave heights of 20 feet or less.[8] According to the Garrad Hassan study conducted for the Corps, the existing and proposed wind farms are in waters ranging from 6.5 feet (shallowest turbine) to several projects in the 49 – 65 foot range (deepest turbine). The extreme wave height data was not available for most projects, but three projects were reported in areas with extreme wave heights between 35 and 38 feet.[9] If the Corps' criteria were applied to the 25 offshore projects either constructed or planned for Europe, 5 would be eliminated for depth and another 4 for extreme wave height.

Another design criterion utilized in the Corps screening was distance from shore, as a proxy for the limits on transmission performance. The Corps used a 20 mile limit citing "High Voltage Alternating Current (HVAC) transmission is commercially available and is feasible for us in offshore Wind Park installations as long as the distance is less than approximately 20 miles."[10] One of the European projects, however -- the North Sea Borkum West project scheduled for operation on 2005 -- is located 50 kilometers (or 31 miles) from nearest land and it utilizes HVAC transmission.

In aggregate, at least 10 of the 25 benchmark projects, or 40%, surveyed in the study performed for the Corps (and not all data is reported for all projects) would <u>not meet</u>

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[7] DEIS, p. 3-28.
[8] DEIS, p. 3-29.
[9] Garrad Hassan study, ibid, Tables 1 and 2, converted from meters to feet.
[10] DEIS, p. 3-29.

its own design criteria. This suggests the Corps' design criteria were far too limiting based on existing or proposed benchmarks from its own survey.

3. **The Public Trust Doctrine would be violated by the issuance of a Section 10 Permit.**

The balancing of public and private interests is an all important consideration in the permitting process. We join others in questioning the ability of the Corps to adequately balance public and private interests under the Public Trust Doctrine through the permitting of this one private facility. For two centuries, the system for ensuring the effective management and stewardship of federal lands has evolved, and the Federal Government has a great deal of experience in balancing private uses that are well understood while preserving the Public Trust. However, the Federal Government has not properly laid the groundwork for dealing with these issues in navigable waters with unique cultural and historic characteristics for a project of such magnitude. What are essential, but absent at this point in time, are management and stewardship plans that govern the use of coastal waters, covering a broad range of uses, including off-shore wind power projects. We concur with the Martha's Vineyard Commission's comments to the Corps on this project that the Federal Government should adopt an Ocean Policy that considers such proposals within a comprehensive planning and regulatory framework.

Related to the Public Trust Doctrine issue is the issue of whether or not any private user of waters in the Public Trust should pay the Federal Government for the right to use these waters. There is ample precedent for the payment of such fees for terrestrial uses. Another consideration is the idea of establishing a Trust Fund to offset the impacts to communities and the region of any such use.

4. **The electric service platform (ESP) and helipad contain concentrated quantities of lubricants that may pose a water quality threat and are not adequately detailed in the visual simulations.**

The DEIS does not adequately address whether the 40,000 gallons of dielectric cooling oil and 1,000 gallons of diesel oil and lubricants present on the ESP represent a water quality threat under a feasible range of extreme weather conditions. Are any of these oils or lubricants biodegradable? We feel that this element of the project warrants greater scrutiny Further, the visualizations contained in the DEIS do not contain a detailed image of the ESP and helipad which are sizeable components of the facility.

5. **The DEIS finding that the Cape Wind Project will allow the Cape and the Islands, and Massachusetts, to become more energy self-sufficient is unsubstantiated.**

We recognize that the operation of the Cape Wind project would electrically displace other sources of electricity serving Cape and Island loads. This does not, however,

translate into direct benefits for Cape and Island electric consumers. To the best of our knowledge, Cape Wind has not proposed energy contracts for either the Cape and Islands or Massachusetts from this project at this point. There is also no conclusive evidence that this project will result in savings of any measurable degree to New England ratepayers. To the extent there are benefits, these will accrue regionally, while the siting impacts are borne by the Cape and Islands. Given the localized visual and potential environmental impacts, it is a source of great concern that no contracts (even in preliminary form) to directly serve Cape and Island consumers from the project have been executed, nor have any such plans been announced. The project as currently proposed is a regional "merchant" project.

The apparent basis for the claim of economic benefits for power consumers is the LaCapra study submitted by the project proponent.[11] The study estimates a savings for the regional electricity market of $25 million per year over the first five years of operation. This estimate is based on an expected "suppression" of wholesale power prices due to Cape Wind's low variable operating costs in contrast to fossil fuel alternatives. The total value of New England's electric energy market is $7.0 billion according to ISO New England.[12] Assuming the $25 million were correct, expressed as a percent of the total regional power market (the basis for the savings estimate), $25 million represents 0.36%, or less than four tenths of a percent in projected savings. Because the energy component represents only a portion of a typical consumer's electric bill (the remainder being for transmission and distribution), a regional consumer would see a lesser benefit, probably less than 0.2%.

Furthermore, the study does not include any offsetting increase in costs to integrate the project into the regional grid that would be "socialized" across system costs for consumers. A recent article on this topic by a wind industry association official suggests that integrating wind resources into the electric grid will cost from > $2 to $5 per MWH.[13] Recognizing this problem for wind resources, the FERC has initiated a wind power market investigation. According a recent industry article, "wind generation is an intermittent resource and wind-powered turbines have low capacity factors, or usage rates, because their output is controlled by nature rather than by dispatch based on markets. So the effective transmission charges for wind generators typically are much higher than those paid by conventional power plants. Furthermore, wind is a remote resource requiring highly coordinated transmission planning that often takes many years, while the wind generators themselves can be planned, built and made operational in a fraction of that time."[14]

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[11] The Cape Wind Project: Impact on New England Electricity Market Prices, La Capra Associates, February 2002, prepared for Cape Wind Associates.
[12] ISO New England Annual Markets Report, 2003, p.2.
[13] Bringing Wind Energy Up to Code, Ronald S. Swisher, Executive Director of the American Wind Energy Association, published in Public Utilities Fortnightly, June 2004, p 22.
[14] FERC Preparing Wind Power Transmission Tariffs, Greenwire, February 2, 2005.

We therefore believe it is more accurate to indicate that any impact on regional electric prices or consumer prices would be de minimis once the costs of grid integration are considered.

6. The DEIS fails to adequately address the impacts of this project on Nantucket, a National Historic Landmark.

The Nantucket Historic District was designated a National Historic Landmark by the Federal Department of the Interior on November 13, 1966, and it remains one of only 2,500 places in the nation with that distinction. We are deeply concerned with the maintenance of the Island's character in this regard. The size and scale of the project within the viewshed of the Island (as illustrated by the photos in Appendix 5.10-F of the report) is a source of considerable concern for the historic character of the Island. As noted in the DEIS, "Because of the large sizes of 'state-of-the art' wind turbines, the visual impact of the structures on surrounding viewsheds is often cited as an environmental impact requiring careful assessment."[15]

The consultant to the Corps on historic property impacts concludes "Findings of 'Adverse Effect' are made for two NHL [National Historic Landmark] properties (Kennedy Compound and Nantucket Historic District), four historic districts, and 10 individual properties."[16] The consultant further determines, in the case of Nantucket: "The interruption of the natural horizon line by the 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 an alteration of the historic character, setting, and viewsheds that make Nantucket nationally significant and eligible for conclusion in the National Register and a NHL."[17] We note that the NHL for Nantucket includes the entire Island, and the definition of a National Historic Landmark "is a historic property of outstanding national significance that the Secretary of Interior has designated as a National Historic Landmark." [18]

Section 106 requires that Federal agencies which license projects to allow the Advisory Council on Historic Preservation ("Advisory Council") an opportunity to comment on all projects affecting historic properties either listed in or determined eligible for listing in the National Register. The Advisory Council oversees and ensures the consideration of historic properties in the Federal planning process. We see no evidence in the document that the Advisory Council has made a ruling. Instead, the DEIS refers to a possible future Programmatic Agreement that may satisfy the requirements of Section 106.[19] The DEIS offers some insight as to the type of mitigation that would be forthcoming under such an agreement, referring to the use

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[15] DEIS, p 3-25.
[16] DEIS, Appendix 5.10-F, p. i
[17] DEIS, Appendix 5.10-F, p. 42
[18] DEIS, Appendix 5.10-F, p. 11
[19] DEIS, Appendix 5.10-F, p. 10

of "materials and paint color that harmonize with the historic property and the surroundings" in order to reduce the visual impact of project elements.[20] The visual impact assessment concludes by stating that "Opportunities for minimizing and mitigating the adverse effects of the Cape Wind Project that will reduce the visual impact of the Wind Park on historic properties will continue to be explored as the consultation process goes forward."[21] Given the vagueness of these conclusions and the absence of such an agreement at this juncture, we fail to see how the Corps can issue its permit with the confidence that historic issues have been satisfactorily addressed.

The DEIS on one hand recognizes the visual and aesthetic impacts of the project on the historic character issues we sited above. According to the Report, "The Horseshoe Shoal and Tuckernuck Shoal sub-sites in Nantucket Sound are within the viewshed of the greatest number of historic properties of any Alternative."[22] Yet on the other hand, the Report seems to ignore this important finding when it considers alternative sites.

7. **Reliance on the limited experience of European windfarms as a basis for evaluating impacts on the Cape and Islands' economy is inadequate.**

Tourism is the lifeblood of Nantucket's economy, with economic activity related to tourism accounting for over 70% of the Island economy.[23] Notwithstanding the European experience with windfarms, there are no relevant precedents in the U.S., and certainly none in the middle of such an exclusively tourist-driven economy as ours. Driven by these concerns, as reported to the Corps at its public meeting on Nantucket on December 8, and in a subsequent letter the 668 members of Nantucket's Chamber of Commerce unanimously opposed the project.[24]

The DEIS recognizes "The significant tourist industry on Cape Cod and the Islands is closely dependent on the availability of high quality recreational resources in the area." The Report further recognizes "it was not possible to review wind farm projects with all three of the characteristics [presented by the Cape Wind project] since there are currently no offshore wind farms in the United States."[25] The DEIS concludes, however, based on surveys of international or onshore experience that "the Project will likely have a negligible effect on the use of recreational resources and a positive effect on tourism in general for Cape Cod and the Islands."[26]

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[20] DEIS, Appendix 5.10-F, p. 43
[21] DEIS, Appendix 5.10-F, p. 44
[22] DEIS, p 3-232.
[23] Monitoring the Nantucket Economy: An Update to the 1993 Nantucket Economic Base Study, June, 2002, Sponsored by the Nantucket Planning and Economic Development Commission and the Nantucket Island Chamber of Commerce, pp. 7 & 8
[24] Letter dated February 7, 2004 from Nantucket Island Chamber of Commerce addressed to Karen Adams.
[25] DEIS, pp 5-276, 5-277
[26] DEIS, p 5-278.

The DEIS seems to summarily dismiss any evidence that the Cape Wind project would harm the Cape and Island economy. The study conducted by the Beacon Hill Institute, specific to the Cape Wind Project, reached some contrary conclusions.[27] The tourist survey asked respondents about their trip spending, length of stay, and motivation for visiting Cape Cod. The resulting responses suggested that tourism spending would fall by $57 million, and possibly as much as $123 million per year, based on a survey of 497 tourists to the area. The report estimates that this would result in a tourism-related job loss between 1,173 and 2,533, much higher than the projected number of jobs created by the project. It is significant to note that although the Global Insight study attached to the DEIS expects the project to generate jobs, the report neglects to address potential tourism-related job losses in its analysis.

We believe the Corps has not adequately addressed the economic impacts of the proposed project on the region's tourism economy. The Corps' consideration of international experience cannot be accurately applied to the Cape and Islands. A key factor behind acceptance of European projects is local involvement and/or local ownership not present with the Cape Wind project.[28] Cape and Islands' communities have no direct involvement with the project. The one study specific to the Cape Wind project that included impacts on tourism in its analysis suggests negative impacts that would significantly exceed the projected benefits to power consumers. Further assessment of the impacts on tourism in a pilot project would be a prudent way to measure local reaction to offshore wind turbines.

8. **While the Report suggests that environmental impacts of the project are nominal, we believe the size and scale of the project in its proposed location which exceeds documented experience casts doubt on the reliability of its true impacts on affected species.**

We concur with the Massachusetts Audubon Society and the U.S. Fish and Wildlife Service in the belief that less than three years of seasonal avian studies does not provide enough information for proper analysis. "Because of potentially significant variation in environmental variables such as weather, and food availability and distribution, it is crucial to repeat surveys over a minimum of three years to determine whether the observations in any single year are repeated in other years."[29] Adequate information is especially crucial for Nantucket Sound, due to the large avian population, and population of federally endangered species in the area.

We find the methodology for the annual bird mortality estimates questionable. The mortality estimate of approximately 364 bird deaths per year is based on land studies,

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[27] Blowing in the Wind: Offshore Wind and the Cape Cod Economy, October 2003, Beacon Hill Institute at Suffolk University.

[28] Experience from the Establishment of Middelgrunden 40 MW Offshore Wind Farm, Hans Chr. Sorensen. (http://www.middelgrunden.dk/MG_UK/ukindex.htm)

[29] Simon Perkins, Taber Allison, Andrea Jones, and Giancarlo Sadoti. "A Survey of Tern Activity Within Nantucket Sound, Massachusetts During The 2003 Fall Staging Period". Final Report for Massachusetts Technology Collaborative (Post-Peer Review). September 10, 2004. (http://www.massaudubon.org/pdf/news/bird_surveys/2003stagingperiodfinal.pdf., p 1).

and not on other offshore wind farms. [30] In addition, the mortality figure "does not include studies from Europe that report higher per turbine mortality, nor does it consider data collected for the DEIS." [31]

We are also concerned about the lack of studies conducted during inclement weather conditions.[32] Migrating birds sometime fly at lower heights during inclement weather conditions, thereby increasing the probability of a collision.[33] Furthermore, birds often become disoriented and are attracted to lights during inclement weather conditions, which also increase the probability of a collision with tower and rotor blades.

The large amount of uncertainty with respect to avian mortality caused by offshore wind farms, compounded with the high level of bird traffic in the Nantucket Sound, compel us to recommend that more than one year of post-construction monitoring surveys be conducted.

We would also recommend that more studies be conducted on the distribution of sea turtles in Nantucket Sound, especially since the Kemp's Ridley turtle is the most endangered sea turtle in the world. In addition we urge the importance of monitoring given that leatherback turtles have trouble swimming backwards and avoiding obstructions in shallow water[34]; additionally, loggerhead turtles swim toward the surface when exposed to high intensity sounds.[35]

We find the DEIS dismissive of the potential collision risk of bats with towers and rotor blades. Some species of bats, such as Red Bats, may cross Nantucket Sound during migratory flights.[36] Bats are known to be killed by wind turbines, and data needs to be collected for Nantucket Sound.

9. The Project may pose a danger to air and marine navigation, and also to ground-based radar navigation facilities, including defense facilities.

Considerable correspondence has passed between the FAA, the Nantucket Airport Commission, the Barnstable Municipal Airport, and the Corps, concerning hazards to navigation posed by the Project. This correspondence is appended to this letter. In particular, the correspondence speaks to documented evidence from the British Ministry of Defense that may be directly applicable to this project to the effect that

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[30] DEIS page 5-128.

[31] Mass Audubon public hearing testimony in response to the *Cape Wind Energy Project Draft Environmental Impact Statement*, December 2004. (http://www.massaudubon.org/PDF/capewind/oraltestimony.pdf)

[32] Radar studies were not conducted in the rain.

[33] "[M]igration altitudes are variable and are often strongly affected by the weather" (http://www.nationalwind.org/publications/avian/avian98/20-Richardson-Migration.pdf, p. 35)

[34] Appendix 5.5A page 37.

[35] DEIS page 5-78.

[36] DEIS page 5-99.

similar arrays in Europe pose navigation hazards and, more importantly, may interfere with navigational radar. We believe that the DEIS should examine further whether the British experience is directly applicable to Nantucket Sound, which has an extraordinary reliance on low-level air travel as a means of transportation to and from the mainland.

While marine navigation around the turbines may be possible, the Project will essentially make about 20% of the Sound off limits or a risky proposition for some types of recreational boating. Although there may be positive benefits to fishing, the DEIS admits that "A drifting vessel, if it were to collide with a WTG, would likely receive some level of structural damage, but would remain afloat. A vessel colliding while under power would sustain substantially greater damage." [37] In inclement / foggy weather which is extremely common in Nantucket Sound, such collisions would be inevitable even if their exact frequency is impossible to predict with precision. These concerns have been forcefully articulated by the Steamship Authority.

10. Environmental and economic monitoring should be an integral part of a permit and the results of the monitoring a deciding factor in the future operation of the facility.

The lack of experience with projects of this unprecedented size makes it difficult to accurately predict impacts on the economy, the historic resources of the region, and on the marine and avian ecology. Because of this considerable uncertainty, we believe that if the Corps is inclined to permit this Project, it should do so only in phases, beginning with a "pilot" phase, while requiring a rigorous monitoring and reporting program for periods of time that are of sufficient length and scope to fully assess the project's impacts. If the results of the monitoring are favorable, the Corps could then permit additional phases, under the same conditions, until full buildout is achieved. The Corps' decision, based on a phasing program, can be articulated such that the validity of its permit is reliant on the results of the monitoring regimen falling within pre-prescribed limits of acceptable impact. We would be glad to provide further input to the specific elements of a phased approach. The Corps should build into the permit the right to re-open the permitting process with the understanding that permit modification or revocation is a possible outcome of that re-opening. We therefore believe that should the Corps be inclined to issue a permit, it is essential that a monitoring protocol be developed at this time under the aegis of an advisory committee (perhaps the Cooperating Agency established by the Corps), and that the monitoring protocol be a requirement of the Corps' permit.

11. Decommissioning guarantees need to be an integral part of any permit issued.

For the same reasons stated above, the size and scope of the Project and the uncertainties surrounding impacts dictate a cautious approach to permitting this unprecedented facility. Whether or not the Project is permitted in phases, the Corps

[37] DEIS page, p. 5-192,5-193.229.

needs to guarantee that if the Project creates impacts that exceed the impacts identified as a basis for the Corps' permit, it (the Corps) has the financial leverage to force compliance, or, if the Project fails financially or technically, it has the ability to force the scaling back of the project or its full decommissioning. The Beacon Hill Institute estimates there is a 30% chance that the Project will lose money, and a 12% chance that the Project will lose $50 million or more. It is common practice for wind project developers to sell projects once they are permitted or constructed to entities that can use the tax credits. As a result, the entity permitted will probably not be the long-term project operator. This increases the importance of establishing a decommissioning fund up-front, to ensure proper decommissioning regardless of future project ownership and whether there are profits left over at the project's end of life. This will require a substantial decommissioning fund, which should be based on today's cost adjusted by cost escalation and inflation factors projected through the life of the project.

12. The project should be more carefully analyzed for light pollution impacts and means for mitigation.

The night visualizations contained in Appendix 5-10 F of the DEIS show the wind turbine lights are visible from virtually every location simulated on the Cape and Islands, including Nantucket. Additionally, these are static pictures not capturing the impacts of flashing lights. According to the DEIS, "Preliminary plans call for lighting the WTG towers with flashing lights to meet FAA and USCG safety requirements. Each of the individual WTGs would be lighted at night by two flashing red lights on the nacelle and two flashing amber lights on the lower access platform. Lights would differ in intensity depending on the specific location of the individual turbine, with perimeter WTGs lighted at a higher intensity than those located within the interior of the Wind Park."[38] We would not want to see safety compromised in the lighting plan, but we would want the Corps to consider the benefit of European experiments with alternative lighting configurations and intensities to minimize the impacts of project lighting on ambient light pollution and the night sky. The preliminary plan should be analyzed and contrasted with the alternatives to identify a plan that best mitigates night sky impacts.

Conclusions

The Board, the Energy Committee, and the NP&EDC are all supportive of the development of wind energy as an alternative to non-renewable sources of energy, and we advocate the development of other alternative sources of energy, including energy conservation and the creation of a master Ocean Policy for the Northeast, rather than the piecemeal permitting of projects absent such a plan. We believe, however, that there are sufficient unknowns about the impacts of the Project to warrant a cautious approach to permitting the largest such facility in the world.

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[38] DEIS, p 5-132.

1. **The Draft EIS is incomplete, its alternatives criteria are improperly specified, and is insufficient to permit the Project as proposed.**
    a. It is imprudent for the Corps to apply a much larger scale threshold to a first of its kind application in U.S. waters when other countries with far greater experience are ramping up with a demonstration, pilot, or scalable option approach.
    b. The Corps' site screening criteria were far too limiting based on existing or proposed benchmarks from its own survey, unduly restricting consideration of viable alternative sites.
    c. The alternative visualizations contained in the DEIS do not contain a detailed image of the ESP and Helipad, which are sizeable components of the facility.
    d. The DEIS findings that the Cape Wind Project will allow the Cape and the Islands, and Massachusetts, to become more energy self-sufficient or obtain lower electric rates are unsubstantiated.
    e. The DEIS fails to adequately address the impacts of this project on Nantucket, a National Historic Landmark.
    f. The Corps has not adequately addressed the economic impacts of the proposed project on the region's tourist economy.
    g. The size and scale of the Project in its proposed location exceeds documented experience and casts doubt on the reliability of estimated impacts on affected species.
    h. The Project may pose a danger to air and marine navigation, and also to ground-based radar navigation facilities, including defense facilities.
    i. The Project should be more carefully analyzed for light pollution impacts and means for mitigation.

2. **If the flaws in the Draft EIS are satisfactorily addressed, the Project should only be permitted in phases with adequate monitoring and permit compliance measures.**
    a. Due to its unprecedented size and scope, and the inevitable uncertainties concerning its impacts, the project should be phased with strong consideration of a pilot project.
    b. Adequate measures should be taken to ensure compliance with permit conditions, including a decommissioning guarantee.

We once again thank the Corps of Engineers and MEPA for this opportunity to comment.

Very truly yours,

Timothy M. Soverino
Chairman
Nantucket Board of Selectmen

Michael A. Glowacki
Chairman
Nantucket County Commissioners

David Kanyock
Chairman
Nantucket Energy Study Committee

Barry G. Rector
Chairman
Nantucket Planning & Economic Development Commission

CC:
Senator Edward Kennedy
Senator John Kerry
Congressman Bill Delahunt
Governor Mitt Romney
Massachusetts Attorney General Thomas Reilly
Massachusetts Secretary of Environmental Affairs
State Senator Robert O'Leary
State Representative Eric Turkington
Cape Cod Commission
Barnstable County Commission
Martha's' Vineyard Commission
Cape Wind Associates

Appendix: Correspondence between the FAA, the Nantucket Airport Commission, the Barnstable Municipal Airport, and the Corps, concerning hazards to navigation posed by the Project.

BARNSTABLE MUNICIPAL AIRPORT
BOARDMAN-POLANDO FIELD
480 BARNSTABLE ROAD, 2ND FLOOR
HYANNIS, MA 02601
www.town.barnstable.ma.us

Office: 508-775-2020
Fax: 508-775-0453

Quincy "Doc" Mosby, Airport Manager
Frank Sanchez, Asst. Airport Manager

Barnstable Municipal Airport Commission:

Michael A. Dunning, Chairman

John T. Griffin, Jr., Vice Chairman

Arthur F. Kimber, Commissioner, Clerk

Margarete Maillho, Commissioner

Larry F. Wheatley, Commissioner

Robert L. O'Brian Commissioner

Anthony J. Balsamo Commissioner

22 October 2004

Manager, Airspace Branch
Federal Aviation Administration
Washington, DC 20591

Re: Appeal Request
Aeronautical Study
No. 2002-ANE-982-OE
through 2002-ANE-1111-OE

Dear Sir:

Airport management and the Barnstable Municipal Airport Commission have reviewed the FAA's determination in response to the above referenced aeronautical study regarding the proposed wind farm in Nantucket Sound.

Per the enclosed letter from the FAA's New England Regional Office in Burlington, Massachusetts dated 10/5/2004, the Barnstable Municipal Airport Commission and other officials from surrounding Cape Cod airports, including Nantucket Memorial Airport and Martha's Vineyard, have enjoined in a collaborative effort to formally appeal your previous review and determination. We respectfully request that a more in-depth and thorough review of the subject wind farm be conducted. Our appeal of the above referenced FAA's determination is based on the following:

- On 18 October 2004, the Barnstable Municipal Airport Commission and citizens from many Cape Cod communities were presented with an in-depth briefing by Mr. Clifford G. Carroll, a local citizen and President of Carroll Communications Company. Mr. Clifford has been diligently working and gathering data on the proposed wind ward project in Nantucket Sound, and presented some very detailed information on the adverse affects of these large wind turbines.

- Mr. Carroll's presentation also contained recent analysis and findings of wind farm research compiled by the British Ministry of Defense. The results of the Britain's research clearly indicate that the proposed wind farm in Nantucket Sound, consisting of 130 wind turbines and covering an area of 25 square miles, not only pose and environmental hazard, but are grave perils to aviation safety and air traffic control ground radar facilities. The wind turbines mentioned in the British studies also highlighted serious negative affects on defense radars as well.

On 23 October 2004, I spoke with Mr. Julian Chafer, Head of Safe Guarding for the British Ministry of Defense. I was quite astounded by the wealth of information that his country has collected regarding wind turbine research. It was more alarming to discover that one large turbine project in Britain was closed due to the effects of radar interference. After a very lengthy discussion with Mr. Chafer, I am overwhelmingly convinced that the proposed wind farm project in Nantucket Sound could possibly have the same grave affects on aviation safety and various air traffic control and defense radar facilities located throughout southern Massachusetts.

With this most recent disclosure of wind farm information, I would respectfully ask that the FAA delay any action to close their review of the aforementioned aeronautical study, and conduct a more in-depth review of the proposed wind farm project in Nantucket Sound. The attached package was presented to the Barnstable Municipal Airport Commission on 18 October 2004 by Mr. Carroll. It contains letters and associated documents authored by many sources relative to the proposed wind farm project in Nantucket Sound. Some letters of course are in opposition to the project. While I cannot authenticate the validity of many of these documents, from my discussion with Mr. Shafer, it is quite evident that further research and evaluation of subject wind farm project is paramount.

Please feel free to contact me if you need any additional information or have any further questions. Your immediate response would be greatly appreciated.

Very truly yours,

Dr. Quincy Mosby, DBA
Airport Manager

Attachment:
Wind Energy and Aviation Interests
with Photographs

Cc:
Mike Dunning, Chairman
Barnstable Municipal Airport Commission
Jon T. Harris, Manager
Airspace Branch – ANE
FAA New England Regional Office
Burlington, MA.
Clifford Carroll, President
Carroll Communications
West Yarmouth, MA.
William J. Weibrecht, C.M.
Airport Manager
Martha's Vineyard Airport
Al Peterson, Airport Manager
Nantucket Memorial Airport

Town of Nantucket
NANTUCKET MEMORIAL AIRPORT
30 Macy Lane
Nantucket Island, Massachusetts 02554

Alfred G. Peterson, Airport Manager
Phone: (508) 325-5300
Fax: (508) 325-5306

COPY

Commissioners
E. Foley Vaughan, Chairman
Charles B. Gibson, Vice Chairman
Sheila O'Brien Egan
Peter Hull
Dual A. Macintyre, Jr.

October 27, 2004

Mr. Reginald C. Matthews, Airspace Branch
Federal Aviation Administration
800 Independence Ave, S.W.
Washington, DC 20591

Re: **Appeal Request**
Aeronautical Study
No. 2002-ANE-982-OE
Through 2002-ANE-1111-OE

Dear Mr. Matthews:

The Nantucket Airport Commission and the Management of the Nantucket Memorial Airport have previously written to advise you of their opposition to the proposed wind farm project consisting of 130 wind machines that will reach a height of approximately 490 feet A.G.L.

Recent information that has been brought to our attention, indicating that studies and research compiled by the British Ministry of Defense (MOD) make our original concern even greater. The Ministry's research indicates that wind farms in Europe have constituted a peril to aviation safety and air traffic control ground radar facilities. The studies show that the wind farms cause clutter on radar and operate at frequencies detrimental to the reliability of ATC radar and other monitoring tools. The English MOD is concerned about any wind turbines within 66km of, and in line of sight to, air traffic control radar and within 74 km of, and in line of sight to, air defense radar. We share their concern.

Potential environmental issues not withstanding, the danger of interfering with radar performance in a highly traveled corridor, with very temperamental weather conditions makes it imperative that you delay any approval of this project until a more in-depth and thorough review and evaluation is performed based on this latest information.

Thank you.

Very truly yours,

A. G. Peterson

WILLIAM J. WEIBRECHT, C.M.
Airport Manager

MVY AIRPORT
MARTHA'S VINEYARD

Tel: 508.693.7022 • Fax: 508.696.4631 • E-Mail: mgr@mvyairport.com • Web Site: mvyairport.com
Parcel Address: 71 Airport Rd. W. Tisbury, MA 02575 • Postal Address: RR1 Box 850 Vineyard Haven, MA 02568

November 4, 2004

Mr. Jon T. Harris, Manager
Airspace Branch – ANE 520
Federal Aviation Administration
12 New England Executive Park
Burlington, MA 01803

(via Facsimile and FedEx)

Dear Mr. Harris:

Please accept this letter as "petition for additional review" associated with the Wind Turbine Project -Nantucket Sound determination issued by you office on or about October 5, 2004.

As has been requested by both the Barnstable Airport Commission, The Nantucket Airport Commission and their respective airport managers, The Martha's Vineyard Airport Commission and myself are also concerned that the potentially detrimental effects to radar effectiveness as detailed within the British Ministry of Defense information.

In light of this new information we believe that the determination issued by your office should be subject to additional review and consideration.

Please feel free to contact me with any questions or concerns you may have, and please notify this office directly of any "grant of review".

Sincerely,

William J. Weibrecht, C.M.
Airport Manager

CC: Dr. Quincy Mosby, Barnstable Airport
Mr. Al Peterson, Nantucket Memorial Airport
Clifford Carroll, Carroll Communications

U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave, SW
Washington, DC 20591

NOV 18 2004

Mr. A. G. Peterson
Airport Manager
Nantucket Memorial Airport
30 Macy Lane
Nantucket Island, MA 02554

Dear Mr. Peterson:

Determination of No Hazard to Air Navigation
Aeronautical Study Number 02-ANE-982-OE through 02-ANE-1111-OE
Wind Turbines – Nantucket Sound, MA

We have received your petition for discretionary review of the subject aeronautical studies. The petition is being considered and we will advise you whether a review is granted or denied. The determinations are not and will not become final pending disposition of the petition.

Though your petition concerns many aeronautical studies, it is one project so we are handling it as one case. Obstruction Evaluation Case Number 04-AWA-OE-24 has been assigned to this petition and should be referenced in any further communication with this office.

If you have any questions on this matter, please contact me at (202) 267-8783.

Sincerely,

Ellen Crum

Ellen Crum
Air Traffic Control Specialist

Town of Nantucket
NANTUCKET MEMORIAL AIRPORT
30 Macy Lane
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Commissioners
E. Foley Vaughan, Chairman
Charles B. Gibson, Vice Chairman
Sheila O'Brien Egan
Peter Hull
Dual A. Macintyre, Jr.

December 17, 2004

C. Godfrey
Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

Re: Wind Turbines – Nantucket Sound

Dear Mr. Godfrey:

As the Manager of Nantucket Memorial Airport and on behalf of the Nantucket Airport Commission, I am writing to express our opposition to the proposed wind farm project consisting of 130 wind machines that will reach a height of approximately 490 feet A.G.L.

Recent information that has been brought to our attention, indicating that studies and research compiled by the British Ministry of Defense (MOD) make our original concern even greater. The Ministry's research indicates that wind farms in Europe have constituted a peril to aviation safety and air traffic control ground radar facilities. The studies show that the wind farms cause clutter on radar and operate at frequencies detrimental to the reliability of ATC radar and other monitoring tools. The English MOD is concerned about any wind turbines within 66km of, and in line of site to, air defense radar. We share their concern.

Potential environmental issues not withstanding, the danger of interfering with radar performance in a highly traveled corridor, with very temperamental weather conditions makes it imperative that you delay any approval of this project until a more in-dept and thorough review and evaluation is performed based on this latest information.

We also feel the presence of these windmills presents a hindrance to potential search and rescue efforts in low visibility.

Thank you.

Very truly yours,

A.G. Peterson

CAPE COD COMMISSION

3225 MAIN STREET
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(508) 362-3828
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E-mail: frontdesk@capecodcommission.org

004970

February 22, 2005

Colonel Thomas L. Koning,
District Engineer
US Army Corps of Engineers
696 Virginia Road,
Concord, MA 01742

Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
Attn: MEPA Office, Anne Canaday EOEA No:12643
100 Cambridge Street
Suite 900
Boston, MA 02114

Re: Cape Cod Commission comments on the Cape Wind Energy Project USACE NAE-2004-338-1/EOEA#:12643

Dear Colonel Koning and Secretary Herzfelder:

The Cape Cod Commission Subcommittee (Subcommittee) respectfully submits the following comments in connection with the Cape Wind Energy Project referenced above. The Subcommittee acknowledges the regional, national and global importance of using renewable energy generation and commends the Army Corps of Engineers (Corps) on the production of the detailed Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR). It is also important that the impacts of a project that is the first of its kind in the nation be fully understood prior to permit action and therefore the DEIS/DEIR must provide a thorough and balanced discussion of the projects benefits and detriments.

The Subcommittee comments are offered jointly to the Army Corps and MEPA, with the understanding that each has separate and different responsibilities under their respective environmental statutes (National Environmental Policy Act (NEPA) and Massachusetts Environmental Policy Act (MEPA). Therefore, all comments may not be applicable to both agencies in all cases. It should also be noted that the Subcommittee may request that additional information be provided as part of the future Development of Regional Impact (DRI) review and

that these comments in no way limit the scope of that review. Furthermore, these comments should not be interpreted as expanding the Commission's jurisdiction over the project, rather they are offered with the intention of addressing issues relevant to the satisfactory completion of the current NEPA and MEPA environmental review in accordance with the scope of the DEIS/DEIR.

BACKGROUND/PUBLIC POLICY

Since Cape Wind's application, there has been a great deal of discussion about whether there is a sufficiently robust regulatory process in place for the use of federal waters on the Outer Continental Shelf (OCS) and whether the Corps should have sole purview over the federal permitting of the Cape Wind project. Similarly, the question of ownership and use of submerged lands held in public trust continues to be a point of debate and litigation.

The Subcommittee believes that the continued ad-hoc review of offshore renewable energy projects creates uncertainty and fails to serve the public or future proponents of renewable energy projects. In February 2002, the Cape Cod Commission wrote to Senators Kerry and Kennedy and Congressman Delahunt seeking clarity on these issues with a view to creating an appropriate framework for review of projects and uses on the OCS. The absence of any planning process, bidding or leasing framework or appropriate regulatory pathway continues to undermine the future use of public resources in the ocean and is an issue of public policy that is deserving of immediate attention. To their credit, the Corps raised similar concerns at public hearings of the Ocean Task Force and we acknowledge that the Corps has indicated that they do not have the authority to address the issue of use of the public resource under current regulations.

Recommendations of the US Commission on Ocean Policy, the Pew Commission and the Massachusetts Ocean Management Task Force have taken an important first step in this area, but the implementation of these recommendations remains to be achieved. As such, we urge our elected officials at both the federal and state level to address these important issues for the benefit of the public and offshore renewable energy in general and to provide a framework within which sound judgment on the merits of projects may be made. Although this issue is deserving of appropriate legislation, it is beyond the scope of the existing process to address and therefore the Subcommittee's comments will focus on the adequacy of the DEIS/DEIR.

COMMENTS ON DEIS/DEIR

The following comments are those of the Subcommittee and firstly present general observations on the DEIS/DEIR, followed by more specific comments by topic. For clarity, some sections include a brief discussion of the issue that is followed by the Subcommittee's comments.

It is the purpose of the comment period on the DEIS/DEIR to allow reviewers to offer comments on the document's accuracy and whether it adequately addresses the impacts of the project. It is especially important in the case of a project for which no precedent exists, that those making decisions on any part of the project fully understand the consequences of that decision. If the DEIS/DEIR does not accurately characterize the potential benefits and detriments and permits are issued without a reasonably balanced view of the project, the offshore wind energy industry in the United States will likely be set back decades should the project fail. It is therefore

essential that the DEIS/DEIR present information fairly, transparently and accurately and acknowledge situations where the extent of the true impacts are uncertain.

In view of this need for accuracy, transparency and balance, and based on the issues identified in the following comments, it is the recommendation of the Subcommittee that a SUPPLEMENTAL DEIS/DEIR be prepared, rather than moving on to the preparation of a Final EIS/EIR.

SECTION 1: GENERAL COMMENTS

Incomplete Analysis

Comment G1: The Subcommittee is concerned that some conclusions presented about the project's impacts in the DEIS/DEIR are derived from an incomplete analysis that is either flawed or fails to fully acknowledge information sources that exist on certain issues. A thorough analysis is especially important to create a sufficiently robust environmental review for a project that is the first of its kind in the nation, but where there are significant data gaps about the existing setting. This issue is illustrated specifically in the following examples, but occurs in a number of places throughout the document.

a) The lengthy discussion of potential avian impacts in Section 5.7 concludes that 364 birds will be killed each year. This conclusion is derived by calculating the numbers of birds flying at the rotor height within Nantucket Sound and multiplying that by a mortality rate for birds (2.8 fatalities/turbine/year). This mortality rate represents a range established from studies of avian impacts at land-based turbines. The impacts of wind turbines on birds in the marine environment are not well understood and may differ significantly from those at land-based facilities. The Subcommittee believes that application of these mortality rates results in a flawed analysis. Given the lack of information on large, offshore wind farms, it seems that the Corps should exercise extreme caution in extrapolating fatality rates between different types of facilities. It may be more accurate to provide a broad range or simply conclude that the true avian impacts are unclear.

b) In Section 5.16.4.6, a discussion of the potential impacts on tourism and recreation is presented. This section makes no mention of a report completed by the Beacon Hill Institute[1] and submitted to the record that concludes that there are impacts to tourism. Similarly, comments received at public hearings by the Humane Society of the United States have raised questions about whether impacts to bats and marine mammals have been adequately researched. The DEIS/DEIR should either include reference to relevant studies or discuss the reasons for the omission as part of the analysis.

[1] "Blowing in the Wind: Offshore Wind and the Cape Cod Economy", Beacon Hill Institute at Suffolk University, October 2003.

Review Methodology

Comment G2: It is vital that the document fully detail the process undertaken to reach the conclusions presented in the DEIS/DEIR in a way that is transparent, so that the objectivity of the document is maintained. This is particularly applicable in cases where information submitted by the project proponent is the primary source of data on a topic. The DEIS/DEIR must provide greater detail of what third party verification has occurred and fully substantiate claims made by the applicant or their consultants. Following are some examples of where this lack of independent assessment is problematic:

a) The reports by Global Insight and La Capra (Appendix 5.16 A and 5.16 B) regarding economic and market impacts were both commissioned by Cape Wind. The DEIS/DEIR does not present evidence that any independent assessment of the assumptions used in the analysis has occurred or that its conclusions are supportable. That is not to say that these reports are necessarily inaccurate, however, the absence of any documented evidence of a third party evaluation calls into question the objectivity of the conclusions.

b) Section 5.16.4.6 provides a discussion of tourism and recreation impacts and states, "In order to evaluate the potential for measurable adverse effects on tourism.... the Applicant conducted additional research into existing studies..." This is followed by quotes from British and Australian Wind Energy Association studies and numerous tourist related publications in support of a conclusion that there is no negative impact. The Subcommittee is concerned that reliance on wind industry groups, home sale advertisements and tour company advertising seems to be an inappropriate substitution for an objective scientific analysis. The DEIS/DEIR should include evidence that an independent and scientific assessment has been completed to support these findings.

c) In Section 3.5.5[2] a discussion is provided about the screening criteria used to evaluate the alternate cable routes. This section states that "experts from the Applicant's and their consultants "project team assigned scores for each criteria" and that these criteria were weighted "based on the project team's judgment of the relative importance of each criterion". There is no assessment provided as to whether the criteria or weighting have been independently verified.

Benefits Overstated/Detriments Downplayed

Comments G3: Many sections, although most notably in Section 3 (Alternatives Analysis) and Section 5 (Environmental Consequences), are written in a way that appears to down-play any negative impacts from the project while overstating the benefits. The DEIS/DEIR analysis should objectively present all the facts related to the project and let them stand on their own merits, ensuring that conclusions about the benefits or detriments are kept in scale with the proposed project. Failure to accomplish this goal gives the impression that the report lacks balance, which must be avoided to maintain the objectivity of the environmental review process. This issue can be illustrated through the following examples:

[2] Page 3-252 DEIS/DEIR

a) Section 5.16.4.2 states that the project will diversify the region's energy mix and "decrease reliance on imported fossil fuels". While diversifying the region's energy mix may reduce reliance on imported fossil fuels, no clear picture emerges from the DEIS/DEIR as to the extent of the decrease associated with the proposed project. See comments AQ1 through AQ3 for a more detailed discussion of this issue.

b) Section 5.7.4.4[3] states that the proposed project would "pose less risk than multiple guyed communication towers in excess of 500 feet that are located onshore". This statement is based on studies that may indicate that certain bird species are at risk of colliding with guy wires associated with taller telecommunications towers on land. However, the Subcommittee believes that this statement downplays the potential for avian mortality. Specifically, although the turbines will not have guy wires, they do have long, unlit rotors that may present a collision hazard to birds. Furthermore, caution should be used when comparing land-based and water-based structures, particularly in this case where small groups of telecommunication towers are compared to the 130-structures proposed as part of the project.

Quantitative Comparisons

Comment G4: Conclusions regarding the alternatives considered lack the quantifiable information that is essential to the permitting process for the project where the project's benefits and detriments are to be weighed. The analysis should result in a summary that is supported by quantitative, rather than qualitative information, which allows comparisons between the different alternatives and a weighing of benefits in accordance with the requirements of NEPA.

a) For example, Section 5.15.2[4] describes the anticipated emissions reductions resulting from the proposed project, including a reduction of 949,000 tons of carbon dioxide, which is the major greenhouse gas. It is important that the DEIS/DEIR put this amount in perspective with total carbon dioxide emissions in the region, nation and globally if any claims are to be made regarding improving air quality. This quantifiable information on the proportion of total emissions should be supplied for each of the primary pollutants discussed.

b) Section 5.7.3.2.1[5] discusses the number of bird fatalities resulting from collisions with glass windows, buildings, telecommunications towers and the effect of hunting. The DEIS/DEIR states "the numbers of bird fatalities for wind turbines is an order of magnitude smaller than other human mortality sources." While there is no doubt that these sources of avian mortality exist, no comparable, proportional information is presented. For example, this section states that "100 million to 1 billion birds die from collisions with glass windows" annually but does not acknowledge that there are also billions of glass windows with which to collide.

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[3] Page 5-138 DEIS/DEIR
[4] Page 5-254 DEIS/DEIR
[5] Page 5-122 DEIS/DEIR

c) Section 5.12.4.1.1[6] discusses the risk of ice being thrown from the rotors and causing injury. The section concludes that the risk is small and outlines some of the factors that contribute to this conclusion. While the statements seem to offer some support for the conclusion, the DEIS/DEIR does not provide information about what constitutes a "relatively small" risk because no relative information about underlying assumptions is provided. Typically, risk is expressed as a probability in the same way as the risk of being struck by lightning.

EFSB Tentative Decision

Comment G5: Throughout the document, the DEIS/DEIR refers to the Tentative Decision rendered by the Energy Facilities Siting Board (EFSB) to support conclusions made on the project's impacts. This approach implies that the conclusions made by the EFSB are final and that the EFSB approval has been secured. However, at the time of the release of the DEIS/DEIR the findings have not received approval by that Board and it therefore seems premature to rely on the Tentative Decision to support the DEIS/DEIR. It is entirely possible that changes may be made to that decision prior to a final decision that could affect the Corps conclusions. This issue is further confused as the EFSB Tentative Decision only becomes effective on the successful approval of the project from all other permitting agencies. As such, even if the EFSB approves the Tentative Decision it would be a contingent permit and would be invalid if one of the many permitting agencies denies the project. This outcome would create confusion about the validity of the reference to this document in the DEIS/DEIR.

Ownership Issues

Comment G6: The question of ownership of the project area continues to be raised as an issue by many commentators. The DEIS/DEIR would benefit from a discussion of the ownership issues surrounding the use of the Outer Continental Shelf (OCS) with particular reference to the recently published Congressional Research Service study "Wind Energy: Offshore Permitting" completed for Congress. The certificate issued by the Secretary of Environmental Affairs on the project's ENF also required the document to "discuss any federal public trust implications of the project."[7] The Commission's DRI review process also requires that an Applicant demonstrate ownership or permission to use property prior to the commencement of the DRI hearing.

Inclusion of Reports

Comment G7: A number of reports referenced in the DEIS/DEIR are noted as being available in the future to provide detail on the proposed mitigation, namely the Spill Prevention Control and Countermeasure Plan (SPCC), a Storm Water Pollution Prevention Plan (SWPPP) and an Operations and Maintenance Plan (O&M). The Subcommittee believes that these plans should be included in the DEIS/DEIR, at least in outline form, so that reviewers may understand the mitigation proposed. In addition, the SPCC plan should include an analysis of the likely direction and affected area of any oil spill. Comments received at public hearings also noted the absence of a System Impact Study (SIS) that is required to identify grid modifications needed to transmit electricity generated from the project. This SIS should be included in the DEIS/DEIR

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[6] Page 5-228 DEIS/DEIR - Ice

[7] Page 13, ENF Certificate

for public review and comment and the economic impacts of providing such upgrades should be incorporated into the Corps analysis. Finally, no report is presented on the data collected from the meteorological tower currently located in Nantucket Sound. This information would allow an accurate characterization of the climate conditions in the area in regard to wind speed, weather conditions and currents.

Cumulative Impacts

Comment G8: The DEIS/DEIR does not provide a full and complete treatment of the cumulative impacts associated with the project. Throughout the document, the cumulative impact assessment is limited to similar types of energy and cable projects that have been permitted or are likely to occur in the vicinity of Cape Cod. While consideration of these activities is an appropriate exercise in cumulative impact analysis, the DEIS/DEIR should also address the additive impacts that will accrue over the project's anticipated lifespan. For example, the cumulative impacts resulting from the loss of avian species because of turbine strikes over the course of the project's operation should be evaluated.

Mitigation

Comment G9: Mitigation other than project design measures should be proposed to reduce or avoid all identified potential impacts. The mitigation proposed throughout the DEIS/DEIR often relates to the project design, such as the use of newer turbine technology with slower spinning rotors as mitigation for avian mortality and painting of structures to mitigate visual impacts. However, while these project design steps may reduce impacts associated with the project, no clear picture emerges whether they minimize impacts or if impacts may be avoidable. This incomplete picture of the possible mitigation could be remedied in part by a more thorough alternatives analysis.

Decommissioning Plan

Comment G10: The DEIS/DEIR is not responsive to the ENF certificate issued by the Secretary of Environmental Affairs that required that a plan for removal of the turbines and related infrastructure be provided and that a "funding mechanism for the decommissioning plan" be discussed. The certificate also required that the steps needed "to ensure minimization of environmental impacts during removal" should be included. The DEIS/DEIR provides very little information on this topic. Section 4.5[8] states that "a financial instrument will be in place to ensure that sufficient funds are available for removal". However, there is no further detail on how this amount will be determined and what instrument may be employed. Unlike most other forms of infrastructure, it appears to the Subcommittee that traditional forms of surety (e.g. bonds) may be difficult to obtain for a project of this scale. The mechanism and process for establishing a surety, together with more detail on decommissioning in general should be provided in the DEIS/DEIR. In addition, the discussion should include what provisions are to be made for potential future changes in inflation and engineering costs associated with decommissioning. In addition, the proposed method for removal of the WTGs would leave significant portions of each pile buried in the sediment of Horseshoe Shoal. The DEIS should identify the technological impediments to complete removal of the structures, assess whether the

[8] Page 4-20 DEIS/DEIR

piles will degrade over time and the likely effect on adjacent habitat. In addition, the DEIS/DEIR should include an assessment of the shoal to enumerate any risk that a shifting shoal will expose the remaining piles.

Monitoring

Comment G11: The Commission Subcommittee has concerns about the depth to which proposed post-construction monitoring is presented in the DEIS/DEIR. The document should clearly stipulate the extent of the monitoring that would be carried out throughout the lifetime of the project. Monitoring should include precautionary monitoring intended to identify incremental changes in the environment that could be precursors to or indicators of adverse impacts. Examples could include species composition in the vicinity of the piles, ongoing assessments of avian behaviors as they relate to the facility, bathymetric surveys of the shoal, etc.

Disaster Preparedness and Planning

Comment G12: The DEIS/DEIR should provide more detailed information regarding the potential environmental impacts associated with a catastrophic failure of the facility, such as in the event of a hurricane or seismic event. This should include details on the design specifications for all infrastructure and the engineering failure point of structures. The analysis should reference the frequency of hurricanes and seismic activity capable of creating forces in excess of the design limitations to establish the likelihood of failure. The contingencies for responding in the event of failure should also be discussed, including plans for reconstruction, recovery/salvage, spill clean-up and what financial arrangements have been made to cover these costs. Special attention should also be paid to assessing the impacts of any spill, including the potential environmental impacts and the direction and area likely to be affected.

SECTION 2: PURPOSE AND NEED

In Section 2, the Corps defines the project purpose and need as "to provide a utility-scale renewable energy facility providing power to the New England grid". Footnote number three on page 2-1 further defines "utility-scale" as generating facilities with a capacity between 200 MW-1,500 MW. This range is based on the capacity of energy generating facilities traditionally connected to the grid. The project purpose and need goes on to discuss the importance of renewable energy and the Massachusetts requirements for new renewable electricity supply as part of the Renewable Portfolio Standards (RPS) and the de-regulation of the electricity industry.

NEPA requires that the purpose and need briefly specify the underlying purpose and need to which the agency is responding. The purpose and need statement in a DEIS is pivotal to the analysis of the document, as it helps define the range of alternatives used for comparison against the proposed project.

Range for Utility Scale project

Comment PN1: The Subcommittee believes that on face value, the purpose and need is generally appropriate, however, we strongly believe that the range used to further define a "utility-scale" renewable project is seriously flawed. This concern is heightened as the same range is used to eliminate many potential alternative sites from the alternatives analysis. These

same concerns have been raised by others at public hearings and by members of the Massachusetts Technology Collaborative's Stakeholders Process. Moreover, the summary of the Peer Review Committee comments presented in the DEIS/DEIR states that there "was some concern expressed about the 200MW minimum size, with reviewers noting that most wind projects were significantly smaller than that and were still "utility scale""[9]. The Subcommittee's concerns about this range are two fold:

a) Firstly, the range employed reflects the capacity of energy generating facilities connected to the grid, none of which are renewable projects. Therefore, to use this range seems at odds with the intended purpose and need to look at "utility-scale renewable projects". Renewable energy generating projects are traditionally much smaller and fall well outside this range. For example, the Hoosac project recently approved in Western Massachusetts has a capacity of 30MW and is the largest project approved or built in the New England region. Cape Wind's project is the only facility in New England capable of a capacity in this range and thus all other renewable energy sources are eliminated from consideration.

b) Secondly, using the nameplate capacity of fossil fueled plants to define a "utility-scale renewable project" fails to account for the dramatic difference in power generated from fossil-fueled/nuclear plants in comparison to a similarly sized wind power plant. It is well understood that when the wind doesn't blow, wind projects do not generate electricity. As such, although the capacity of the Cape Wind project is listed as 454 MW, the development would only have an average capacity of 170 MW over the course of a year (producing 1,489 Gigawatt hours (Gwh) of electricity). This reduction is known as a capacity factor and it accounts for the fluctuations inherent in the use of wind power. Such a reduction is not typical of other forms of fossil-fueled and nuclear generators that are capable of providing energy at their maximum capacity all the time. Simply put, a 454 MW fossil fuel plant generates approximately two and a half times the amount of energy as a 454 MW wind facility. Therefore using the nameplate capacity for wind facilities appears to be inappropriate. The DEIS/DEIR attempts to rationalize the use of this figure by stating that 20% of the time the project will operate at 454MW but fails to acknowledge that 80% of the time it does not. In fact, even the range of capacity from the Cape Wind project (0 to 454 MW) falls partly outside the selected range.

Modified range for Utility Scale project

Comment PN2: To partly address the concern raised in PN1, it is our recommendation that the Corps modify the range of facilities looked at to reflect the amount of power produced by the facility, rather than the capacity. Based on the average capacity of the Cape Wind project (170 MW), approximately 1,489 Gwh of electricity would be produced annually. As this is the product of the project, it seems more appropriate to use this scale to measure against other forms of energy generating facilities. This measure has the advantage of allowing comparison between different technologies without having to account for the variability in the wind facility's generation. For instance, the alternatives analysis would compare the impacts of Cape Wind's

[9] Appendix 3-E, Summary

proposed project to that of other oil, coal, natural gas and other renewable technologies capable of producing 1,489 Gwh of power annually.

Renewable Portfolio Standard

Comment PN3: The Subcommittee agrees that there needs to be substantial investment in renewable energy technologies in New England, as required in the Massachusetts legislation cited in the purpose and need. However, it may be misleading to say the purpose is to meet the requirements of the Massachusetts Renewable Portfolio Standard when it is our understanding that Cape Wind could sell their power to meet the Connecticut or Maine RPSs. As yet, no contractual commitment has been disclosed that would require that the power generated would be sold to consumers in Massachusetts.

SECTION 3: ALTERNATIVES ANALYSIS

The purpose of the alternatives analysis under NEPA is to "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public"[10]. The alternative analysis does not require the proponent to relocate its project nor does it require analysis of an alternative to be within the means of the proponent. Its importance is to allow future decision makers to understand the alternative ways of achieving the goal articulated in the purpose and need statement.

The alternative analysis in Section 3 presents a number of alternatives for consideration:

a) Comparison of Fossil-fueled generation plants.
This section responds to the scope of the DEIR under MEPA and compares the impacts of coal, oil, and natural gas generating plants capable of producing 454 MW of electricity at capacity.

b) Comparison of alternate renewable energy technologies.
This section provides an overview of the various forms of renewable energy generating technologies and discusses their relative impacts

c) An analysis of four alternate sites (including Horseshoe Shoal).
The four alternate sites include Nantucket Sound, South of Tuckernuck, Massachusetts Military Reservation and a combination site consisting of offshore facilities near New Bedford and a reduced facility at Horseshoe Shoal. The Corps initially developed a list of 17 potential sites and used a set of screening criteria (listed in Section 3.4.1[11]) to narrow down the alternatives to undergo more detailed study. Issues raised for each site were listed to provide the relative merits and/or detriments of these sites.

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[10] Council on Environmental Quality, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act.
[11] Page 3-28 and 3-29 DEIS/DEIR

d) A no-action (no-build) analysis was also included to act as a baseline from which all other alternatives can be evaluated.

Incomplete Alternatives Analysis

Comment A1: While the alternatives analysis provides some important information, it does not provide the necessary comparisons required under NEPA and does not provide a clear basis for choice for agencies issuing permits on the project. The summary attached to this report outlines the general issues with this section, however, more detailed comments are provided in the following comments (A2 through A12) to specifically illustrate the issues of concern.

Alternatives Analysis - Preliminary Site Selection

Comment A2: Notwithstanding the issue of the appropriateness of the range (see Comment PN1 above), the Subcommittee is concerned about the lack of a clear methodology for developing the list of 17 potential sites. We believe that the method of establishing the list of preliminary sites that was based on input from the public is too unscientific for this kind of project. We believe a methodology similar to that used by the Long Island Power Authority (LIPA) to identify suitable areas for offshore wind development is more appropriate and should be followed. LIPA used wind resource information to broadly identify potential sites and refined their site selection process by using a broad range of criteria to narrow the potential sites. This is different from the DEIS/DEIR analysis, which started with a number of suggested locations and was then narrowed by application of the screening criteria. The result of the analysis is that several of the sites do not have sufficient wind resources and are therefore eliminated. A more objective analysis would prevent consideration of sites that have insufficient wind resources, would allow a broader view of potential sites to serve the region and would be more defensible from the perspective of NEPA.

Alternatives Analysis - Fossil Fuel Fired Plants

Comment A3: The Subcommittee is concerned that the alternatives analysis for the fossil fuel fired generating plants is overly general and incomplete. We do not believe that it is responsive to the MEPA certificate, which aimed to establish a baseline for consideration of alternatives by clearly articulating the impacts associated with conventional power production. Concerns in this area can be summarized in the following examples:

a) The entire section compares 454 MW fossil fuel fired facilities but does not acknowledge the amount of electricity generated from a power plant of that size. As noted in Comment PN1, the energy output is almost three times that of the project under consideration. If information were to be provided on the amount of kilowatt-hours (kwh) produced by these plants, the statement in the DEIS/DEIR that 25 gallons of water are needed to produce a kwh of electricity[12] could be placed in perspective.

b) The description generally discusses the impacts of building new fossil fuel plants in a qualitative way but does not summarize these impacts in a manner that allows comparison to the proposed project. Section 3.2.1 presents almost no figures to allow the

[12] Page 3-4 DEIS/DEIR, Water Use

reader to compare technologies. Some simple quantitative analysis is needed for this section to be useful, particularly in the summary of findings for each section.

c) The analysis provides some figures on the impacts associated with certain types of fossil fuel plants on a national or regional level; however, the analysis does not provide any indication of what impacts are associated with a 454 MW facility. For example, Section 3.2.1.1.1[13] states that fossil fueled power plants account for 48% of total water use in the US, but no indication is given as to the percentage of this attributable to a 454 MW natural gas plant.

d) A limited set of environmental issues are discussed in this section for each type of facility, which is in contrast to the range of topics analyzed under Cape Wind's alternative. This should be rectified and is particularly important when trying to understand the impacts of the proposed Cape Wind in context with impacts of traditional forms of energy generation.

Alternatives Analysis - Renewable Technologies

Comment A4: Section 3.2 provides a more useful analysis of the alternative renewable technologies and their relative ability to provide large amounts of electricity. However, the lack of a concise, quantitative summary of each of the technologies studied does not allow a simple comparison to be made. For instance, Section 3.2.2.1.4[14] describing Photovoltaic/Solar power states that a "454 MW plant would require a 14.6-square-mile array of solar panels." This fact is extremely informative as it allows a simple comparison to the area of the Cape Wind project. Unfortunately, similar simple statistics that allow comparison are not provided anywhere else in the section. In addition, the section does not include many of the topic areas discussed under the more detailed wind energy analysis (e.g. socio-economic analysis) and therefore appears to be incomplete.

Alternatives Analysis - Identification of Site Constraints

Comment A5: Section 3.4.2 lists the 17 sites identified by the Corps as part of the preliminary review together with a bulleted list of the conclusions reached following application of the screening criteria. There are a number of concerns about this section:

a) There is no clear description of the exact areas studied and therefore it is difficult to independently evaluate the findings. For example, under the Portland Harbor site[15] the DEIS/DEIR states that the inner harbor is insufficient to accommodate a 200-1,500 MW facility but that outside the inner harbor open watersheet is available. However, although Figure 3-19 shows the general vicinity, it is unclear where each of these areas is located (this problem exists for each site).

b) It appears that some of the criteria have not been applied evenly. For example, navigational impacts (either to marine traffic or aircraft) are listed under Vinalhaven,

[13] Page 3-4 DEIS/DEIR
[14] Page 3-12, Affected Environment
[15] Page 3-36 DEIS/DEIR

Boston Harbor and Block Island, implying that this is a major flaw in exploring these sites further. However, the Nantucket Sound section does not even mention navigational issues even though it is located near busy shipping lanes and air traffic routes. There seems to be similar inconsistency in listing protected marine mammal species between site alternatives.

Alternatives Analysis - Application of Screening Criteria

Comment A6: The Subcommittee has concerns about the application of the screening criteria listed in Section 3.4.1[16] and that the criteria selected result in an overly narrow range of alternatives. The primary concerns can be summarized as follows:

a) As discussed in Comment PN1 above, we believe that the application of the 200-1,500 MW range is inappropriate when considering renewable technologies. The range dictates both the land/water area needed for an alternative and the available surplus in the transmission infrastructure needed for the supply of power. The range therefore directly constrains the methodology and results in the exclusion of all other renewable projects and multiple sites from consideration. The range also dismisses the potential for a distributed generation alternative by assuming the need for a single, large facility to meet the purpose and need.

b) The use of screening criteria that use "commercially acceptable" and "practical construction and maintenance" in their language seem to rely on the specific circumstances of the Applicant that seems contrary to the purposes of NEPA. No clear picture is presented as to what these terms mean.

c) The result of the screening process is the selection of four sites within Southeastern Massachusetts for further study. Although the DEIS/DEIR states that the screening criteria were subjectively used, there is no discussion of how they were applied and how each criterion was weighed in the analysis. Section 1502.14 of the NEPA implementing regulations requires that when alternatives are eliminated that the document "briefly discuss the reasons for their having been eliminated." A very limited discussion is presented and should be expanded to provide a clearer explanation of how impacts were weighed so that the public understands the screening process more fully.

Alternatives Analysis - Combination Site

Comment A7: The combined site of New Bedford and Horseshoe Shoal involves a 25-turbine project at New Bedford and a configuration at Horseshoe Shoal that is reduced by only 18 turbines. No explanation is provided as to why 25 turbines were not removed and why a larger project is being analyzed.

Alternatives Analysis - Alternate Configurations

Comment A8: The DEIS/DEIR does not include any alternate configurations for the turbine array at Cape Wind's preferred alternative, leaving little opportunity for the public or the Corps

[16] Page 3-28 DEIS/DEIR

to contemplate potentially environmentally preferable designs. A fundamental exercise in evaluating alternatives is to vary the configuration of the project to understand the relative benefits/detriments to the public interest of each configuration, irrespective of the desires of the proponent. The Corps' own NEPA Guidance document[17] states "The EIS should discuss geographic alternatives, e.g., changes in location and other site specific variables, and functional alternatives, e.g., project substitutes and design modifications." (emphasis added). This may be of particular importance for a project such as Cape Wind's where the visual impact is of concern to many members of the public and where changes in spacing, layout and/or distance from shore may alter the visual impression of the project. The Subcommittee recommends that at a minimum the configuration be evaluated in the following ways to explore the relative impacts of different configurations:

1. Reduced number of turbines
   To be a useful exercise in informing the public and permitting agencies in the relative impacts of the project, the analysis should include a project with a significantly reduced facility. The current size is dictated by the business plan of the Applicant and the DEIS/DEIR does not allow reviewers to determine whether this approach to providing renewable energy to Massachusetts is in the public interest. A smaller project would likely have proportionally smaller detriments and benefits but would allow decision makers to determine whether the economies of scale enjoyed when building a large facility weigh favorably with the relative impacts. If it is uneconomic to construct a smaller facility, the DEIS/DEIR should clearly articulate why, so that the public may fully understand why the project is the size proposed.

2. Alternate Configurations
   The current arrangement of turbines places the facility 4.7 miles from Point Gammon and 6 and 6.5 miles from Cotuit and Craigville Beach respectively. The facility is approximately 9 miles from Martha's Vineyard and approximately 14 miles from Nantucket. If the proposed facility is to remain at its current size, it is imperative that the alternatives analysis explores functional alternatives in project configuration and assesses their impacts (as required by 33 CFR Part 325, Appendix B, Section 9(b), 5(c)). The Middlegrunden offshore wind farm in Denmark provides a good example of why this is important. This very successful project was re-designed and re-configured based on community input and aesthetics, in preference over the initial engineered design. The Subcommittee recommends that the following alternate configurations be evaluated:

   a) A configuration that maintains the size of the facility but places the turbines further away from shore. Section 5.10.4.3.2[18] references a British study that looks into a methodology for assessing the visual impacts of changes to the seascape (including new wind turbine development). That study suggests that 15 kilometers (or approx 9.3 miles) would be the maximum limit of regional

[17] 33 CFR Part 325, Appendix B, Section 9(b), 5(c)
[18] Page 5-203 DEIA/DEIR

visual significance to a seascape. The DEIS/DEIR uses this fact to support the conclusion that the project structures become obscured and more difficult to see when viewed at distances greater than 8 miles. These statements seem to lead to consideration of an alternative that arranges the turbine array differently such that the turbines are placed at distances at or beyond those cited. This may involve construction of turbines in slightly deeper water if rows are removed from the north side of the project, however, water depths in this part of Nantucket Sound do not appear to exceed the 50 foot depth used to describe the "shallow water" desired by the applicant.

b) The DEIS/DEIR should explore whether alternate turbine spacing would be more preferable than that proposed for the project. Section 4.1.2[19] says that the WTGs will be arranged "to obtain an optimal energy-generating arrangement" and "to minimize power losses due to wind shear and turbulence". As such, the WTGs are spaced 0.34 nautical miles (2,063 feet) apart with 0.54 nautical miles (3,280 feet) between rows. There is no detailed explanation provided as to the factors that contributed to this proposed configuration, other than what the applicant has determined to be optimal. The Environmental Impact Assessment[20] completed for an offshore wind project near Arklow, Ireland which uses the same turbine proposed by Cape Wind, is planned to have the WTGs spaced 1,148 feet apart with 1,640 feet between rows. This project is in an environment very similar to that proposed to be used by the proponent, yet the turbines are placed approximately half the distance proposed by Cape Wind. If the WTGs for Cape Wind's project were to be spaced in a manner consistent with those at Arklow, the wind farm could occupy half the area. There may be other consequences to this action, such as greater impacts on fishing in the interstitial areas perhaps and potentially greater avian impacts. However, it is essential that these relative impacts be explored, in fact, such an analysis is the whole point of the alternatives analysis under NEPA.

c) The DEIS/DEIR should also explore what potential might exist for a maintaining the number of turbines, but instead utilizing a mix of turbine sizes. For example, smaller turbines may be used around the periphery of the project array with potentially smaller visual impacts. Smaller turbines may be spaced more closely and the DEIS/DEIR should discuss whether the potential exists for smaller turbines to operate at lower wind speeds.

Alternatives Analysis - Distributed Generation

Comment A9: The DEIS/DEIR leads the reader to conclude that the only way of producing 1,489 Gwh of renewable energy to meet the Massachusetts Renewable Portfolio Standard is through construction of a single, 454 MW capacity wind farm. However, it is our belief that the

[19] Page 4-3 DEIS/DEIR

[20] June 2001, Arklow Bank Wind Park, Non-technical Summary

same amount of electricity could be produced by several, distributed generation facilities. As such, we strongly recommend that the DEIS/DEIR include an analysis of a distributed generation alternative, a suggestion that is supported by members of the Peer Review Committee established by the Corps[21] and by a number of comments made at public hearings. In Section 3.4.2.1.9, the DEIS/DEIR says that some of the smaller land-based sites were not located in close enough proximity to be grouped to reach a similar energy production to that of Cape Wind. The reasons for this statement should be fully explained, as the Subcommittee believes that proximity is not a pre-requisite for operating multiple facilities.

Alternatives Analysis - Phased Installation

Comment A10: No analysis is provided concerning the potential for a phased installation of the project. A phased installation would be consistent with the precautionary approach to developing new technologies and would permit a fuller understanding of the potential impacts of the project. Such an analysis may result in different impacts that should be evaluated as part of the DEIS/DEIR. This approach would also be consistent with that currently employed at the Arklow wind farm in Ireland, a project that is approved for 200 turbines but for which only 7 have been installed in order to evaluate the turbine performance and assess offshore impacts.

Alternatives Analysis - Demand Reduction

Comment A11: One issue that has not been explored in the analysis is the benefit of reducing demand for electricity rather than continuing to construct energy generation plants to create more supply. The alternatives analysis should include a discussion of conservation measures that avoid any of the impacts associated with construction of energy plants and place the proposed project in context with alternate ways of reducing air emissions, greenhouse gases and saving consumer's money.

Alternatives Analysis - No-action Alternative

Comment A12: In Section 3.3, the no-action alternative describes the increased electric rates that would be experienced by consumers resulting from non-compliance with the Massachusetts RPS, should the project not be constructed. However, the RPS promulgated under 225 CMR 14.00 requires that energy suppliers that fail to meet the RPS make an alternative compliance payment to the Massachusetts Technology Park Corporation and that it be used "to maximize the commercial development of New Renewable Generation Units."[22] The Corps should more fully explain how the payment of the alternate compliance payment would increase consumer electric rates since elsewhere in the document the use of new renewable generation is claimed to lower electric rates.

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[21] Appendix 3-E, DEIS/DEIR

[22] 225 CMR 14.08 (4)(b)

SECTION 4: NATURAL RESOURCES

A: COASTAL RESOURCES

Submerged Cable

Comment CR1: Additional information regarding the submerged cable is needed in the DEIS/DEIR, particularly the results of studies undertaken elsewhere. For example, the effect of submerged and underground cables on aquatic habitat has been studied at the Stellwagen Bank National Marine Sanctuary, the Olympic National Marine Sanctuary and other sites. The DEIS should also discuss any similarities or differences in the installation methodology or strata and anticipated impacts and maintenance requirements. The use of scour mats around the base of each turbine is stated to mitigate the effect of sediment scour on the seafloor, however no details are provided for contingencies in the event of failure. The DEIS/DEIR should include a discussion of this potential and a monitoring schedule should be detailed in the Operations and Maintenance Plan.

Sand Waves

Comment CR2: The DEIS/DEIR describes Horseshoe Shoal as a "dynamic" and "mobile" environment with discernable sand waves that migrate across the shoal. The larger sand waves have an elevation that averages "4 to 5 feet" with maximum observed elevations in the 15 foot range[23]. The installed depth of the proposed cable is stated to be 6 feet. It is not clear from the DEIS/DEIR that interstitial cables within the WTG array will be installed deeply enough to avoid exposure as sand waves migrate across the dynamic and mobile shoal. Therefore the DEIS/DEIR should provide a discussion of the effectiveness of installing cables to a uniform depth across variable surfaces and whether impacts to the marine environment might be expected or whether cables might be exposed over time. The effectiveness of the proposed burial technique should also be discussed for the cable route to shore and all marine alternative sites, including Nantucket Shoals, which has sand waves up to 30' in elevation.

Structure-oriented Environment

Comment CR3: Several sections of the document discuss the implications of WTGs as vertical features that will be introduced into the shoal environment, and the "structure-oriented" community expected to develop in the immediate vicinity of the piles. Additional analysis should be conducted to ascertain the effects of introduced communities on fauna in the area. For example, the effect of similar structures on the hunting habitats of seal species, waterfowl and other species should be fully investigated. In addition, the effects of such alterations on migratory fish stocks such as striped bass and bluefish should be explored. The DEIS/DEIR should evaluate the likelihood that the availability of prey species and material on and around the WTGs could initiate a cascade of effects on higher trophic levels including game fish and other predators, including some marine mammals, and whether there would be resulting changes in the activities of commercial and recreational fisherman.

[23] DEIS/DEIR Section 5.1.3.2, pages 5-9

Sampling

Comment CR4: Some of the analysis provided in the DEIS/DEIR relies on the results obtained from 46 core samples taken from the substrate in the project area. The DEIS/DEIR should explain the rationale for the sample locations and the number of samples taken to demonstrate that the analysis adequately samples the area. Sediment types should be mapped by key characteristics such as grain size and organic content and the depth and distribution of material should be depicted in all areas where work is proposed. Additional mapping resources regarding the geology and composition of the Sound were cited in a recently released study by the Center for Coastal Studies[24] and should be reviewed to provide additional information.

Sedimentation

Comment CR5: The DEIS/DEIR states that impacts to submerged aquatic vegetation (SAV), as identified by prior state mapping efforts and diver surveys, would be accomplished by maintaining adequate distance from SAV beds. The report indicates that the shortest distance between the proposed cable route and known SAV is 70 feet. The DEIS/DEIR indicates that sediment deposition ranges from 0.9 inches adjacent to the jet plow, diminishing to 0.2 inches at 100 feet[25]. However, the DEIS does not provide an analysis of the sensitivity of SAV or endemic shellfish species to varying depths of sediment drape. Information in the appendices to the document indicates that sediment suspension may be evident up to 1500 feet from the jet plowing operation. Therefore, the affected area of habitat of protected and managed resources should be more clearly quantified, anticipated impacts should be more fully described, and appropriate mitigation should be proposed. Additional information should also be provided regarding the quantity of sediment expected to be displaced and lofted into the water column during pile installation. The spatial extent and environmental impacts of suspended sediment, turbidity, and deposition should be quantified and described.

Plan Detail

Comment CR6: Additional information will be required for the Commission's DRI review, specifically plans will need to be provided at a larger scale or shown at sufficient resolution to see details of the project. These plans would need to clearly show the following: sediment composition, shellfish harvesting areas, submerged aquatic vegetation, essential fish habitat, permitted moorings and aids to navigation, boulders, debris or disposal sites, flood zones, protected resource areas and other attributes. Mitigation for shellfish lost during the cable installation will also need to be proposed.

Dredging Determination

Comment CR7: In Section 8[26], the DEIS/DEIR states that jet-plow installation of the cable does not constitute a dredging operation. This determination may be important for the Commission's DRI review and therefore the DEIS/DEIR should more clearly provide the basis for this determination.

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[24] "Toward an Ocean Vision for Nantucket Shelf Region", January 2005

[25] Page 5-29 DEIS/DEIR

[26] Page 8-11, response to MPS 2.2.3.6 DEIS/DEIR

Marine Noise

Comment CR8: The DEIS/DEIR should be augmented to include additional information of the effects of noise in the marine environment, including:

a) Reference to studies regarding underwater noise at overseas installations such as recent European studies[27] that seem to indicate a greater intensity of underwater sound from pile driving and cable setting than that described in the DEIS/DEIR. The DEIS/DEIR should include a discussion of the variables that may affect the intensity of construction noise underwater (e.g. installation techniques, bathymetry, WTG specifications, etc.). Following review of these European Studies, the maps contained in Appendix 5.11-A[28] should be updated to include habitat characteristics and the extent to which the construction activities will be audible above background levels both above and below the surface of the sea.

b) A discussion of behavioral responses of different species to different types and intensities of underwater noise should be provided. In addition to total noise levels, the document should include a discussion of the response of protected and game species to both acute and chronic noise impacts.

c) The DEIS/DEIR indicates that construction may ensue during the night; it seems appropriate that a nighttime baseline for ambient noise levels should be collected and used as a benchmark for measuring incremental increases and total ambient noise levels during construction and operation.

Marine Mammal Avoidance

Comment CR9: The DEIS/DEIR anticipates that marine mammals will exhibit avoidance behavior from the noise of maintenance and construction vessels transiting the area. The document is unclear as to whether specific devices will be attached to the vessels to alert marine mammals of the vessels" presence or whether the expected behavior is supposed to manifest from routine engine and hull sounds. Additional attention should be paid to avoiding collisions with marine mammals through the use of sentinel monitoring technologies (acoustic sonar) and avoidance strategies, including those recommended in the National Marine Fisheries Service notice of advanced rulemaking.

Anchor Disturbance

Comment CR10: The DEIS/DEIR describes impacts to living resources from the sweep of the anchor chain of vessels associated with jet-plow installation. The DEIS/DEIR should discuss whether apparatus attached to the line could pre-empt or mitigate such losses.

EMF

Comment CR11: The DEIS/DEIR dismisses concerns about Electro-magnetic Field (EMF) emissions from the transmission of electricity through the buried cable. Additional data should be provided to demonstrate that EMFs and structural elements in the marine environment would have no effect on behavior or navigation of marine mammals, turtles and shark species and

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[27] "A review of offshore windfarm related underwater noise sources", Report No: 544R0308, Nedwell et al, October 2004 (Commissioned by COWRIE)

[28] Figures 38 and 39, Volume 3 DEIS/DEIR

others sensitive to EMFs. For example, recent studies in Europe[29] seem to indicate that such species will be able to detect EMF fields similar to those associated with the project, but that the resulting effects on behavior are uncertain.

Public Benefit

Comments CR12: The DEIS/DEIR does not demonstrate an "overriding public benefit" in accordance with MPS 2.2.2.6 of the Commission's regulations. The DEIS/DEIR sites the conditional finding included in the Tentative Decision of the Commonwealth's Energy Facility Siting Board (EFSB) as justification in this regard. However, as noted earlier, this decision is tentative and the EFSB's finding of need for the project is contingent on Cape Wind securing all necessary permits.

Fisheries

Comment CR13: The Massachusetts Marine Fisheries Advisory Commission provided substantial comments outlining general concerns about the collection and treatment of data in the DEIS/DEIR and the extent to which studies and conclusions in the document accurately address potential impacts to the fishery. The remarks also include more detailed commentary on fisheries issues discussed in the DEIS/DEIR. Fishing and supporting industries are still a key element of the fabric of life on Cape Cod, and impacts to the cultural tradition or economic yield of this maritime pursuit should be understood and avoided. To ensure that potential fishery impacts are fully addressed, the Commission Subcommittee recommends that the Supplemental DEIS/DEIR include a study developed in consultation with the Massachusetts Marine Fisheries Advisory Commission. Finding consensus on fishery impacts through the use of mutually agreeable sampling approaches, analytical techniques and treatment of data sets will assist agencies and the public at large to understand impacts to the fishery (including target and non-target species, their habitat, fisherman, and supporting commercial ventures) and the management approaches that will be affected if the project is permitted.

B: WATER RESOURCES

Stormwater

Comment WR1: The DEIS/DEIR does not discuss plans to comply with storm water management requirements of the Commission's Regional Policy Plan. Potential impacts consist of encroachment into several 100-foot wetland buffers during cable installation and the Zone I(s). Stormwater will need to be managed along the cable route during and after construction. The Subcommittee recommends that the proponent direct and infiltrate runoff areas outside of the Zone I of the Yarmouth Water Supply Wells. The proponent should submit a Stormwater Pollution Prevention Plan that makes use of Best Management Practices consistent with Massachusetts Stormwater Policy Guidelines for handling of stormwater runoff as required by regional standards.

[29] COWRIE-EMF-01-2002 prepared by Centre for Marine and Coastal Studies, Centre for Intelligent Monitoring Systems, Applied Ecology Group & ECONNECT LTD., dated July 2003

21E Sites

Comment WR2: The DEIS/DEIR should evaluate up to date information regarding the potential occurrence of any 21E hazardous material sites along the preferred cable route. Identification of any such occurrences would enable appropriate actions to take place according to the Massachusetts Contingency Plan for utility release abatements.

Dewatering

Comment WR3: The DEIS/DEIR indicates that dewatering of the cable trench may be necessary where high groundwater is encountered which are typically near wetland areas. The proponent should ensure that dewatering does not cause drawdown in wetlands, precluding the need to discharge water to wetlands in order to maintain a hydrologic balance. The Barnstable Conservation Commission, through the Notice of Intent, will have the opportunity to ensure wetlands protection.

Comment WR4: The landfall at New Hampshire Avenue will also require dewatering and the installation of a cofferdam. This activity has the potential to release drilling fluids and sedimentation into near shore coastal waters. Also the landfall area is a groundwater discharge area. The applicant should demonstrate that the isolation necessary for a functional cofferdam from discharging groundwater is feasible.

C: WETLANDS, WILDLIFE, AND OPEN SPACE

Avian Study

Comment NR1: As noted earlier, the Subcommittee has concerns over the quality and quantity of data available to assess avian impacts and is concerned over the methodology used in the analysis. Our overall impression reading the DEIS/DEIR is that there are resources in the Sound to be concerned about, both rare and non-threatened species, but that we don't know enough about their habits or the effect of turbines to make an informed evaluation of the impacts. We support the request established during the scoping for the DEIS/DEIR to collect three full years of data on all bird species utilizing the Sound in order to get a better picture of what species are doing what, when and where. Continued evaluation of areas outside of the immediate project area may also be important for understanding bird behavior and our ability to make decisions about temporary (construction-related) and permanent displacement effects. Our concerns fall into two categories; impacts to waterbird populations from displacement and from collision-related mortality. The following points illustrate this concern more specifically:

1) The report *Preliminary Avian Risk Assessment for Cape Wind* (see DEIS Appendix 5-7) notes that different birds will have different responses to the introduction of wind turbines, some avoiding the intrusion, some becoming habituated. The *Preliminary Assessment* provides a review of the scientific literature and states that an equal number of studies show bird displacement and bird habituation for wind turbines. It appears that different species of bird will behave differently in response to turbines, and quite possibly a given species will behave differently from site to site. As such, the Corps should use caution in generalizing displacement of avian populations.

2) We are also concerned about the displacement effect the turbines may create for waterbirds, both during construction and following installation. Seaducks may be particularly affected by construction activities in the Sound. There is very little information about what effect the presence of turbines will have on species that use the Sound for resting or foraging habitat. We may not know enough about these possible impacts until turbines are installed and impacts can be observed, which suggests that a phased, or small scale installation may be a more prudent approach to the project.

3) The *Preliminary Assessment* observes that there was no data for seaduck activity at this location prior to the Cape Wind proposal; numbers and types of birds, where they feed, night activity, flight altitudes, etc. were all unknown. Therefore, data collected by Cape Wind over the last two years is the only source of data upon which conclusions in the DEIS/DEIR are made. The Subcommittee is concerned that this data may lack the sufficient depth to inform these conclusions. For instance, the *Spring and Summer 2002 Waterbirds Survey* noted that birds (typically seaducks) that were resting on the water were disturbed by the passing boat, which suggests the difficulty in counting birds that are disturbed by the boat's presence. Furthermore, boat surveys did not occur during the winter months when large numbers of seaducks may be using the Sound.

4) Also of concern is the use of only one spring and fall season evaluation of night migrating passerines (those birds/targets that are captured only by the radar studies). Using one year's worth of data does not take into consideration the likely variation in weather from year to year, and the possible impact that variation may have on the estimated numbers of birds moving through the area. The preliminary survey was also conducted in a narrow timeframe that may have missed early and late migrants and the DEIS/DEIR does not account for the significant differences between radar monitoring counts and those counted by visual survey. The data that is presented suggests that 17% of night migrants and 26% of all birds/targets detected by the radar may fly through the rotor swept zone (significant percentages). It is unknown how many of these birds might be at risk for collision.

5) The Subcommittee is very concerned about rare species impacts, particularly the risk of collision-related mortality to terns. Roseate, Least, and Common terns are all state listed species which may be found within the project area. The Subcommittee has some concern that the count of birds within the rotor swept zone is dependent on visual estimates by the observers in the boat, who acknowledge in the Appendix 5.7 studies difficulty in estimating bird altitudes. Ultimately, the Subcommittee will rely on the recommendations of NHESP biologists regarding the risk to terns within the wind farm area.

6) The conclusions about collision risk to birds are based on extrapolations of data about deaths at terrestrial wind farms to the numbers of birds that the radar study found flying in the rotor swept zone. This extrapolation raises several concerns.

Specifically, comparisons between terrestrial and offshore sites may be inappropriate because of the differences in bird species using the sites. Also of concern is extrapolating data from other wind farms where the turbine size may vary considerably from that proposed for this project. Furthermore, variations in weather conditions between land and ocean raise further course for concern with extrapolating data from land-based sites. Information found in the November 2004 publication by the National Wind Coordinating Council (NWCC)[30] supports this view and also indicates that the rate of bird fatalities relates to the size of the turbine (or rotor swept zone), and thus comparisons must be made between unit of rotor swept zone, or per MW produced, not per turbine.

7) The DEIS/DEIR also downplays the results of avian studies conducted at a wind farm in the Netherlands that estimated 14.6 to 51.1 fatalities/turbine/year[31]. This Dutch project located in a low-lying area adjacent to the Wadden Sea has recorded "large numbers of migrants, including waterfowl, shorebirds, and some songbirds" during migrations that may be more similar to Cape Wind's location than other land-based sites in the United States. Direct comparisons between Horseshoe Shoal and the Wadden Sea facility may be inappropriate due to differences in configuration and turbine type, but because avian mortalities are 7 to 25 times greater than those estimated for the Cape Wind project, the Subcommittee believes that further investigation of the data from the Wadden Sea is necessary.

ESP

Comment NR3: An Electrical Service Platform (ESP) is proposed to be located in the middle of the wind turbine array, and is likely to be utilized by birds as a platform from which to dive or become airborne. The DEIS suggests that a thin wire may be utilized to prevent landing, however, it is unclear how this will work on a large flat surface, such as the proposed helipad. Therefore, the report should provide more specific details on what part of the ESP will be protected from perching and available alternatives to the wire deterrent should be presented. Furthermore, the report should more fully describe whether habituation of the ESP would put some avian species at greater risk of collision with nearby turbines.

Bats

Comment NR4: Like birds, very little is known about the potential impacts of a wind farm on bats. The DEIS/DEIR states that Nantucket Sound is not preferred habitat for bats, and concludes that collision risk is likely extremely low. However, at least one bat species is known to migrate over large bodies of water. Concluding that there is no risk to bats is insupportable given the lack of data in the Sound, and further study should be required. This issue is potentially significant as the NWCC reports that a 44-turbine wind farm in West Virginia killed 458 bats. The NWCC suggests that conservative extrapolation could raise that number to 2,100 annually.

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[30] Wind turbine interactions with birds and bats: a summary of research results and remaining questions ñ November 2004

[31] Section 5.7.3.2.1, page 5-129, third paragraph

Wildlife Habitat

Comment NR5: The project's landside impacts on wetlands and wildlife are limited as much of the proposed cable route lies within previously disturbed road rights of way. However, the preferred cable route will traverse 1.9 miles of the NSTAR utility right of way (ROW), requiring clearing and excavation of a presently vegetated, maintained, area (5.8 acres). Much of this site area is located in Significant Natural Resource Area (SNRA) due to the presence of public water supply wellhead protection areas. The ROW in this part of the Cape is typically comprised of open shrub/heath habitat, providing a habitat type that is less common on the Cape at the present time. While the ROW may be maintained on a regular basis, the clearing proposed for the Cape Wind project will significantly alter the vegetation composition in the ROW, more so than the typical maintenance activity that NSTAR undertakes. Consequently, restoration of the site post-construction will be important for wildlife in the area. The Subcommittee recommends that re-vegetation with native shrub species should be incorporated into the plan in addition to the reseeding proposed.

Open Space

Comment NR6: Commercial projects impacting vegetated areas must provide permanently protected open space under the Cape Cod Commission regulations. The amount of open space is based on the disturbed area, and whether the project occurs in SNRA. Much of the project does occur in SNRA and therefore during DRI review of this project the Subcommittee will address the open space requirements.

Rare Species

Comment NR7: Parts of the preferred cable route traverse mapped rare species habitat. Since the species of concern are wetland dependent species, and the preferred route does not traverse freshwater wetlands, there likely will be no impacts to rare species. However, if impacts to rare species or their habitat are unavoidable as determined in consultation with NHESP, mitigation should be proposed.

Avian Mitigation

Comment NR8: The bird mitigation proposed by the project should be considered "design improvements" resulting in minimized impacts. Minimization of impacts is an important component of the project design, but actual impacts to birds, and rare species in particular, should be mitigated by an appropriate offset proposal, such as a commitment toward bird habitat protection.

D: NOISE

Comment N1: The DEIS/DEIR concludes that the wind field will comply with the state's noise regulations; but that temporary impacts may result from project construction, particularly pile driving. Section 6.0 of the DEIS/DEIR indicates that acoustical measurements would be taken during project construction (Section 6.2.1) and post-construction (Section 6.3.2), to verify compliance with any conditions imposed as a result of the review. However, other than the Preferred Alternative, the application does not appear to have measured or modeled acoustical impacts for alternate project configurations or locations. As such, it is difficult to determine

whether other configurations would result in different or reduced impacts. In addition, testimony received at the Commission's public hearing from an individual claiming to be an expert in acoustics noted that the effect of refraction of sound over water had not been accounted for in the study, The Subcommittee recommends that this comment be addressed.

E: AIR QUALITY

Imported Fossil Fuels

Comment AQ1: As noted in Comment G3, Section 5.16.4.2 states that the project will diversify the region's energy mix and "decrease reliance on imported fossil fuels". While diversifying the region's energy mix may reduce reliance on imported fossil fuels, no clear picture emerges from the DEIS/DEIR as to the extent of the decrease associated with the proposed project. Appendix 5.16B[32] says that natural gas plants tend to set the marginal market clearing price and it is these marginal generators that are claimed to be offset by the Cape Wind project. According to Appendix 2.0A, the majority of the region's natural gas supply comes from the US with a small percentage of Liquefied Natural Gas coming from sources outside North America. Therefore, from the analysis provided, any claim of reducing imported fossil fuel seems in question or at a minimum requires more detailed explanation. It is particularly important that this issue be clearly discussed as many comments made thus far on this project have linked it to reducing national dependency on foreign oil. Although such statements may be true of renewable energy generally, in the case of this project the conclusion seems unsupported by the facts presented in the DEIS/DEIR.

Greenhouse Gases

Comment AQ2: The Subcommittee recognizes the importance of reducing greenhouse gas emissions and the problems associated with global warming for the region. The Subcommittee agrees with the statement in Section 3.4.3.4.17[33] that states that carbon dioxide has been identified as a "greenhouse gas" and that reductions in greenhouse gas emissions have far reaching beneficial global effects. However, in the Executive Summary[34], the effect on air and climate includes a statement that the project "provides an opportunity, and an example of how to achieve a significant annual and long-term reduction of greenhouse gases to help stem global warming…" While it may be true to say that there will be reductions in greenhouse gas emissions associated with the project, it seems to be an overstatement that the project will help stem global warming and it is unclear how these effects are determined to be "significant".

Emissions

Comment AQ3: Section 5.15.2[35] states that reduced emissions would assist Massachusetts in "continuing to improve air quality and visibility throughout the region." The Subcommittee believes this overstates the air quality benefits of the project when placed in context with the sources of air pollutants to the region. Any claim that the air quality will "improve" needs to be fully supported. The concerns for this conclusion can be summarized as follows:

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[32] Appendix 5.16B, Page 7, last paragraph
[33] Page 3-219 DEIS/DEIR
[34] Page 1-21 DEIS/DEIR
[35] Page 5-254 DEIS/DEIR

1) Firstly, there is no discussion of what proportion of pollutants currently degrading Massachusetts originate outside the state. These pollutants would remain the same and unaffected by operation of the proposed project. For example, the 2002 Massachusetts State Implementation Plan (SIP) required by the Clean Air Act states that emissions of oxides of nitrogen (Nox) from utility plants in Connecticut, Rhode Island, New York and New Jersey significantly contribute to ozone non-attainment in the Northeast and Cape Cod.
2) There is also no discussion that quantifies what proportion of the pollutants are attributable to energy generation. For example, pollutants are produced by different forms of combustion, including vehicles and industry. As such, it is currently not possible to understand the proportion of the pollutants present in the air that would be offset by Cape Wind's project.
3) Furthermore, as indicated elsewhere in the DEIS/DEIR, there is a great deal of uncertainty about which particular plants would be displaced should Cape Wind operate and that the displaced plant could vary from day to day or hour to hour. This would seem to indicate that there may be local improvements in air quality surrounding specific power plants, but that any regional improvement would be spread over a wide geographic area.
4) A clearer picture should also be presented as to how the project will reduce impaired visibility at downwind locations such as Acadia National Park. Further detail needs to be provided as to meteorological processes that will achieve this result.
5) There is also no discussion in this section of the increased annual demand for electricity projected in the ISO-NE region (1.9% annually according to Section 3.3[36]). With such an increase in demand, it would appear that even if Cape Wind starts operating, any improvement would be short lived.

SECTION 5: ECONOMIC DEVELOPMENT

Understanding the economic development impacts of the Cape Wind project and the project alternatives requires three levels of analysis. These are:

1. Market Impact Analysis
2. Economic Impact Analysis
3. Fiscal Impact Analysis

The market impact analysis should consider how the project and the alternatives would influence the supply and demand for electricity and thereby estimate changes in market price under the different scenarios. The economic impact analysis should estimate the indirect and induced effect of the jobs and investment directly required to complete and operate the proposed project and the alternatives on the regional economy. Finally, the fiscal analysis should estimate both the new revenues (taxes & fees) and the demand on public services generated by the project and the alternatives. In every case, to be complete and verifiable, these analyses must include a clear

[36] Page 3-26 DEIS/DEIR

description of the baseline assumptions used, the variables included in the analysis, and the complete specification and results of the models employed. Data sources must be fully documented and justified.

Model Assumptions

Comment ED1: The assumptions and results of the economic impact model (Appendix 5.16A) and the market simulation model (Appendix 5.16B) are not clearly articulated or disaggregated in the DEIS/DEIR. The results of these studies cannot be understood or accepted as impacts without full disclosure of the variables used in the models and how they where specified. For example, the estimated economic impacts must be separately presented to clearly show direct, indirect, and induced impacts, rather than presenting them as a total. This sort of clear articulation of model assumptions, methods, and results is essential to understanding the impacts of the project.

Static Modeling Limitations

Comment ED2: The economic impact model by Global Insights (Appendix 5.16A) uses a static model that estimates gross impact of the project. This model does not take into account how the project may impact other industries in the region. While it is generally acceptable to employ a static model, it must be accompanied by research on the other industries that might be negatively impacted, such as tourism or fishing. The DEIS/DEIR does not sufficiently investigate the impacts to these industries and does not cite the recent studies conducted relating to this project on this subject or similar studies at other comparable sites internationally.

Region of Impact

Comment ED3: Appendix 5.16A identifies Barnstable County as the Region of Impact (ROI) for the project. The Subcommittee believes that this is too narrow a view of the area affected by the project. As articulated in the DEIS/DEIR, the majority of employment and investment activity occurs outside of Barnstable County and therefore the Subcommittee believes that the ROI should be expanded to include all areas impacted by the project, including the islands of Nantucket and Martha's Vineyard. The document must adequately specify where employment impacts will occur and the nature of the employment at each stage of the project (including decommissioning). The types of employment projected as well as the wages should be based on experience at similar wind generation sites. Sources of information should be comprehensive and noted for reference.

Market Analysis

Comment ED4: The proposed project's impact on the market and the projected customer savings relies on a single study that was procured by the applicant (Appendix 5.16B). In addition to concerns about the objectivity of this study, the following issues should be addressed:

1) The study fails to explain what variables are included in its spot market simulation model and, as a result, it is not clear that this is the appropriate model for understanding the project's impact on market prices.
2) The results of the study are not tested against any other research, against a range of scenarios, or compared to the results of similar projects internationally or to the alternatives investigated elsewhere in the DEIS/DEIR.

3) The analysis makes no mention of how Cape Wind would provide power that they were contracted to supply when the wind is not blowing. If Cape Wind successfully bids to supply electricity on the spot market, it is unclear what effect obtaining power from alternate sources would have on the analysis.
4) The analysis appears to assume that all Cape Wind's power is to be sold on the spot market. However, it is the Subcommittee's understanding that in order to secure financing, Cape Wind is likely to want to secure long-term contracts to guarantee income. It is unclear from the analysis whether this has been incorporated into the analysis.

Green Credits

Comment ED5: The DIES/DEIR does not sufficiently explain the roll that "green credits" will play in the market and how they will benefit the project proponent. The DEIS/DEIR does not consider the proponents business model at all, which would be an essential part of understanding and justifying the need for a wind facility of the size proposed. A clear and transparent discussion of the sources of revenue and the revenue expectations of the project over time, as well as the expected break even point, is essential to the overall analysis of the impacts of the project, both positive and negative.

Economic Impact Analysis

Comment ED6: The DEIS/DEIR investigation of the economic impacts of the Cape Wind project presented in Section 5.16 and Appendix 5.16A appears to be incomplete. The Subcommittee recommends that the Corps expand this section to include the following:

1) The analysis should include a comparison of impacts resulting from comparable project sites located elsewhere in order to validate the data presented and corroborate its findings.
2) The information used in the section is unnecessarily limited to information procured by the applicant when other information is known to be available. As discussed in Comment G2, the Corps should attempt to independently verify information provided by the Applicant and ensure that all available information is referenced.
3) The DEIS/DEIR does not separately investigate the economic impacts at each stage of the project. Most notably, the decommissioning stage of the project is absent from the study and should be included.
4) The DEIS/DEIR does not estimate the economic impacts of the alternatives analyzed, the absence of which makes comparison with the Cape Wind project economic impacts impossible.

Fiscal Impacts

Comment ED7: The Subcommittee believes that the fiscal impacts of this project included in Section 5.16 are not completely investigated. Further information should be provided in the following areas:

1) Further investigation of the project's potential impact on property values should be provided. Additional research is needed on comparable sites internationally to determine the impact on property values at each stage of the project.

2) It would be appropriate to use a fiscal impact model to estimate the need for services that will result from this project in the locations where employment impacts will be realized during each phase of the project.
3) The DEIS/DEIR does not address the balance of project benefits between the public donors of the seafloor and the private user. For land-based wind farms, a significant part of the positive fiscal impact is derived from the lease agreements and user fees related to the land on which the turbines are located. The DEIS/DEIR is silent on this issue and therefore fails to sufficiently assess the fiscal, as well as the overall impacts of the project.

SECTION 6: COMMUNITY FACILITIES AND SERVICES

A: TRANSPORTATION

Comment T1: For locations where the subterranean cable installation has the potential to disrupt traffic, the Subcommittee recommends that the construction be scheduled to avoid the heavy-travel season (the period between and including Memorial Day weekend to Labor Day weekend) and peak hours during other times of the year. In addition, in advance of closure (including partial/lane closures) of any major roadway, the contractor should provide advance notification to the Commission for announcement on the Transportation Information Center (www.gocapecod.org).

B: HAZARDOUS MATERIALS/WASTE

Minimizing Hazardous Materials Use
Comment HM1: Section 4.6 of the DEIS/DEIR discusses the project's use of hazardous materials but does not address how to *minimize* that use, either from construction activities or project operation. This issue needs to be addressed more fully.

Hazardous Waste generation
Comment HM2: The DEIS/DEIR does not adequately address the project's generation of hazardous waste either during construction or operation of the facility. Hazardous waste is likely to be generated primarily from the construction vehicles and operation of the turbines and Electrical Service Platform (ESP). The report deals largely with plans designed to prevent spills or sedimentation, however, this discussion should be expanded to address proper management of hazardous wastes generated from all project activities.

Land-based infrastructure
Comment HM3: The Subcommittee requests that additional information on the land-based project infrastructure be provided:

1) The DEIS/DEIR indicates that PVC or HDPE conduit will be used for the sea-to-landfall interface and a similar subsurface conduit for underground upland transmission lines (Section 4.0). Since industrial-grade plastic pipe will be used, the

Subcommittee anticipates that no welding or use of X-ray equipment is anticipated. The applicant should confirm this.

2) The DEIS/DEIR does not address hazardous materials or wastes attributable to land-based construction activities and equipment. This needs to be clarified.
3) The DEIS/DEIR describes various plans to be developed to deal with releases and spills (see below). It is typical for heavy construction equipment (dozers, back hoes) to be fueled and serviced many times during a project. Such large machines can carry large quantities of fuel and other engine fluids. On-site equipment maintenance should be restricted to the minimum necessary, and to locations outside the Wellhead Protection Areas to comply with regional standards. Maintenance and refueling should also be performed in a secure bermed area, on an impervious surface away from storm drains, and with spill response equipment readily available. The project's spill containment and response plans should be presented and address such activities.

Hazardous Materials Storage and Protocols

Comment HM4: Additional information should be provided regarding lubricating and conductive fluids that will be stored within the WTGs and the ESP. The DEIS/DEIR should identify fluids that will be used, stockpiling locations for the material and for containment apparatus, and response protocols. The DEIS/DEIR should describe the materials expected reactivity with the environment, its toxicity and any sensitive receptors, and the physical characteristics of its dispersal should a spill occur (will it float or sink, under what conditions will wind or current prevail, what are the ranges and directions of distribution that are likely).

C: ENERGY

Comment E1: The DEIS/DEIR would benefit from a factual discussion of the energy pathway and electricity markets beyond that described in Appendix 15.B. Such a discussion is important to providing an understanding of how the electricity industry functions and provides essential context for the consideration of the project. Such a discussion could be brief and simplified to permit the public to understand how energy is distributed to the region, the role of the ISO-NE system administrator and how customers pay for their electricity. This discussion should also fully describe how power is sold and what options are available to an energy supplier when providing electricity to the New England grid. For instance, how will Cape Wind meet its commitment to supply power when the wind is not blowing and what proportions of the energy produced will be sold on the spot markets or via long-term contracts. This analysis should also state whether Cape Wind has made any guaranteed commitment to sell the renewable energy to the state of Massachusetts and therefore meet the state's Renewable Portfolio Standard for new renewable energy production.

SECTION 7: HERITAGE PRESERVATION/COMMUNITY CHARACTER

A: ARCHAEOLOGICAL RESOURCES

Comment CC1: Much of the proposed project area is considered to have high archaeological sensitivity. The applicant's underwater archaeological surveys identified several paleosols (pre-

historic land masses currently underwater) in the area of the proposed WTGs. The applicant proposes either moving six turbines and seven portions of the inner array cable grid to avoid the paleosols, or doing further archaeological survey. Geophysical surveys identified three possible shipwreck sites that would be impacted by the proposed transmission line cable. The applicant has proposed to reroute the cable to avoid these sites or to do further archaeological survey. Avoidance of identified underwater archaeological resources or a requirement for further survey work, along with an unanticipated discovery plan designed to protect any unexpected archaeological resources that are uncovered during construction, are included in the Draft Programmatic Agreement with preservation agencies. In both cases, disturbance of the resources should be avoided. Construction should be limited in the vicinity of the paleosols to prevent impacts to pre-historic archaeological resources, and the cable should be rerouted to preserve the integrity of the shipwreck sites. No terrestrial archaeological impacts were identified in the surveys.

B: HISTORIC RESOURCES AND COMMUNITY CHARACTER

Alternative Configurations

Comments CC2: The Subcommittee believes that the visual impacts of the proposed project are significant because of the vastness of a project that will affect virtually the entire seaward horizon. As noted in Comment A8, the DEIS/DEIR lacks sufficient analysis of alternative configurations that would provide a comparative measure for evaluating whether the project has truly avoided, reduced, or mitigated environmental impacts to the maximum extent feasible.

Quantifying Visual Impact

Comment CC3: The DEIS/DEIR should do more to quantify visual impacts on coastal properties in order to adequately evaluate the different alternatives. The DEIS/DEIR notes only the range of distance between the shore and the proposed turbines, and the percentage of the total turbines that would be visible at each location. Visual impact can be further quantified through a scenic viewshed/seascape analysis that focuses on the breadth and height of the impacted view area, translating the impact into a percentage of the viewshed or horizon as seen from any point. The impact thus becomes a function of the turbines' distance from shore, their orientation to the shoreline, and the number of turbines constructed. This is consistent with the European methodology cited in the DEIS/DEIR[37], but not followed in preparation of the report. The MMR siting alternative should also include such quantified analysis, including photo simulations from other representative locations within the Sandwich Historic District.

Alternate Configurations

Comment CC4: In the scenarios presented in the draft report, the location and arrangement of the proposed WTGs results in an extremely broad portion of the horizon being impacted in virtually every scenario. The analysis of impacts to National Register and National Landmark properties shows adverse effects primarily in those areas where a majority of the viewshed includes turbines. The Visual Impact Assessment should determine at what size and configuration a

[37] Guide to Best Practice in Seascape Assessment, Hill et al, March 2001, Page 5-203 DEIS/DEIR

proposed wind farm would not result in an adverse effect on these properties. An alternative of that size and configuration should then be explored.

Additional Historic Properties

Comment CC5: The draft report identifies visual impacts to specific historic properties from Falmouth to Chatham. Numerous historic properties and neighborhoods along the coastline of Cape Cod have not been inventoried, or have been inventoried but not yet established as local or National Register historic districts, and thus are not considered in the report. The fact that these properties have not been formally listed does not diminish their significance. The true visual and character impacts of the proposed project are much greater than the report indicates, as it cites only two National Historic Landmarks, 4 historic districts and 10 properties as adversely affected.

Mitigation

Comment CC6: The Subcommittee does not believe that the DEIS/DEIR provides sufficient mitigation for visual impacts to historic properties. The Draft Programmatic Agreement between the applicant and preservation agencies proposes as mitigation several turbine design features and photo documentation of existing viewsheds. No meaningful off-site mitigation has been identified. The proposed mitigation to address visual impacts on historic properties includes painting the turbines marine gray and shielding night lighting. These measures are ineffective at limiting the scale of the project's visual impact given its vast presence on the horizon. More meaningful mitigation for visual impacts would involve locating the WTGs farther from shore, acknowledging that their visibility is significantly reduced when they are more than 9.3 miles from shore[38], or configuring the turbines in other ways to reduce their coverage of the horizon (either placing them closer together or in more dispersed locations). All of these alternatives would provide considerably more benefit in the long term than photographs of existing conditions.

Exterior Lighting

Comment CC7: It appears that construction activities for the submarine cable landfall and upland transmission lines will take place during daylight hours, so no lights would be needed for night-time work. The applicant should confirm this.

Thank you for the opportunity to comment,

Sincerely,

Elizabeth G. Taylor

Elizabeth G. Taylor
Subcommittee Chair

[38] Guide to Best Practice in Seascape Assessment, Hill et al, March 2001, Page 5-203 DEIS/DEIR

CAPE COD COMMISSION

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February 22, 2005

Colonel Thomas L. Koning,
District Engineer
US Army Corps of Engineers
696 Virginia Road,
Concord, MA 01742

Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
Attn: MEPA Office, Anne Canaday EOEA No:12643
100 Cambridge Street
Suite 900
Boston, MA 02114

Re: Cape Cod Commission comments on the Cape Wind Energy Project USACE NAE-2004-338-1/EOEA#:12643

Dear Colonel Koning and Secretary Herzfelder:

Please find attached to this letter detailed comments from the Cape Cod Commission Subcommittee (Subcommittee) on the adequacy of the joint Draft Environmental Impact Statement and Environmental Impact Report (DEIS/DEIR) prepared for the Cape Wind project. Due to the complexity of the DEIS/DEIR, specific comments on the report are lengthy. Therefore, in order that the most significant issues can be highlighted, a summary of the most critical issues is provided below.

The purpose of the environmental review currently underway (at the federal and state level) is to ensure that environmental information is available to all participants before decisions are made and before actions are taken. Especially in the case of a project that is the first of its kind in the nation, it is essential that the public, and particularly those who have a responsibility to issue permits on the project, fully understand the specific benefits and detriments attributable to the proposed project. The environmental review is intended to provide information of the highest quality and present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues. This permits a clear basis for choice among options by decision makers and the public.

The Corps should be commended on the extraordinary amount of effort and time put into preparation of the document and on the depth to which many issues have been explored. However, based on the issues identified within the attached report and in consideration of whether the DEIS/DEIR is consistent with the purpose of the environmental review process, we strongly urge the preparation of a Supplemental DEIS/DEIR (SDEIS/DEIR). The SDEIS/DEIR should address key areas where the Commission Subcommittee believes the report fails to adequately and accurately identify the impacts of the proposed project. The Commission recognizes that the Army Corps of Engineers and the State MEPA unit have separate and somewhat different responsibilities under their respective review statutes (NEPA and MEPA). Thus the requirements of the two agencies vis-à-vis the adequacy of the DEIS/DEIR may vary.

The Commission Subcommittee believes the following issues need to be addressed in the SDEIS/DEIR, a more complete discussion of these issues with examples is presented in the detailed letter attached.

1. The Commission Subcommittee has concerns about the range used to define the "utility-scale renewable energy" project described in the project purpose and need. The definition of the purpose and need is critical to a successful DEIS in that it determines the range of alternatives to be considered. The 200-1,500 MW range selected limits the consideration of other renewable technologies, because, with the exception of Cape Wind's proposal, all other renewable projects are an order of magnitude smaller than the range selected. This range also effectively eliminates all alternative sites when applied in conjunction with the selected screening criteria. If a range is to be selected, it should be appropriate and in scale with current renewable energy projects.

2. The alternatives analysis fails to provide all reasonable alternatives and therefore no simple comparisons can be made. The analysis does not provide a simple variation in the project parameters that would allow a weighing of whether the proposed project is in the public interest and is the most appropriate way of reaching the state's important renewable energy goals. Alternatives that are omitted include:
    a. Smaller facilities.
    b. Alternate configurations, including relocating some rows to be further from shore and tighter spacing between turbines.
    c. A phased installation that would be typical of a precautionary approach to new technologies.
    d. A distributed generation option that would consider several smaller wind farms.

3. The Commission Subcommittee has a variety of concerns about the analysis and methodology employed in reaching conclusions in the DEIS/DEIR. This results in many questions about the validity of the conclusions reached and the appropriateness of the study. The Commission Subcommittee concerns can be grouped into the following areas:

a. Incomplete - Flawed assumptions
Some of the report's conclusions appear to be based either on an incomplete or flawed analysis. The DEIS/DEIR does not reference all sources of information on a topic and the analysis presented is, on occasion, derived from a methodology that includes flawed assumptions and inappropriate comparisons.

b. Lack of independent assessment – lack of transparency
It is unclear from the text of the DEIS/DEIR what independent analysis was undertaken to reach some of the conclusions presented. This is of particular concern when information provided by the Applicant is the primary source of information. The objectivity of the analysis must be maintained and therefore it must be clear to all readers what independent verification of facts the Corps undertook.

c. Balance of conclusions
In many sections of the DEIS/DEIR, conclusions regarding the expected benefits and detriments are not directly related to the proposed project. General statements are included that suggest benefits but the DEIS/DEIR fails to adequately link these to the specific project. Conversely, where potential detrimental impacts are identified, they appear to be downplayed.

d. Lack of quantitative information
Some sections (particularly parts of the alternatives analysis) do not present enough quantitative information on the relative impacts of the facility under consideration. This prevents meaningful comparison between the various alternatives and therefore is not consistent with the purpose of NEPA.

The following detailed comments provide many specific examples that illustrate these concerns and raise other issues of significance that should be addressed. Many of the comments made have been shared by other organizations and individuals in the region and most notably by members of the Peer Review Committee consulted during the preparation of the DEIS/DEIR. We strongly believe that shortcomings should be addressed by preparation of a Supplemental EIS/EIR that could focus on revisions to specific areas of the document. As stated earlier, for a project that is the first of its kind in the nation, the DEIS/DEIR must be clear, objective and supportable to allow a thorough understanding of the potential impacts of the project so that future decision makers and the public may weigh its relative benefits and detriments. Thank you for the opportunity to comment,

Sincerely,

Elizabeth G. Taylor

Elizabeth G. Taylor
Subcommittee Chair

cc: Cape Cod Commission Members
Craig Olmsted, Cape Wind Associates, LLC, 75 Arlington Street, Suite 704, Boston, MA 02116.
Terry Orr, ESS Inc., 888 Worcester Street, Suite 240, Wellesley, MA 02482
Senator Edward Kennedy
Senator John Kerry
Congressman William Delahunt
Senator Robert O'Leary
Senator Therese Murray
State Representative Eric Turkington
State Representative Matthew Patrick
State Representative Demetrius Atsalis
State Representative Jeffrey Perry
State Representative Cleon Turner
State Representative Shirley Gomes
State Representative Susan William Gifford
Barnstable County Assembly of Delegates
Barnstable County Commissioners
Chair, Barnstable Town Council
Chair, Bourne Board of Selectman
Chair, Brewster Board of Selectman
Chair, Chatham Board of Selectman
Chair, Dennis Board of Selectman
Chair, Eastham Board of Selectman
Chair, Falmouth Board of Selectman
Chair, Harwich Board of Selectman
Chair, Mashpee Board of Selectman
Chair, Orleans Board of Selectman
Chair, Provincetown Board of Selectman
Chair, Sandwich Board of Selectman
Chair, Truro Board of Selectman
Chair, Wellfleet Board of Selectman
Chair, Yarmouth Board of Selectman
Martha's Vineyard Commission
Nantucket Planning & Economic Development Commission

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

February 24, 2005

004970

Colonel Thomas L. Koning
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742

Dear Colonel Koning:

The National Marine Fisheries Service (NOAA Fisheries Service) has reviewed the Draft Environmental Impact Statement (DEIS) for the Cape Wind Energy Project (USACE NAE-2004-338-1) to construct and operate 130 wind turbine generators (WTGs) in Nantucket Sound, Massachusetts, to be connected by submarine cables to the shore at West Yarmouth, Massachusetts for distribution to the existing power grid. This DEIS also serves as the Draft Environmental Impact Report (DEIR) required pursuant to the Massachusetts Environmental Policy Act. NOAA Fisheries Service served as a cooperating federal agency in the development of the DEIS.

Cape Wind Associates proposes to build 130 WTGs on Horseshoe Shoal in Nantucket Sound. Each WTG would be mounted on a single 16-18 foot diameter monopile. The WTGs would be spaced in a .36 nautical mile by .54 nautical mile grid and would occupy approximately 24 square miles. Each WTG would be connected by a 33 kilovolt (kV) submarine cable to an electric service platform (ESP). The ESP would transform and transmit alternating current electricity to shore through two 115 kV submarine cables. The maximum potential electric output is expected to be 454 megawatts (MW) distributed to the power grid on shore.

As a cooperating agency on this DEIS, NOAA Fisheries Service staff has been involved throughout the scoping and development stages. Staff has participated in interagency and stakeholder meetings and has provided comments on early draft sections of the DEIS. The comments that follow are in accordance with provisions of the National Environmental Policy Act (NEPA) and focus on DEIS sections for which NOAA Fisheries Service has jurisdiction and technical expertise. Specific comments and recommendations pursuant to the consultation requirements of the Magnuson-Stevens Fisheries Conservation and Management Act, Fish and Wildlife Coordination Act, and Endangered Species Act will be provided in additional letters from the NOAA Fisheries Service Northeast Regional Office located in Gloucester, Massachusetts.

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Cumulative Impacts

It appears that the 1997 CEQ Guidance on performing cumulative effect assessments was not followed here. Although the cumulative effect sections on benthos and fisheries identify general categories of activities (dredging, trawling, etc.), they fail to provide an assessment of the effects that these activities have had on these resources in each of the alternative project areas. The discussions mainly focus on other proposed transmission cables. Coastal areas in the alternative project areas provide important habitat for one or more life stages to most, if not all, of the identified species. Have some species been more affected than others have? Would the proposed activities add negative impact on these species, and which ones might be the most affected? Coastal development and activities have already permanently altered or removed habitat along the south shore of Cape Cod and the nearby Islands. The FEIS should provide a general assessment to describe the extent to which these activities have had adverse effects on benthic, shellfish, and fisheries resources in the alternative project areas. The cumulative effect assessments would then determine whether the proposed project (or alternatives) combined with these past generic impacts (and potential impacts of other identified proposed projects in the area) would have a greater or a minimal negative cumulative impact on each of these resources.

Section 1.0 - Executive Summary- Protected Marine Species

1. Page 1-10 – paragraph 2 – "...they are likely to temporarily avoid the area during construction activities" – need justification for this statement.
2. Paragraph 3 – "These behavior changes would be short-term and would likely be similar to the avoidance behaviors observed during heavy pleasure boat use, ferry traffic, or heavy fishing activity in the area." This statement, especially the fishing activity part, cannot be justified. If whales avoided areas of heavy fishing activity, there would likely be fewer entanglements occurring. Also, this sentence appears to contradict later statements about humpback whales being habituated to boat activity and being found in the vicinity of boats.
3. Page 1-11 – Bullet 2 – the NOAA whale watching guidelines (not "procedures") – how will these be used? Further detail will be needed but this would be more appropriately listed in later sections.
4. Bullet 3 – "initial construction activities" – needs to be more fully defined?
5. Page 1-11 – Bullet 5 – The underwater sound monitoring done during the installation of the data tower should be more fully described with regard to protection of marine mammals and sea turtles.

Section 2.0 – Purpose and Need

The purpose and need statement focuses on the need for a "utility scale renewable energy" facility. This section should offer more explanation as to why "utility scale" is needed since project justification is dependent on this scale. The use of "utility scale" limits the analysis of reasonable alternatives.

environmental impacts, the DEIS should discuss how the Cape Wind project gets "preferred" status with similar or greater impacts. (See e.g., 3.2.2.2.6, Summary: "...development of tidal power in this region, which requires significant coastal construction and modification, could have significant impacts on marine life").

Section 3.2.2.6 Wind

The section on wind stands in stark contrast in tone to every earlier discussion of other energy types. Whereas tidal energy had environmental impacts, wind energy has only "...environmental issues in need of further review..." (Section 3.2.2.6.5). Tidal energy impacts wintering and migratory birds, yet wind power, with turbines and location on a flyway, makes hardly any mention, or dismisses avian impacts as being site-specific and mitigated by new technologies and siting. The solution would be to discuss the benefits associated with the other energy systems and acknowledge that wind power does have impacts that will have to be considered and potentially mitigated.

Section 3.3 No Action

The no action alternative should expand on the bulleted text to provide more information on the potential benefits of the project.

Section 3.4 Preliminary Siting Criteria and Potential Sites

The need for connection and transport to the grid is likely critical, and the document's conclusion that it is infeasible causes many potential options (both terrestrial and marine) to be eliminated. The document should include a discussion of what would be required to upgrade infrastructure to allow for connection to the grid in order to justify the assumption that this would be too difficult and cost prohibitive.

In discussing various options, the DEIS often states that the "...watersheet is (or isn't) permissible." The term "permissible" connotes a legal determination. The meaning of "permissible" should be explained.

Section 3.4.3.4.2 Geology and Soil Sediments

Nantucket Sound - Good information is presented on the overall affected footprint and some good information on scour, but further information should be presented on the amount of sediment that would be suspended at the time of the construction. How much turbidity would occur? How big the plume? If temporary, how long? If localized, what area?

Section 3.4.3.4.4 Protected Species

Please see comments for Section 5.5 (Protected Marine Species), Appendix 3-G and Appendix 5.5A.

flounder eggs would cover an area approximately 100 feet wide around the cable. This assessment assumes that the material within Lewis Bay is sand. Section 5.1.3.3 of the DEIS notes that there are higher percentages of silt and clay within Lewis Bay compared with Nantucket Sound. Such sediments are expected to remain in the water column for longer periods of time than would sand and impacts may extend out greater distances from the disturbance and increase the areal extent of impact on winter flounder eggs.

As noted within Section 4.3, this portion of the project is anticipated to occur during the first and second quarters of 2006. This period (January through June) represents the sensitive time period during which we would anticipate winter flounder spawning and juvenile development to occur in this area. As such, we would encourage the applicant to arrange the project schedule to avoid in-water work within Lewis Bay between January 15–May 31 of any year in order to protect sensitive life stages of winter flounder.

Temporary impacts from placement of cables within Lewis Bay and Nantucket Sound

Section 5.3.4 and Table 5.3-3 of the DEIS identify that the proposed project will result in approximately 1,378 acres of temporary impacts on benthic habitats during construction. These temporary impacts are the result of the installation of submarine cables, inner-array cables, the monopiles, and the ESP, as well as the associated anchors and anchor line sweeps. While the DEIS states that these impacts are anticipated to be temporary and localized, NOAA Fisheries Service maintains that such benthic impacts have not been fully evaluated. Specifically, there is little discussion of the magnitude of anticipated impact and the anticipated recovery rate.

Section 5.1.3 and figure 5.1-6 of the DEIS notes several areas of short and long period sand waves throughout the project area on Horseshoe Shoals. According to recent evaluations of fishing gear effects (Stevenson, et al, In Press), the smoothing of sand ridges as a result of trawl gear can adversely affect fisheries habitat[1]. Finfish resources utilize biogenic depressions and sand ridges for refuge and shelter, and loss of these habitats can affect fish energy requirements. Furthermore, loss of this sand ridge structure habitat can impact the forage base for larger fishery resources in the area. NOAA Fisheries Service maintains that the proposed temporary impact from jet-plowing/cable laying and anchor chain sweeps can adversely affect sand wave habitat. While recovery is expected to occur within this dynamic environment, studies have shown that recovery may be prolonged for up to one year. The lost functions and values of this habitat – from initial impact to the time of full recovery to pre-construction contours – are important to understand. We recommend that the FEIS analyze the anticipated effects of these temporary losses and the anticipated time period for recovery. Efforts to minimize impacts on benthic habitats, such as mid-line anchor buoys, should be utilized for the proposed project. For impacts that cannot be avoided, compensatory mitigation for lost functions and values for temporary impacts should be presented within the FEIS.

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[1] Stevenson, David K., Louis A. Chiarella, C. Dianne Stephan, Robert N. Reid, John E. McCarthy, and Michael Pentony. In Press. Characterization of Fishing Practices and the Marine Benthic Ecosystems of the Northeast U.S. Shelf, and an evaluation of the Potential Effects of Fishing on Essential Fish Habitat. NOAA Technical Memorandum, Northeast Fisheries Science Center, Woods Hole, MA.

project. These issues are of great concern to NOAA Fisheries Service due to the fact that the burial depth of the cable is presented as the primary mitigative method of avoiding conflicts with commercial fishing activities. Finally, should interactions occur between cables and fishing gear, some form of contingency planning should be addressed within the FEIS.

Impacts on commercial fishing vessel navigation

The FEIS should expand on the discussion of impacts related to active fishing vessels within the project area. Of specific concern is that vessels utilizing trawl gears within the project area will be forced to maneuver throughout the wind park. The DEIS states that due to the orientation of the structures, fishing vessels will be able to travel in a straight line. However, fishing vessels that attempt to maneuver in alternate courses may be impacted and efficiency may be reduced. The FEIS should include an assessment of fishing gears utilized in the area, lengths of nets and lines, anticipated tow speeds, etc., to determine any adverse impacts on commercial fishing navigation.

Essential Fish Habitat Assessment

The expanded Essential Fish Habitat Assessment (EFHA) describes the federally managed species that have been designated by the New England and Mid-Atlantic Fishery Management Councils, as well as their anticipated presence within the project site. The EFHA concludes that impacts resulting from the construction of the proposed project will be localized and temporary and that little mitigation will be required. The EFHA, however, does not discuss the impacts on fisheries habitat resulting from 1,378 acres of temporary impact during construction of the wind park. As stated above, further assessment of impact and recovery fishery habitats should be performed within the FEIS prior to any conclusions regarding mitigation. Moreover, it is important to be mindful that the sequential obligations of the applicant are first to avoid, and then minimize, adverse impacts. Only then are remaining unavoidable impacts addressed by mitigation. (see footnote 3)

Protected Marine Species

General Comments for Protected Marine Species (Section 5.5) and related appendixes (Appendix 3-G and Appendix 5.5A)

1. Do not capitalize "right whale" in phrases containing "North Atlantic Right Whale" (except in titles) and use "North Atlantic right whale" rather than "Northern right whale"
2. Do not capitalize "ridley" in phrases containing "Kemp's Ridley"
3. Please refer to the "white-sided dolphin" as the "Atlantic white-sided dolphin"
4. Wherever text states that "Very few whales are sighted within Nantucket Sound," or similar statements (e.g., under "Seasonal Distribution in North Atlantic Waters" page 1 last paragraph, page 6 last paragraph, etc.), we suggest changing this to say that Nantucket Sound (and sometimes South of Tuckernuck and Buzzards Bay) do (does) not appear to be (a) high use area(s). There have not been systematic surveys of this region, so there is no assurance that few whales are actually found in Nantucket Sound.

13. 5.5.6.1.1 Potential Direct Impacts, Acoustic Harassment – The statements made in paragraph 3 must be justified. Please explain why the expected levels of sound created by the action are not likely to harm marine mammals and sea turtles.
14. Page 5-78 Paragraph 1, last sentence. Define what is meant by "little vessel traffic" and what is considered by the statement "a slower speed."
15. Page 5-78 paragraph 2 – The following statement must be justified "Some studies suggest that whales may react to short-term acoustic disturbances by moving away…" Please try to include the study listed below, it provides more current information regarding this topic.
    North Atlantic right whales ignore ships by responding to alerting stimuli. Douglas Nowacek, Mark Johnson, Peter Tyack, Proceedings of the Royal Society of London
16. Page 5-78, paragraph 5 – The DEIS states "underwater sound levels will be 2 dB below the 180 dB threshold for marine mammals." Is it possible that the 180 dB threshold will be exceeded? Please include reasons why the 180 dB threshold will not be exceeded. Please justify the statement "there will be temporary avoidance behavior in marine mammals and sea turtles during Project construction."
17. Page 5-78, the last sentence on the page needs a citation.
18. Page 5-79 Increased Vessel Traffic – Vessel Strikes – paragraph 2. While it may be acceptable to say that "Humpback, right, and fin whales should be able to detect tugboats, barges, and other slow-moving Project vessels," there is little confidence in saying that they will avoid them. If whales avoided all boats, there would be no large whale collisions with vessels.
19. Page 5-79 Increased Vessel Traffic – Vessel Strikes – paragraph 2. The last sentence of this paragraph is not consistent with the most current information. Please refer to the Draft Revised Right Whale Recovery Plan (see www.nmfs.noaa.gov/prot_res/readingrm/Recoverplans/narwrecplan.pdf). The Draft Recovery Plan states that collisions with boats are the number one known cause of right whale mortality. An alternate approach is to demonstrate that large whales do not appear to use Nantucket Sound.
20. Page 5-80, Increase Vessel Traffic – Please clarify the size and speeds of the crew boats and the slower moving vessels.
21. Page 5-83 - Please assess the likelihood of an oil/chemical spill and the likely impact on listed species; use information from existing wind projects.
22. The document should discuss how long it is expected to take for benthic environment (invertebrates) to recover from cable laying.
23. Page 5-85, Operation/Maintenance – It seems that part of this sentence is missing.
24. 5.5.7 Mitigation – page 5-92 – Paragraph 1 – This section discusses that a NMFS-certified observer is only going to be on-site during "initial" construction activities. Please discuss the amount of time initial activities will take. Also, please further explain in paragraph 2 how vessels are going to follow the NOAA Fisheries Service whale watching guidelines (rather than "procedures") while in transit. Does this mean abiding by speed restrictions?
25. 5.5.7 Mitigation – paragraph 1, sentence 2 – Sentence should read "A Biological Assessment was conducted to determine the likely effects of the action on threatened…initiated with NMFS and USFWS to ensure that the action will not jeopardize listed species…."
26. 5.5.7 Mitigation – paragraph 1, last sentence – The measures must be NMFS approved, not NMFS certified. These measures and what is intended need to be laid out clearly.

4. Page 5, paragraph 3 – The last sentence in this paragraph requires a citation.
5. Figure 3 Right whale sightings – What does "O.C. Proposed Critical Habitat" mean? We are not aware of any proposed critical habitat.
6. Page 6, last paragraph – Mate et al., 1997 demonstrate right whales inside Nantucket Sound. Also, there was a recent sighting inside the Sound reported by the Right Whale Sighting Advisory System (SAS) on 10/10/04 (see www.nefsc.noaa.gov/rwhale/oct1004_zones.jpg)
7. Page 7 inside top paragraph – see comment #1 from humpback whales
8. "Known Disturbance…" – The two most significant impacts on right whale recovery right now are entanglements in fishing gear and collisions with ships. Paragraphs 1 and 2 of this section should be switched.
9. Paragraph 2 – "A total of 45 right whale moralities" should read "mortalities." The Knowlton and Kraus, 2001 cite should stand alone, the NMFS 2001 refers to a sea turtle document.

2.3 Loggerhead turtle

1. Paragraph 1 – First sentence should read "The loggerhead sea turtle *(Caretta caretta)* was listed as threatened throughout its range on July 27, 1978, under the Endangered Species Act and its status has not changed."
2. Paragraph 1 – Add an additional sentence to the end of the paragraph, such as "Most recent evidence suggests that the number of nesting females in South Carolina and Georgia may be declining, while the number of nesting females in Florida appears to be stable.
3. Seasonal Distribution, General – Add into this section that the loggerhead Atlantic range extends from Newfoundland to Argentina. Loggerheads occur in the northeast from May 1 through November 15.
4. Seasonal Distribution, Paragraph 1 – Line 4 should read "mostly in coastal waters…"
5. Seasonal Distribution, 1st sentence – add, it is mostly juveniles found in the Northeast waters.
6. Seasonal Distribution - Add the following information – Loggerheads commonly found in waters of 22-49 meters; they range from the beach to the continental shelf (Shoop and Kenney, 1992).
7. Seasonal Distribution, last paragraph – In line two, switch the word order of the phrase "occur rarely" to "rarely occur." Also, remove the words "as well."
8. Seasonal Distribution, last paragraph – In the second sentence, replace "Crocker (2003)" with "NOAA Fisheries Service."

2.5 Kemp's ridley turtle (Correct the spelling of Lepidochelys)

1. Insert the sentence "The Kemp's ridley sea turtle was listed under the ESA as endangered on December 2, 1970, and status has remained unchanged" prior to the sentence "The Kemp's ridley turtle is the most endangered….."
2. Remove the last two sentences of the intro paragraph beginning with "The entire Atlantic population, consisting…." And replace with "Estimates of adult abundance indicated 9,600 individuals in 1966, 1,050 in 1985, and 3,000 in 1995 (TEWG 2000)."
3. Seasonal distribution, paragraph 2 – add the sentence, "Juveniles use northeast and mid-Atlantic coastal waters as primary developmental habitat during the summer months."

2. Page 10 first full paragraph – need to add to the end of that paragraph that sand lance reappeared on Stellwagen and so did the whales (see page 12, top paragraph which began on page 11, last few sentences)
3. 4.1.4 "Known Disturbance…" first paragraph – Should cite some recent SARs (Waring documents) for more recent entanglement information than between 1975 and 1990.
4. Page 13 paragraph 3, last sentence – know should be "known"
5. Page 13 paragraph 4 – Humpback whales in the Gulf of Maine "stock" (add this) become entangled most frequently in gillnets and "trap/pot gear (such as lobster or crab)" (cite Waring et al., 2003 here instead).

4.2 The Fin Whale

1. See also comments from Section 2.2 above, including update Waring et al. SARs.
2. Figure 3 Fin whale sightings – what do the symbols (triangles and plus signs) stand for?
3. Section 4.2.4, p. 19, paragraph 3 – "High swimming speeds may protect fin whales from collisions." There is no justification for this statement, and the Large Whale Ship Strike Database (Jensen and Silber, 2004) states that fin whales are the most commonly hit whale.

4.3 The North Atlantic Right Whale

1. Page 20, paragraph 1 – suggest saying that North Atlantic right whales are "one of the rarest" of the large whales rather than "the rarest" because, technically, North Pacific right whales are fewer in number.
2. Section 4.3.1, p. 21, paragraph 2 – "NMFS 1991b" refers to the 1991 Right Whale Recovery Plan. This recovery plan was revised in 2001 and is still in draft form. This is a public document and should be cited as the most current information for Right whales. Please update the Right whale text to reflect this current information. The recovery plan can be found at: http://www.nmfs.noaa.gov/prot_res/readingrm/Recoverplans/narwrecplan.pdf
3. Page 21, last paragraph - The first sentence says that "the population of North Atlantic right whales appears to be growing at a very slow rate." This is not cited, then is contradicted by the last sentence, which says "However, updated reproduction and population data and status and trends modeling indicated that the population was in decline in the 1990s." Perhaps the wording of the first sentence can be altered to indicate that it was thought, in the early to mid-1990s, that the population was slowly recovering. The "Abundance and Trends" (p. IF) section of the revised Right Whale Recovery Plan has this information and cites.
4. Section 4.3.2, page 23, last paragraph – "Most references show right whales moving from the eastern shores of Long Island…." This needs a reference, similar to a comment made for humpback whales (Section 2.1, comment #1). Mate et al., 1997 (this is cited in this right whale section dealing with Known Disturbance and Mortality Factors) had evidence of satellite tagged right whales traveling through Nantucket Sound.
5. Section 4.3.3, page 24, paragraph 1 – "carangid" copepods should be "calanoid" copepods. Also, do not italicize "sp." in *Centropages* sp. because it does not refer to a specific species of *Centropages*.
6. Section 4.3.4, page 26, full paragraph 3 – "While entanglement records may not contain enough information to attribute the entanglement to a particular fishery…" Suggest re-

5.2.9 Cumulative Impacts (on Protected Species)

This section deserves a more complete description of cumulative impacts associated with each species, or at least with groups of species (whales, sea turtles). Cumulative impacts must take into account other impacts on species in conjunction with the impacts associated with this project and other projects that are similar to the one being described in the Cape Wind DEIS. The authors must consider the combined effects of all known impacts on protected species. For example, large whales are faced with a variety of anthropogenic sources of serious injury and mortality, such as collisions with ships and entanglements in fishing gear. Right whales also face problems associated with pollution and are probably still feeling the effects that commercial whaling had on their population.

NOAA Fisheries Service will remain involved in the project review as the ACOE responds to comments and develops the FEIS for the process. Should you have any questions about this matter, please contact Jack Terrill at 978-281-9136. Thank you for providing us with the opportunity to comment on this DEIS. We hope our comments will assist you.

Sincerely,

Susan A. Kennedy
Acting NEPA Coordinator

cc
USACE – Christine Godfrey
USACE - Karen Adams
USEPA – Robert Varney
USFWS - Marvin Moriarty
USFWS- Michael Bartlett
F/HC2 - Thomas Bigford
F/NER - Patricia Kurkul
F/NER - David Tomey
F/NER2 - George Darcy
F/NER3 - Mary Colligan
F/NER4 - Peter Colosi
Atlantic States Marine Fisheries Commission
New England Fishery Management Council
Mid Atlantic Fishery Management Council

THE COMMONWEALTH OF MASSACHUSETTS
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February 24, 2005

Ms. Karen Adams
Cape Wind Project Manager
U.S. Army Corps of Engineers, Regulatory Division
696 Virginia Road
Concord, MA 01742

004972

Re: Cape Wind Energy Project DEIS/R

Dear Ms. Adams:

The Massachusetts Office of Coastal Zone Management (CZM) has reviewed the above-referenced Cape Wind Energy Project Draft Environmental Impact Statement/Report (DEIS/R), and recommends that additional information regarding issues discussed below be provided in subsequent NEPA/MEPA documents.

Background

As described in the DEIS/R, the proposed project involves the development of 130 Wind Turbine Generators (WTGs) on a grid over approximately 26 square miles of sub-tidal area in Nantucket Sound known as Horseshoe Shoals. The project has a maximum deliverable capacity of 454 megawatts (MW) of electricity. As currently proposed, the hub of each WTG will be 246 feet above Mean Lower Low Water (MLLW), with a total height up to 417 feet above MLLW when rotor systems reach maximum height.

The project also entails the placement of submarine cables for interconnection of the WTGs; an elevated electric service platform; and placement of two 115 KV submarine and underground cables providing the interconnection of the WTG array to existing NSTAR transmission lines on Cape Cod. The underground cables and portions of the submarine cables are located within Massachusetts or in the waters of the Commonwealth. As depicted in the DEIS/R, the WTG array itself is located in federal waters. However, recent surveys by the Massachusetts Highway Department and the Minerals Management Service have documented a geological feature that qualifies as a baseline point from which to extend the Commonwealth's marine boundary into federal waters. As a result of this forthcoming boundary change, an estimated ten to twelve of the proposed turbines will be located in Commonwealth waters.

Comments

The DEIS/R reviewed the potential impacts to coastal resources by the preferred alternative, and to a lesser extent, the other potentially feasible sites included in the alternatives analysis. CZM's review has focused on potential effects to the coastal resources and uses described in CZM's enforceable policies and applicable supporting authorities. These resources

and uses include habitat, coastal geological processes, water quality, fisheries, and the visual environment.

As summarized in Table 5.3-3, the project will have direct impacts on approximately 1381 acres of sea floor in Nantucket Sound, of which approximately 1265 acres will occur in federal waters. This includes approximately 3.2 acres of permanent impact from pilings and associated scour mats. The majority of the direct impacts to the sea floor will result from the installation of the transmission cable and the inter-array cables. Indirect impacts will be experienced throughout the Sound, given the location of the project within a partially enclosed waterbody and the Sound-wide interrelationship of physical and biological processes and human uses. For sediment transport, habitat, and fisheries, in particular, the DEIS/R does not sufficiently characterize these resources and/or processes in the Sound to allow us to: 1) assess the potential effect of direct impacts; 2) reasonably identify the nature and extent of indirect impacts among interrelated resources and uses; or 3) determine the significance of direct and indirect effects on resources and uses of the coastal zone. CZM recognizes that an ecological characterization of Nantucket Sound could be taken well beyond the level of effort necessary to make determinations of the relative significance of impacts under NEPA, MEPA, and federal consistency. We also recognize that the results of such study could leave many questions unanswered. Accordingly, we have purposefully focused our comments and requests for additional information on those aspects of the project where the requested information will be directly applicable to our assessment of direct and indirect project impacts to the resources and uses of the coastal zone.

Habitat Mapping

The DEIS/R characterizes the benthic habitat within the project area as being similar to the sandy bottom habitat that is prevalent throughout Nantucket Sound in general. The absence of detailed habitat information makes it difficult to evaluate impacts to distinct habitat types. CZM recommends that more detailed benthic habitat mapping identify eelgrass beds, shellfish habitat, sand waves, and other habitat types in the project area, including the path of the transmission cables and the location of monopiles and associated structures. These habitats, by virtue of their relative scarcity in Nantucket Sound, are particularly important. This mapping information will allow CZM and other resource agencies to better evaluate the project's impacts and make specific recommendations for avoiding important habitat areas.

Habitat Impacts

In addition to directly displacing ambient seafloor habitat, the addition of 130 monopiles and associated scour mats will introduce new artificial habitat types to Nantucket Sound. These new artificial habitats are likely to attract a variety of marine organisms currently not found on shoals. While the DEIS/R acknowledges that the monopiles will create a vertical hard surface habitat that does not currently exist, the potentially significant changes in the distribution and abundance of marine species in Nantucket Sound are not described. CZM acknowledges that it

may not be possible to comprehensively document this effect by any other means than post-construction monitoring; however, we recommend that a more substantial review and discussion based on the current literature of the possible changes resulting from this habitat change be included in subsequent documents to assess possible impacts and determine whether they can be avoided or mitigated.

The monopile and scour protection structures may also concentrate marine organisms from other parts of Nantucket Sound to the vicinity of the wind farm array. This could result in the aggregation of colonizing and transient organisms, such as macroalgae, fouling organisms, shellfish (e.g., mussels), crabs and fishes. The potential attraction of invasive species to these structures could also have particularly significant consequences. CZM does not concur with the DEIS/R conclusion that increasing the distance between the monopiles would minimize this effect; rather, this is more likely to simply increase the area of change and spread the effect over a greater area of Nantucket Sound.

Commercial and Recreational Fishing Impacts

A practical result of these habitat changes may occur with respect to the distribution of commercial and recreational fishing. If typically fished species move to the vicinity of the wind farm, then the fishing activity will attempt to relocate as well. While the DEIS discounts any significant obstruction to fishing activity, the monopiles and scour mats may preclude certain types of fishing, such as weirs and mobile gear. In addition, if an exclusion zone around each WTG is determined to be necessary or is functionally imposed by the incompatibility of the structure and certain gear types, then fishermen will have limited access to these fishing grounds. To better understand the potential effect of the project on fishing interests, CZM recommends that the proponent more fully characterize the current level of fishing (including finfish, squid, and shellfish) in the area using the methods described below, describe potential impacts, and propose actions to minimize or mitigate unavoidable impacts.

The potential impact to shellfish resources has not been adequately described. The abundance and distribution of shellfish species throughout the project area is not documented in the DEIS/R. Instead, the DEIS/R describes commercial and recreational shellfisheries in federal and state waters based on broad-scale landings data and anecdotal information, which is not suited to the kind of analysis necessary to determine specific project impacts. A more thorough characterization of both the shellfish resource and the level of shellfishing effort is necessary to evaluate the project's impacts on this resource and use.

To determine whether the project will impact commercial and recreational fishing and shellfishing, it is necessary to understand the current level at which Horseshoe Shoals is used for these purposes. The DEIS/R does not adequately describe commercial fishing conducted in the area. CZM recommends that the applicant consult with the Division of Marine Fisheries, which may have data in this regard, and conduct surveys if necessary.

Appendix 5.4B of the DEIS/R includes an assessment of the use of the proposed project site for recreational fishing. This survey appeared to focus too narrowly on charter and party boat services to the exclusion of other non-commercial activity. To better characterize all recreational fishing activity in the vicinity of Horseshoe Shoals, CZM believes that a much broader survey should be performed. This should include contact with the state Division of Marine Fisheries, local Harbormasters, shellfish officers, tackle shops, and others, including those engaged in various types of recreational and commercial fishing. CZM recommends that the methodology developed for a conflicting use evaluation conducted on our behalf for the Buzzards Bay area (http://www.mass.gov/czm/dredgereports/2002/dmmp-02-03.pdf), be used as guidance for discussion with the appropriate agencies.

Water Quality

The DEIS does not provide specific information regarding the potential impacts to water quality and marine resources of a discharge of some or all of the 40,000 gallons of dialectric fluid that will be contained in the transformers on the electric service platform. Similarly, the DEIS generally describes but does not provide several required pollution prevention/remediation plans, including an Oil Spill Response Plan, Spill Prevention Control and Countermeasure Plan, Stormwater Pollution Prevention Plan, and an Operations and Maintenance Plan. Detailed contingency plans should be prepared so that appropriate measures can be implemented to minimize impacts related to any accidental releases.

Sediment Transport

Nantucket Sound is part of a large sand-sharing system. Sediment transport within the Sound is a regional, transjurisdictional process that affects all marine environments and coastal landforms within and adjoining the Sound. While it is not a closed system, as some sand enters the sound and some is lost to the open ocean, the majority of sand cycles throughout the Sound over time. As the DEIR/S states, the sand waves within Horseshoe Shoals are actively migrating. The area of Horseshoe Shoals can be seen on historic nautical charts, but the sand that comprised those shoals is not the same sand that is there today. Horseshoe Shoals is shallow, dynamic, and contains a significant volume of sand; an alteration to the project area may have a significant impact to the sediment transport system in Nantucket Sound. Tidal, and to a lesser extent wind-driven, currents move sand into and out of these areas daily; these processes are accelerated during storm events. Changes to this system may have widespread effects, potentially affecting benthic habitat and changing erosion and accretion patterns in the coastal zone.

CZM's review of projects that may affect sediment transport is guided by Coastal Hazard Policy #2, which requires an analysis of a project's potential to alter wave or tidally generated sediment transport at the project site or on adjacent downcoast areas. The policy states that "[o]f particular concern are significant adverse changes in depositional patterns and natural storm damage prevention or buffering functions." CZM believes that more analysis concerning the effect of the project on sediment transport is necessary to evaluate potential impacts. The array

of monopiles and associated scour mats will stand as new features that will affect sediment transport. To assess the significance of this effect, CZM requests that an oceanographic modeling study be undertaken to develop a better understanding of sediment transport pathways for all of the options in the alternatives analysis, as well as for Nantucket Sound in general and any potential impacts of the proposed project to those sediment transport pathways.

To understand the potential impacts of the proposed project on the physical processes of the Sound, it is necessary to understand the physical processes which daily shape the littoral environment of the area within which the project is proposed. The DEIS/R provides an overly simplified model of sediment transport within the Sound that is based on inadequate data and focuses narrowly on the immediate project area. Wave data is hindcast from meteorological records, which, while often an appropriate and cost-effective means of characterizing wave climate, does not provide sufficient detail to assess the potential impacts of a project of this magnitude. Key factors that affect the overall sediment transport process, including tidal and wind-driven currents, sediment transport patterns, and the frequency and magnitude of storm events, are evaluated using data from studies and records developed for areas and purposes not directly related to a characterization of the environment in which the project is proposed. For example, the 1996 FEMA study used to determine that currents will move over Horseshoe Shoals at 1.8 ft/second during a 100-year return frequency was developed as a general, broad scale model applicable to the coastline of Nantucket Island, and can not be used exclusively to characterize conditions within the Sound or at alternative sites. Data such as those provided by the FEMA study are valuable as a general characterization of potential conditions, and as guidance for scoping detailed, site-specific analysis, but they do not provide an adequate basis for a detailed characterization of the affected environment or to determine potential project impacts.

Based on the information at hand, CZM recommends that the proponent develop detailed site-specific oceanographic models to evaluate different magnitude storms, as well as fair-weather, tidal and wind-driven conditions, for the Nantucket Sound and South of Tuckernuck sites (see Alternatives Analysis section below), and we provide the following technical guidance as the basis for discussion of an appropriately scaled effort.

An in-depth study of these processes would provide the required information to quantitatively assess sediment transport pathways, as well as near-field effects of the proposed wind tower structures and any scour protection proposed or permitted. In addition to a more complete spatial and temporal oceanographic data collection (e.g. wind, tides, sediment characteristics, etc.) and analysis effort, a thorough investigation into the coastal dynamics of the alternative sites should include a hydrodynamic and sediment transport modeling component. Regional hydrodynamics should be determined using a spatially- and time-varying model based on the governing equations of fluid flow. Similarly, the study of sediment transport patterns at alternative sites would require the use of a model that can adequately represent the regional variability of the area. Appropriate models should be calibrated with data to represent a full range of tidal conditions, and validation of the models also should be performed. The model

domain should represent the entire region to ensure that boundary conditions do not inappropriately influence the solution within the area of interest (i.e. the alternative sites). Once calibrated, model simulations should be performed to evaluate the influence of typical conditions as well as storms on both regional and local sediment transport patterns.

CZM does not believe that the proposed scour protection is appropriate. The plastic filaments attached to the mats are non-biodegradable and, even with maintenance plan in place to assure the integrity of each mat unit, will eventually dislodge and disperse within the marine environment. The proposed mats will contain a total of approximately 588 million four-foot long plastic filaments. A rate of loss of only 1% represents 5.8 million pieces of marine debris in Nantucket Sound. CZM recommends that the oceanographic modeling described above be used to evaluate the need for the scour control at the base of the monopiles. Since the monopiles are proposed to be driven to a depth of 80 feet, it is unclear that they will become unstable if the amount of erosion is only 6-8 feet. If modeling and/or engineering calculations determine that scour protection is necessary, CZM recommends the use of riprap or similar materials, recognizing that this will require the proponent to recalculate habitat impacts.

Visual Impacts

The DEIS/R includes photo-renderings showing the visual impact of the proposed alternative and three other potentially feasible alternatives. These photo-renderings are useful insofar as they appear to provide some frame of reference for the assessment of these impacts. However, the DEIS/R does not provide a systematic methodology for more objectively assessing the impacts of the preferred alternative, or for comparing the other alternative sites or possible configurations in terms of visual impact.

For purposes of identifying and evaluating the visual impacts of the proposed wind farm, the DEIS/R (page 3-200) first characterizes the existing Nantucket Sound seascape in the vicinity of Horseshoe Shoal as "a large expanse of open water, rimmed by the low-lying landforms of Cape Cod and the Islands", the basic character of which "is not fragmented, and is consistent with a natural unified nearshore southern New England seascape…[within which] activity is limited to recreational and fishing boats, ferries, navigational aids, and aircraft." Further, an onshore "viewshed" for the proposed wind farm location is defined as the shoreline area oriented to experience open unobstructed views, the lateral extent of which encompasses the southerly shores of Cape Cod, the westerly shores of Martha's Vineyard, and northerly shores of Nantucket in their entirety (Figure 3-38). In the landward direction the viewshed extends to approximately 300 feet, beyond which views are considered to be at least partially screened by mature vegetation, intervening structures, and topography.

The preferred site for the wind farm is centrally located within this overall viewshed, which is a popular recreational resource used for a variety of water-related activities. On shore, the DEIS/R (Table 3-26) identifies a total of 259 specific public recreation sites along the Nantucket Sound shoreline, located at distances ranging from a low of 4.8 miles (Point Gammon, Yarmouth) to a high of 17.6 miles (at Morris Island, Chatham) to the closest edge of the preferred wind farm site. Among other things,

these sites include numerous properties within National Register listed or eligible historic districts or containing individual structures that are listed or eligible for listing. The proposed turbine structures are expected to be visible to varying degrees at all of these public recreation sites, as well as from most of the extensive privately-owned shoreline abutting Nantucket Sound – all of which lies within a 27-mile radius of Horseshoe Shoals, the theoretical maximum range of visibility for a 420 foot structure located at sea, as seen from a point 10 feet above sea level (based on standard visibility charts, as estimated by the applicant and reported in the Energy Facility Siting Board Tentative Decision, page 185).

The DEIS/R acknowledges that, in adding a built element to the existing views of the natural seascape, the proposed wind farm will "cause changes in day time views" and that, at night under clear sky conditions, the FAA-required flashing aviation warning lights "will create a visual change to the existing relatively unbroken night time views, especially at remote locations with low levels of ambient light" (pages 5-203 and 3-202 respectively). Documentation of such changes is provided in the form of a series of "photo renderings" that simulate, using computer modeling techniques, both day and night views of the project from 12 representative "viewpoint locations" around Nantucket Sound, all on historic properties. Six of these vantage points are located on Cape Cod and three are located on each of Martha's Vineyard and Nantucket Islands, at varying distances from the nearest edge of the preferred site (five viewpoints are 5.4-7.0 miles away, four are between 8.8 and 11.2 miles away, and three are between 13.6 and 14.1 miles away). The renderings were prepared using a generic seascape photograph as the background for the layout of the wind farm structures, and were constructed to incorporate a variety of lighting conditions to take into account the fact that the turbines will appear darker or lighter against the sky depending upon the position of the sun and shadows cast at different times of the day.

The DEIS/R asserts that the simulated photos represent "worst case" visibility for a variety of reasons (page 5-203). First, the selected viewpoint locations were the most open, unobstructed, publicly available view at each historic site, whereas other locations therein have more limited or screened views. Second, all photo renderings illustrate the project under clear sky conditions, whereas the project would be less visible during periods of fog and storms and under certain other atmospheric conditions. In this respect NOAA data over a 22-year period indicates that visibility can be expected to be less than .25 miles at some point during the day on a total of 98 days each year, and less than 2 nautical miles an average 8.5% of the year. Finally, the simulations do not take into account the blocking effect the curvature of the earth will have on the visibility of structures toward the base. Because the degree of this effect could not be accurately determined, each turbine was "set" on the horizon rather than in front of or behind it.

Notwithstanding such caveats, the collection of photo renderings provides a useful starting point for an assessment of visual impact. It demonstrates, for example, that virtually all of the turbine towers will be visible from shoreline vantage points up to 14 miles distant from the facing perimeter of the project site, with "the greatest Project visibility and visual contrast expected to occur at distances of less than 8 miles, within which all the WTGs will be visible within the field of view….[and] the grid pattern of the turbine layout will be also be visible…"(p.3-202). Beyond this distance, project structures are characterized as becoming more obscure with certain of the more slender components, such as rotor blades, difficult to see.

Turning to the nighttime views, the simulated photos indicate (page 3-200) that "the greatest visibility and visual contrast will occur at undeveloped or lightly developed sites with dark skies…[because] ambient light in more developed areas significantly reduces the visibility and contrast of the lights against the night sky.

With respect to judging the *significance* of the visual impacts identified in the respective simulations, the DEIS/R appears to rely primarily on the results of a limited Visual Impact Assessment (VIA) required by the federal National Historic Preservation Act, in which a professional architectural historian concluded that the project would have an adverse effect on two historic properties, four historic districts, and ten individual historic properties (page 5-204). There is no apparent attempt to employ a broader framework for evaluation, with the only additional discussion consisting of a brief statement on page 5-203 to the effect that the observation of greatest impact at 8 miles or less is "consistent with European studies that indicate a distance of 9.3 miles may be the maximum limit of visual significance along the coast and within a seascape (Hill et al., 2001)." This seems to imply that a simple distance cutoff can be employed in determining the extent to which the appearance of the ocean will be altered significantly as a result of the proposed wind farm.

CZM does not support such a simplified approach to visual impact evaluation, for two reasons. First, inspection of the single work cited from the professional literature reveals that the term "limit of visual significance" was neither utilized nor recommended for purposes of assessing structural intrusions upon a natural seascape. Rather, it was employed in the context of establishing the dimensions of a geographic unit for planning purposes, based on the concept of "shared intervisibility" between points on land and out at sea. The width of this zone was taken to be the distance to the horizon as seen from a landside elevation of approximately 20 feet (a vantage point akin to a low-lying bluff headland), and a standard graph showing horizon distance as a function of viewer elevation was used to compute the distance as 9.3 miles (15 km). In calling this the limit of visual significance, then, the authors were simply defining how much of the sea surface can be seen by the "naked eye" before the curvature of the earth serves to remove it from one's field of vision.

Nor is the implication that distance alone is a sufficient indicator of impact significance supported by the claim in the DEIS/R that the greatest visual impact occurs within 8 miles of the wind farm perimeter. Although the proposed project is certainly most prominent in the photo simulations prepared for Viewpoints within this range (nos. 5,6,7,8,and 19), it cannot be concluded that both visibility and visual contrast diminish substantially at points beyond, because all but one of the renderings prepared for these "far-field" Viewpoints are either lacking strong back or front lighting from the sun, are partially screened by intervening landforms, or otherwise manifest less than ideal viewing conditions (such as overcast, haze, or "sky washout"). This is not in keeping with the worst case approach on which the simulation program as a whole was based, and suggests that a supplemental set of photo renderings are needed for the Viewpoints in question (nos. 20, 22-24, 26, and 1), to better illustrate the "far-field" appearance of the wind farm under conditions of greatest visibility and visual contrast. Further, CZM recommends that new simulations be prepared according to the same specifications for at least two additional Viewpoints, to represent sections of the Cape Cod shoreline lying between 14 and 18 miles from the outer perimeter of the project site (and therefore not

encompassed by the 12 simulations presented in the DEIS/R). Table 3-26 indicates that several public recreation sites in Harwich and Chatham are in the Horseshoe Shoals viewshed and within this distance range, and CZM recommends that the two sites with the most open, unobstructed views of the wind farm be selected for preparation of new photo renderings.

In conjunction with the results of this expanded visual simulation program, CZM recommends that quantitative information be presented that will help indicate the significance of the altered views presented therein. More specifically, we request the computation of values for two basic parameters:

1) the amount of ocean-facing shoreline (in miles, and as a percent of the total within Nantucket Sound) located within three categories of distance from the wind farm perimeter: 0-6 miles (a near-field distance), 6-12 miles (a mid-field distance), and 12-18 miles (a far-field distance, to the farthest reaches of the Sound but still well within the maximum theoretical limit of visibility of the turbine towers); and

2) the arc (in degrees, and as a percent of the full seascape view) that describes the horizontal extent to which wind farm structures will be noticeable against the water horizon, for all of the separate viewpoints and grouped again according to the three distance categories stated above.

CZM believes that such information is necessary to completely and effectively assess the visual effects of the proposed project on the uses and resources of the Massachusetts coastal zone.

Potential for Modified Project Footprint

The environmental and visual impacts described above are related in part to the large footprint of the WTG array. A more thorough alternatives analysis therefore should consider means by which these impacts can be minimized by reducing the area of the array.

The DEIS/R describes (page 3-29) "generally accepted planning guidelines" for the wind power industry. Those guidelines state that while approximately 20 acres of land are required to generate 1 MW of power, a smaller area is needed for an offshore facility because of the relative smoothness of an open water surface and the absence of topographical features. Specifically, the guidelines cite a 1.2:1 ratio for land and offshore project sites. Therefore, according to these guidelines, an offshore site would require approximately 16.7 acres to generate 1 MW of power; for a project generating 454 MW, the required area of open water should be approximately 7,582 acres, or slightly less than 12 square miles. The Peer Review Summary Report (Appendix 3-E) appears to offer greater detail on the application and validity of this guideline, and expresses the typical distance between WTGs as a function of the rotor diameter. The Peer Review notes the typical spacing as 5 to 10 rotor diameters in one place and 6 to 8 rotor diameters in another.

Based on this analysis, it appears that the footprint of the array may be considerably larger than necessary. This conclusion is supported by comparing the spacing between turbines at the Horns Rev facility off the coast of Denmark with that proposed for the Cape Wind project.

The Horns Rev facility[1] uses rotors with a diameter of 80 meters, and they are spaced 560 meters apart, equivalent to about 7 rotor diameters. The diameter of the rotors proposed to be used for the Cape Wind project is 104 meters, with a spacing WTGs of 629 meters by 1,000 meters, a range of approximately 6 to 10 rotor diameters. The DEIS/R did not evaluate alternatives that sought to lessen impacts by using a smaller array footprint. Indeed, all of the offshore sites considered in the DEIS/R (Table 3-5) that have a capacity greater than 200 MW are based on an available watersheet of 28 square miles, including those that have higher wind speeds, and presumably could generate the same amount of power with fewer turbines. CZM acknowledges that the applicant may have proposed a larger-than-necessary spacing between turbines in an attempt to reduce impacts, especially to navigation. However, based on data presented in the DEIS/R, CZM finds no basis for concluding that greater spacing between WTGs reduces environmental impacts, and may instead spread these impacts over a greater area of Nantucket Sound.

CZM recommends that the applicant review technically feasible layouts using a modified footprint. This additional analysis should include a 454 MW facility with a compressed footprint and a "split-facility" alternative with two or more arrays that total 454 MW within Nantucket Sound. The compressed footprint alternative should use spacing between turbines comparable to that in use at the Horns Rev facility or other industry standard. In contrast to the New Bedford/Horseshoe Shoals alternative presented in the DEIS/R, CZM recommends that an alternative involving two arrays that are essentially equivalent in footprint area be developed for comparison purposes. The purpose of this analysis is to compare the fisheries, visual, and environmental impacts of these alternatives to the large arrays proposed in the DEIS/R, without compromising the proposed power generation capability of the project.

Alternatives Analysis

The analysis of alternative locations for coastal energy facilities plays a key role in achieving the stated objective of CZM's Energy Policy #1, which is "to ensure that the development and maintenance of energy resources are completed....by the least environmentally damaging means practicable." This key role is set forth in the core statement of the Policy itself, which provides as follows:

> For coastally dependent energy facilities, assess siting in alternative coastal locations. For non-coastally dependent energy facilities, assess siting in areas outside the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites.

The Policy goes on to reinforce the importance of comparative evaluation by stating that it "ensures that reasonable alternatives are considered and that sites are avoided which could lead to substantial harm to the most valued areas of the coastal zone." As further stated in Energy

[1] According to the web site for the Horns Rev facility, www.hornsrev.dk.

Policy #1, federal consistency review of energy projects is carried out in accordance with the applicable provisions of the state statutes and regulations listed at the end of the Policy.

Within this overall framework, a threshold question is that of coastal dependency. Energy Policy #1 states that coastally dependent energy facilities are facilities that "utilize the indigenous energy resources of the coastal zone," and that "…wind generation may be determined to be coastally dependent based on the specific project proposal." CZM has determined that the project as proposed qualifies as a coastally dependent project for the purposes of our review. However, Energy Policy #1 and its implementing authorities still provide that at least one alternative coastal site will be reviewed "in order to efficiently administer a CZM alternative site review. In determining whether one or more qualifying alternatives have been identified, CZM has reviewed the site screening analysis presented in the DEIS/R, which is generally responsive to the requirements of the Secretary's ENF Certificate regarding the search for candidate sites. In conducting this review we have focused on the development/approval capability of the non-preferred site that appears to have greatest potential feasibility, and on the potential for reducing environmental and visual impacts relative to the preferred site at Horseshoe Shoals.

In the preliminary phase of the alternatives analysis, the DEIS/R reviewed a relatively long list of potential onshore and offshore locations with reference to five basic screening criteria, chosen to eliminate sites that clearly were not technically or economically feasible and to develop a shorter list of reasonable alternative sites. The screening criteria employed were: wind power classification of 4 or greater; sufficient surplus electric transmission capacity to transport 200 – 1500 MW to load centers throughout the ISO-NE transmission system; commercially available land or permissible use of offshore water-sheet area sufficient to accommodate a 200 – 1,500 MW wind energy project; engineering and design limitations; and absence of major legal or regulatory constraints. Application of these screening criteria resulted in the initial identification of 17 specific sites in New England -- eight involving upland locations and nine located offshore – all of which were judged to be generally reasonable based on their relative merits as a whole (rather than by applying a strict pass/fail test to each criterion independently).

Upon further review of the relative merits the field of land-based alternatives was reduced to one, with the others considered to be infeasible generally for reasons related to the large area needed for a utility-scale wind farm, low wind speeds, or lack of adequate transmission capability. On the water side, transmission constraints and excessive depths and/or wave heights were the principal disadvantages resulting in the elimination of potential sites. In the end the field was narrowed to four primary alternatives for closer scrutiny: a shallow water alternative in Nantucket Sound (which included the Applicant's preferred site at Horseshoe Shoals along with two nearby "sub-sites" at Tuckernuck Shoals and Monomoy/Handkerchief Shoals); a split-site alternative with 25 turbines located outside New Bedford Harbor and a reduced footprint at Horseshoe Shoals; a deeper water location South of Tuckernuck Island; and

the one onshore alternative, located at the Massachusetts Military Reservation (MMR) on Cape Cod.

Of the three alternatives involving wind farm development outside of Nantucket Sound proper, it would appear that two -- the MMR location, and the portion of the split-site alternative lying outside New Bedford Harbor – are more problematic than the discussion of legal/regulatory constraints in the DEIS/R indicates. Indeed, the MMR has clearly ruled out any conversion of its land to non-military use, so that alternative no longer warrants further consideration – leaving no land-based sites that are reasonably capable of development to be further evaluated for comparative purposes.

The New Bedford offshore location also may need to be eliminated from further review, because it lies in state waters and within the Cape Cod & Islands Ocean Sanctuary and thus may be subject to a prohibition on offshore power generating stations under the Massachusetts Ocean Sanctuary Act (MOSA: M.G.L c. 164, secs. 12A-16F, 18). The DEIS/R acknowledges MOSA as a legal/regulatory constraint in Table 3-5, but asserts on page 3-35 that use of this offshore watersheet is "permissible (assuming issuance of MADEP Chapter 91 Waterways License)." However, the regulations implementing Chapter 91 at 310 CMR 9.33(1)(f) state that "no license or permit shall be issued for any structure or fill that is expressly prohibited" by the Ocean Sanctuaries Act. Accordingly, the question of whether an express statutory prohibition applies to the New Bedford alternative site needs to be determined, and CZM recommends that the matter be clarified before retaining that site for further comparative evaluation.

Elimination of the MMR and split-site alternatives would leave only one potentially developable/approvable site outside of Nantucket Sound – the South of Tuckernuck Island alternative, which was selected for a closer look "in order to provide some perspective on whether deeper sites are currently feasible", recognizing that the industry "appears to be moving towards attempting to install offshore wind turbines in deeper water." This location was chosen over two other nearby deepwater sites that were judged to be relatively less attractive: one south of Martha's Vineyard, disfavored largely because of concerns regarding the potential for unexploded ordinance in the area; and the other at Nantucket Shoals, which exhibits extreme wave heights (ESW) of approximately 65 feet. Apart from considerations of deep water constructability, the South of Tuckernuck Island Alternative is clearly advantageous from the standpoint of visual impacts insofar as no portion of the wind farm would be visible from any part of the Cape Cod shoreline, thus greatly reducing and the number of affected viewers and historic properties. To the extent that a determination can be made based on the information in the DEIS/R, the impacts on environmental resources of this site appear to be comparable to other alternatives, although the direct impacts may be somewhat greater due to the need for a larger diameter monopile and/or quad-caisson foundations. On the other hand, it may have fewer indirect impacts than the preferred Horseshoe Shoals alternative, which may have a significant effect on the sediment transport system and ecological character of Nantucket Sound.

Before the potential advantages of the South of Tuckernuck Island alternative can be effectively weighed, however, the threshold question of development capability must be resolved. On this point the DEIS/R is rather equivocal and inconclusive, reflecting the fact that "the technology is evolving

rapidly; there was no clear consensus on what is considered to be the current state of the art or what could be expected to be feasible in the reasonably foreseeable future." This is particularly apparent in the use of a 50' maximum water depth and 20' maximum ESW as key screening criterion, described on page 3-29 as "generally accepted industry guidelines that define the limits of currently available and technically proven offshore WTG foundation designs." However, the Peer Review Summary Report (Appendix 3-E) states that several reviewers found that the Applicant did "not provide a well-supported argument for the conclusions" regarding water depth and ESW, and further notes that "there is no discussion or reference to the design standards for offshore wind turbines which are being developed by the International Electrotechnical Commission Technical Committee 88, Working Group 3...", expected to be released shortly in draft form.

CZM also takes note of Appendix 3-F ("Garrad Hassan Report- Review of Offshore Wind Farm Project Features"), which indicates that several projects in Europe proposed for construction in the reasonably foreseeable future are to be located in water depths greater than 50 feet, including the Borkum West project in the North Sea, proposed in waters 30 meters deep (approximately 90 feet). Unfortunately, Table 3 in Appendix 3-F does not list the ESW for the 30 meter site, but the discussion in Appendix 3-E references the Blythe project in the UK which is reported to have an ESW of 28 feet and to be experiencing breaking waves (contrary to some assertions that it is not practical to design a wind turbine to withstand forces associated with plunging breakers). Finally, it has been reported separately that the Long Island Power Authority used a water depth of 70 feet in its siting study.[2] For purposes of comparison, we note from Figure 3-2 that a significant portion of the South of Tuckernuck Island site appears to lie in waters less than 75 feet, which is within the range of the North Sea and Long Island Sound projects; and although the ESW of 51.1 feet apparently exceeds that encountered in practice elsewhere, the site is described as sheltered to some extent from open ocean waves due to the position of Nantucket to the east.

In light of these observations concerning deeper water sites, CZM recommends that the South of Tuckernuck Island alternative be evaluated at a greater level of detail with respect to engineering design and environmental resources, so that a more instructive comparison of shallow water and deeper water sites can be undertaken. The DEIS/R falls short of offering an effective basis for such comparison: for example, while it notes on page 3-125 that three different foundation sizes will be needed for the South of Tuckernuck alternative, depending on the water depth in which the foundation is constructed, the document does not specify how many of each type of foundation would actually be necessary; therefore it does not appear to be possible at this time to compare the direct impacts of the South of Tuckernuck site with the Horseshoe Shoals alternative. This additional analysis should also consider whether the number of larger foundation systems could be minimized by reducing or reconfiguring the project footprint.

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[2] See *Long Island' s Offshore Wind Energy Development Potential*, prepared for the Long Island Power Authority, dated January 31, 2003. Downloaded from www.lioffshorewindenergy.org/.

Finally, while the direct impacts of the larger foundation structures needed at deeper water sites must not be discounted, there may be benefits that can offset or mitigate such impacts. In particular, a site such as South of Tuckernuck Island may have benefits related to greater wind speed that influence economic feasibility. Accordingly, CZM requests clarification of the wind classification of the Nantucket Sound and South of Tuckernuck alternatives. In Table 3-5, the Nantucket Sound sites are given wind classification values of 5 and the South of Tuckernuck Alternative a value of 6; however, in section 3.4.3.3.2, which compares the economics of the alternatives, both sites are stated to have wind classification values of 6. Similarly, in section 3.0 the South of Tuckernuck site is generally described as having better wind resources, yet the economic analysis in Table 3-48 indicates very little difference between the Nantucket Sound and South of Tuckernuck sites with respect to wind speed.

Federal Consistency Review

The proposed project is subject to CZM federal consistency review, and therefore must be found to be consistent with CZM's enforceable program policies. For further information on this process, please contact Alex Strysky, Project Review Coordinator, at 617-626-1219 or visit the CZM web site at www.state.ma.us/czm/fcr.htm.

Thank you for this opportunity to comment.

Sincerely,

Susan Snow-Cotter
Acting Director

Cc: Phil Weinberg, DEP
Paul Diodati, DMF
Mike Gildesgame, DCR
Tim Timmermann, EPA
Vern Lang, U.S. Fish & Wildlife
Elizabeth Kouloheras, DEP
Dierdre Matthews, Energy Facilities Siting Board
Vin Malkoski, DMF
Town of Yarmouth Conservation Commission
Town of Barnstable Conservation Commission
Cape Cod Commission

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004973

February 24, 2005

Colonel Thomas L. Koning, Commander
United States Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

Dear Colonel Koning:

I am writing to formally submit my comments into the record on the Draft Environmental Impact Statement and express my continued opposition to the Cape Wind project. The majority of the Cape Wind energy project is located in the federal waters of Nantucket Sound. Those portions of the project in state waters are being independently reviewed by several state agencies in accordance with the laws and regulations of the Commonwealth. On this point, the federal Minerals Management Service has recently certified a change in the Commonwealth's coastal boundary. As a result, a number of the turbines proposed by Cape Wind are now within Massachusetts jurisdiction.

Cape Wind is arguably the most significant precedent-setting project currently proposed in the United States. The proposed Cape Wind project involves the development of 130 Wind Turbine Generators in a grid covering 24 miles in the middle of Nantucket Sound. Each generator is on top of a tower measuring approximately 263 feet in height, which is fitted with three 160-foot blade rotor systems, resulting in a total height of 423 feet above mean sea level for each turbine.

Nantucket Sound is an area of unique ecological, economic, recreational and aesthetic value. Its ecological significance includes the habitat that the Sound provides for many state and federally listed wildlife species. Its economic significance includes the nearly 5 million tourists who visit the Cape and Islands every year, and the commercial fishing, ferry and cargo vessels that traverse Nantucket Sound on a daily basis. Its recreational significance includes active use by recreational boaters and fishermen. The landed value of our commercially caught fish and

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direct expenditures related to our recreational saltwater fishing exceed a half-billon dollars each year.

Our ocean is a public asset that should be planned for and protected. Unfortunately, governance of ocean resources within U.S. territorial waters historically has been dictated by the practice of "first come, first serve." The recent proliferation of projects proposing exclusive use of ocean resources, like Cape Wind, highlights a gap in the federal siting process for ocean development projects. In recent years, Massachusetts has seen a number of offshore proposals, including marine-based aquaculture, offshore sand mining, natural gas pipelines, wave energy facilities, fiber optic cables and offshore wind farms. Rather than the current "wild-west" mentality, I believe we need to examine better ways of looking at how we manage our ocean resources.

We recognized this concern early on in my Administration and began to address this ocean management issue at the state level. I commissioned an Ocean Management Task Force to come up with recommendations on improved stewardship of ocean resources. To implement some of the recommendations of the Task Force, which included many stakeholders and multiple public meetings, I will soon file legislation to authorize management planning for state ocean resources. This bill will also acknowledge the need, and provide the ability, to improve the Commonwealth's coordination with federal agencies on activities occurring in federal waters that may impact resources in state waters. Enactment of this bill would enable Massachusetts to plan for our ocean resources rather just react to development projects as they come along. We should not allow Massachusetts' 1.3 million acres of ocean resources to become the site of the next "land rush."

Submerged lands under either state or federal jurisdiction are public lands held in trust by the government for the people. Massachusetts was the first of the original colonies to codify the public trust doctrine, and it has been a fixture of state law ever since. The Commonwealth's Public Waterfront Act, also known as "Chapter 91," is the oldest such statute in the nation. Current Massachusetts regulations under Chapter 91 articulate priorities for use of all tidelands subject to the public trust, and require private use of tidelands to be mitigated by some type of public benefit, such as public access and other water dependent improvements in addition to payment of an occupancy fee.

However, in federal waters, no such fee structure exists, except for extraction of hard minerals, oil and gas. On the federal side, the current regulatory scheme should be enhanced to include a competitive review and siting process, including proactive planning for federal resources, of proposals as a substitute for the current "first come, first served" approach. The federal siting process should include a process for leases to govern development with payment of fees or royalties by commercial developers. The federal process should include consultation with the Governors from affected states, similar to the process established under the federal Deep Water Port Act.

In addition to the critically important policy issues I have raised above, several state resource agencies with technical expertise in environmental matters have remaining concerns about the technical deficiencies of the Draft Environmental Impact Statement. I have attached a summary memorandum with this letter and more detailed comments will follow separately from individual agencies. I ask that you give careful consideration to their comments in this proceeding.

In conclusion, I again express my strong opposition to this project and respectfully request that the U.S. Army Corps of Engineers find the project not in the public interest and cease processing the application at this time.

Sincerely,

Mitt Romney

cc:
United States Senator Edward Kennedy
United States Senator John Kerry
United States Representative William Delahunt
State Senator Robert O'Leary
State Senator Therese Murray
State Representative Demetrius Atsalis
State Representative Shirley Gomes
State Representative Matthew Patrick
State Representative Jeff Perry
State Representative Eric Turkington
State Representative Cleon Turner

Executive Agency Summary Attachment

In the event that the US Army Corps of Engineers moves forward with further review under the National Environmental Policy Act, the following is a technical memorandum providing summary comments to the on the Draft Environmental Impact Statement for the Cape Wind Energy Project (USACE NAE-2004-338-1). Individual state agencies are separately submitting comments in greater detail to the US Army Corps of Engineers under separate cover.

Project Description

As described in the Draft Environmental Impact Statement (DEIS), the proposed project involves the development of 130 Wind Turbine Generators (WTGs) on a grid over approximately 26 square miles of sub-tidal area in Nantucket Sound known as Horseshoe Shoals. The project has a maximum deliverable capacity of 454 megawatts (MW) of electricity. As currently proposed, the hub of each WTG will be 246 feet above Mean Lower Low Water (MLLW), with a total height up to 417 feet above MLLW when rotor systems reach maximum height.

The project also involves development of submarine cables for interconnection of the WTGs; an elevated electric service platform; and placement of two 115 KV submarine and underground cables providing the interconnection of the WTG array to existing NSTAR transmission lines on Cape Cod. The underground cables and portions of the submarine cables are located within Massachusetts or in the waters of the Commonwealth. As depicted in the DEIS, the WTG array itself is located in federal waters. However, recent surveys by the Massachusetts Highway Department and the Minerals Management Service have documented a geological feature that qualifies as a baseline point from which to extend the Commonwealth's marine boundary into federal waters. As a result of this forthcoming boundary change, several of the turbines in the proposed project area are anticipated to fall withing Commonwealth waters.

Comments

The project will have direct and indirect impacts to marine resources and human uses associated with the waters of Nantucket Sound. As described in greater detail below, the DEIS in many cases does not characterize the nature and extent of potentially significant project impacts or does not provide sufficient information to support the conclusions presented therein. While the DEIS reviews a significant amount of existing information on the resources of Nantucket Sound, more detailed, site-specific characterizations are needed to better evaluate the project's impacts. In particular, the characterization of fisheries resources and potential impacts to the ecology of Nantucket Sound relies on generalizations and extrapolations from existing data that should be supplemented with additional scientific data. Where studies have been done, as for the physical characterization of the project area, the survey work was conducted at a broad scale that is not sufficient for a characterization of the affected environment.

In summary:

- The DEIS presents only generalized characterizations of marine habitat, sediment transport, fisheries, and existing human uses of Nantucket as the basis for stated conclusions of limited project impacts;
- The final screening of alternative sites does not adequately distinguish the relative significance of the individual impacts and benefits of each alternative by which, for example, the diminished impacts of sediment transport disruption at South of Tuckernuck versus Horseshoe Shoals could outweigh the former's greater direct impacts to habitat; and
- The analysis of visual impacts is generalized and does not meet the level of analysis normally required to support reasoned findings of regulatory compliance.

Habitat

Recommendation: Detailed habitat maps should be developed to characterize the preferred alternative and at least one alternative site, and used to recalculate potential project impacts of these alternatives. For the project area and at least one alternative site, develop an ecological characterization and provide a formal assessment of the potential impact of the 'reef effect' based on the current scientific literature.

The DEIS does not contain a benthic habitat map that characterizes the project site in sufficient detail. While sandy environments are assumed to be located throughout the project area and are the most abundant habitat in the project area, other habitats are known to exist in the project area as well. A survey of the benthic habitat in the project area could provide more insight into the extent of the impacts to important habitats in the project area such as eelgrass beds, seaweed, sand waves, and rocky outcroppings. This information would help assess the design and route of project elements in order to avoid important habitat areas, and could be used in conjunction with a sediment transport model to assess indirect impacts of the project on benthic habitat.

The monopiles and scour protection will add a substantial area of new artificial habitat to Nantucket Sound. The addition of hardened structure to the seafloor and through the water column and the associated changes to the distribution and abundance of marine organisms is an example of the "reef effect." The reef effect is still not well understood and remains the subject of scientific research. However, the addition of this new habitat type may introduce species that are adapted to such environments to Horseshoe Shoals, where no such habitat currently exists and such species are presently absent. Another result may be that species that under natural conditions are broadly distributed across Horseshoe Shoals will instead aggregate around these monopile structures. Not the least of the changes that may be associated with this new habitat is the potential colonization of these areas by invasive species. An additional factor is the large footprint of the proposed WTG array and the cumulative effects of such a large number of pilings over an extensive area of Nantucket Sound. More information is necessary as to whether this effect is diminished because of the spacing between the WTG's, as the DEIS asserts, or whether this only serves to increase the area of biological change.

Sediment transport

Recommendation: Consider developing additional information to characterize the potential impacts of the project on the Nantucket Sound sediment transport regime, coastal landforms, and benthic habitat. Develop site-specific models to characterize monopile and electric cable scour.

The landforms of Nantucket, Martha's Vineyard, and the south side of Cape Cod are highly dependent on the natural distribution of sediment within Nantucket Sound. Sediment within the boundaries of the proposed project is part of a larger sediment transport system in which tidal and wind driven currents cause the sand in Nantucket Sound to migrate, especially during storm events. Large shoal systems like Horseshoe Shoals are areas where sand, in the form of underwater dunes or sand waves, migrates in response to changing water currents. To a great extent, Nantucket Sound acts as a large sand-sharing system: while some sand enters the sound and some is lost to the open ocean, the majority of sand continues to circulate within the confines of the Sound. As an added obstruction to the movement of sand in this regional sediment transport system, the project may impact the marine and coastal sandy landforms, such as beaches, bluffs, dunes, and marine sand wave habitat, that are formed through this process. This effect cannot be determined in the absence of an appropriate oceanographic modeling study. Recent press about Cape and Islands towns that are seeking sand to restore local beaches indicates the critical importance of sand movement in this area.

The dynamic environment of Nantucket Sound also requires that greater attention be paid to elements of the project design. Wind-driven and tidal currents that are likely to cause scour below the proposed burial depth of the cables. Exposed cables pose a significant hazard to fishing and navigation. The proponent should generate detailed site-specific oceanographic models to accurately characterize likely scour so that the appropriate burial depth can be determined. Likewise, the scour mats proposed for installation should be evaluated in light of the conditions that they would be subject to in Nantucket Sound. The DEIS does not provide data on the performance of these mats at Cape Wind's test tower, which could be helpful in determining if these structures are effective and whether there are any adverse impacts associated with them.

Fisheries

Recommendation: A shellfish survey that accurately characterizes the resource should be developed and conducted. Resource characterizations developed from state and federal finfish data should be reworked in consultation with the fisheries agencies to accurately represent conclusions that can be drawn from the existing data sets. Commercial and recreational shellfishing and finfishing effort should be characterized by methods that proved an accurate assessment of existing uses. For the project area and at least one alternative site, the resource and use characterizations, assessment of impacts, and site comparisons should be reevaluated using accurate data.

The DEIS assessment of commercial and recreational shellfisheries is based on broad-scale landings data and anecdotal information and does not provide sufficient detail to assess impacts associated with the construction of the project. The DEIS appears to rely on Massachusetts Division of Marine Fisheries (DMF) research trawl data, which is intended to gather information on finfish and is an inappropriate method to assess shellfish abundance. Therefore, the DEIS

lacks the data necessary to evaluate shellfish resources in the project area. A better way to assess the potential impacts to this resource is to conduct targeted resource surveys assess the distribution and abundance of commercially and recreational valuable shellfish species, in addition to non-target shellfish species. The targeted resource surveys should be designed in coordination with DMF. Data from the survey(s) will provide the means to identify potential impacts associated with the project and measures to avoid and minimize impacts to shellfish resources.

An evaluation of the impacts to commercial and recreational fishing should be based on an understanding of the existing use of the proposed project site for these purposes. For commercial fishing, this should include an assessment of the techniques used, including mobile gear fishing (e.g., trawls and shellfish dredge), stationary gear (e.g., pots / traps), and hook and line, to allow for an understanding of any impacts to fishing caused by the turbine structures and any associated use exclusion zones that may be necessary. The data from the DMF was used to characterize general characteristics of finfish and decapod crustacean resources throughout the sound. While these data are valuable for understanding large-scale, Sound-wide trends in resources, the DMF resource survey does not adequately survey site-specific or annual (year-round) characteristics of finfish and decapod crustacean ecology. No site-specific data was presented in the DEIS to supplement the DMF data to better describe ecological characteristics of the project area. This lack of site-specific reduces the utility of the assessment of baseline conditions for understanding potential changes associated with the project (e.g., alteration of seafloor and water column habitat and addition of hardened structure).

Alternatives Analysis

Recommendation: For the preferred and South of Tuckernuck alternatives, develop alternative layouts for the WTGs that minimize the project footprint. Provide additional information regarding the constructability of the South of Tuckernuck alternative based on contemporary and imminent WTG technology. Compare the South of Tuckernuck and preferred alternatives under alternative scenarios that apply differently weighted criteria, including impact to sediment transport and near and far-field effects to coastal processes and landforms, impact to biological resources, visual effects, and constructability.

The DEIS did not consider alternative wind farm array configurations that may reduce impacts. Based on the design principles articulated in the DEIS, the approximately 28 square mile footprint used for the assessment of the alternatives appears to be twice the size necessary for an offshore wind farm with the proposed power output. The DEIS indicates that the applicant may have proposed a larger-than-necessary spacing between turbines in an attempt to reduce impacts to navigation, fishing, and ecological resources, and to avoid wind turbulence caused by upstream turbines. However, as noted earlier, it is not clear whether the large footprint proposed, the size of which is due primarily to the spacing between turbines, has greater or fewer impacts on the environmental resources and uses of Nantucket Sound than would a comparable facility with a smaller footprint.

A review of technically feasible layouts using a smaller footprint should be performed. This additional analysis should include:

* a 454 MW facility with a smaller footprint
* a reduced scale and/or phased-in facility
* an alternative with two or more arrays that total 454 MW

The purpose of this analysis is to allow for an evaluation of the environmental impacts of these small-footprint alternatives compared to the alternatives presented in the DEIS.

A key siting criteria used in the DEIS in the evaluation of alternatives sites was water depth. While the DEIS evaluated the South of Tuckernuck site as a deeper-water alternative for comparison purposes, it is not clear whether the engineering and economic difficulties attributed to this alternative remain valid. Advances in the design and engineering of offshore wind farms has made construction of these facilities in waters deeper than 50 feet a feasible option for other projects, and a more thorough evaluation of a deeper water site is warranted.

Additional information about the constructability and environmental impacts of a deeper water alternative should be presented, using the South of Tuckernuck alternative as an example. Deeper water sites may have advantages associated with higher wind speed, and while there may be more direct impacts due to the size of the foundation structures needed, these may have benefits that can offset or mitigate such impacts. For example, a deeper water alternative may have less significant impacts to the sediment transport system within Nantucket Sound. Also, a deeper water alternative may reduce visual impacts and reduce risks to navigation.

Avian

Recommendation: Conduct additional surveys of important bird populations in order to understand behavioral and usage patterns so that impacts can be minimized. Develop a mitigation plan for offsetting unavoidable impacts.

The DEIS does not adequately characterize the presence or behavior of Long-tailed Ducks in Nantucket Sound. The DEIS acknowledges the large evening roost of Long-tailed Ducks in Nantucket Sound and an inability to quantify and locate the roost precisely due to the crepuscular nature of the species' activities. The transect sampling procedures employed to characterize this resource are inappropriate as a methodology for documenting a roost of this type. An appropriate methodology should be developed in concert with MassAudubon and US Fish & Wildlife to document the resource and assess potential impacts from the WTGs.

While the DEIS states that there will be no long-term population impacts from a low level of avian mortality, it will add to the cumulative impacts from all of the other sources of avian mortality. Several species of seabird are in strong decline, so even minimal mortality could have serious consequences for the population. If one grebe were killed per year (out of the observed approximately 300 found using the Horseshoe Shoals area in the surveys), then the impacts could be significant for this declining group of seabirds. Since it appears that further mitigation for avian mortality at the turbines is unlikely to be achievable, mitigation should be designed to significantly enhance breeding activities to offset mortality. Accordingly, an appropriate element of overall project mitigation would be the establishment of an ongoing fund to support the acquisition and permanent protection of breeding bird habitat.

Visual

Recommendation: Develop a more objective method of analyzing visual impacts of the project

As characterized by the DEIS, the current view of the Nantucket Sound in the vicinity of Horseshoe Shoals is one of a large expanse of open water that offers a characteristic New England seascape framed by the shore of Cape Cod, Nantucket,a nd Martha's Vineyard. The construction of the proposed windfarm will clearly change the character of this view.

The DEIS addressed the visual impact of this project by providing a series of photo renderings that simulate, using computer modeling techniques, both day and night views of the project from representative "viewpoint locations" around Nantucket Sound, all on historic properties. This collection of photo renderings provides a useful starting point for an assessment of visual impact. It demonstrates, for example, that virtually all of the turbine towers will be visible from shoreline vantage points up to 14 miles distant from the facing perimeter of the project site, with "the greatest Project visibility and visual contrast expected to occur at distances of less than 8 miles, within which all the WTGs will be visible within the field of view....[and] the grid pattern of the turbine layout will be also be visible..." Beyond this distance, project structures are characterized as becoming more obscure with certain of the more slender components, such as rotor blades, difficult to see.

With respect to judging the significance of the visual impacts identified in the respective simulations, the DEIS appears to rely primarily on the results of a limited Visual Impact Assessment (VIA) required by the federal National Historic Preservation Act. There is no apparent attempt to employ a broader framework for evaluation, with the only additional discussion consisting of a brief statement to the effect that the observation of greatest impact at 8 miles or less is "consistent with European studies that indicate a distance of 9.3 miles may be the maximum limit of visual significance along the coast and within a seascape (Hill et al., 2001)." Inspection of the work cited, however, reveals that the term "limit of visual significance" was utilized in a different context, simply to describe the distance to the horizon as seen from a landside elevation of approximately 20 feet.

As a more appropriate indicator of significance than a simple distance cutoff, the visual impacts analysis should focus instead on two key variables: how much of the overall seascape field of vision is occupied by wind farm structures at each viewpoint, and how much shoreline is within the basic categories (near-field, mid-range, and far-field) into which the photo renderings logically fall. Further, it appears that some additional photo simulations may be necessary to provide a more thorough representation of the viewing experience that will exist under varying light conditions throughout the day, for each of the basic distance categories. This information will allow for additional objective analysis of the visual effects the proposed project is likely to have on the uses and resources of the Massachusetts coastal zone.

Water Quality

Recommendation: Develop appropriate contingency plans to minimize the impacts of a release of dialectric fluid.

The DEIS does not provide specific information regarding the potential impacts to water quality and marine resources of a discharge of some or all of the 40,000 gallons of dialectric fluid that will be contained in the transformers on the electric service platform. Similarly, the DEIS

generally describes but does not provide several required pollution prevention/remediation plans, including an Oil Spill Response Plan, Spill Prevention Control and Countermeasure Plan, Stormwater Pollution Prevention Plan, and an Operations and Maintenance Plan. Detailed contingency plans should be prepared so that appropriate measures can be implemented to minimize impacts related to any accidental releases. At a minimum, the public should have the opportunity to review outlines of plans with more detailed narratives as part of the NEPA documents.

Archaeological Resources

Recommendation: Minimize impacts to underwater archaeological resources by conducting detailed surveys of these resources or moving project elements away from sites likely to contain these resources.

Field surveys have revealed areas in the eastern portion of the Horseshoe Shoals site that exhibit moderate to high sensitivity for containing prehistoric archaeological deposits, in the form of intact ancient landscapes, or paleosols, that could contain archaeological materials from Native American settlements. Pond Weed seeds recovered from a relic shallow freshwater wetland pond had a radiocarbon date of 10,100 before present. To avoid construction activities at these locations, the locations of WTGs G3, G4, H9, 14, 15 and L4 and seven sections of the interconnect cable grid should be relocated to avoid construction activities at these locations. If avoidance is not possible, further archaeological survey should be conducted using vibratory coring and intensive subsurface testing to determine the presence or absence of Native American deposits.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF THE
REGIONAL ADMINISTRATOR

004974

February 24, 2005

Colonel Thomas L. Koning, District Engineer
US Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
Attn: MEPA Office EOEA No. 13061
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Corps of Engineers' Draft Environmental Impact Statement/Report, Cape Wind Energy Project

Dear Colonel Koning and Secretary Herzfelder:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, we have reviewed the Draft Environmental Impact Statement (DEIS) for the Cape Wind Energy project in Nantucket Sound off the coast of Massachusetts.[1]

The DEIS details Cape Wind Associates, LLC's proposal to install a wind-powered generating facility in Nantucket Sound consisting of 130 wind turbine generators (WTGs), an electrical service platform (ESP), and 102 miles of transmission cables to connect the turbines to the service platform and to existing infrastructure on land. Each WTG will be 426 feet tall at its highest point and the ESP will extend 39 feet above the water surface. The wind turbines will occupy 24 square miles of Nantucket Sound and will be 4.7 miles from the closest point of land (Point Gammon on the mainland). The bathymetry of Nantucket Sound is irregular with charted water depths ranging between one and 70 feet. The project will be capable of producing an average annual output of approximately 170 megawatts (MW). For perspective, the capacity of the 18 natural gas power plants that were brought on line in New England between January 2000 and December 2002 ranged from 86 MW to 528 MW.

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[1] This letter serves as our comment on the DEIS, the Draft Environmental Impact Report prepared under the Massachusetts Environmental Policy Act, and the Corps of Engineers' public notice for a Rivers and Harbors Act Section 10 permit for the project.

This large-scale renewable energy generation facility would help the region meet numerous state and federal public policy goals focused on renewable energy production and air quality. In our scoping letter we identified the generation of electricity from fossil fuels as the single largest industrial source of air pollution in New England. Power plant emissions have contributed to unhealthy air and other degradation of the environment, including acidification of lakes and streams, mercury deposition, visibility impairment, greenhouse gas emissions, and excessive nitrogen loading to our ecosystems due to power plant emissions. In addition, fossil fuel burning power plants can cause environmental harm from their withdrawal of cooling water from, and their discharge of heated water to, the region's waterways. Consequently, EPA New England strongly supports an increase in the amount of electricity generated in the region from renewable resources such as wind.

EPA participated in the preparation of the DEIS through many interagency meetings and by providing comments during scoping and on the Administrative Draft Environmental Impact Statement (ADEIS). Our scoping comments addressed the project's purpose and need, called for a thorough consideration of alternatives and impact assessments across a wide range of issues, and recognized the importance of public trust issues in the process and the precedent setting nature of the project. We also specifically requested the development of an environmental baseline for purposes of measuring the project's impacts and developing a mitigation and monitoring program.

We recognize that preparing the EIS for this project has required considerable effort on the Corps' part. Over the past several years the Corps has consulted with federal, state and local agencies and the public throughout the process. However, many of the concerns raised by EPA and other cooperating agencies about the project, the consideration of alternatives, and the analysis of impacts have not been addressed in the DEIS. We do not believe that the DEIS provides enough information to fully characterize baseline environmental conditions, the substantial environmental impacts of the proposed project, and alternatives that avoid or minimize those impacts. Without this information we do not believe an adequate mitigation and monitoring plan can be developed, nor can a decision be made as to whether the project is environmentally acceptable and in the public interest.

For the reasons discussed above and in the attachment, EPA has rated this DEIS as "Category 3–Inadequate" in accordance with EPA's national rating system, a description of which is attached to this letter. In order to address the issues raised in this letter, we recommend that the Corps prepare a supplemental DEIS. We are ready to continue to participate on the cooperating agency team to provide additional input, as necessary, to help the NEPA analysis for the project

advance. Please feel free to contact me or Timothy Timmermann of the Office of Environmental Review at 617/918-1025 if you wish to discuss these comments further.

Sincerely,

Robert W. Varney
Regional Administrator

Enclosure

cc:

Governor Mitt Romney
Senator Edward Kennedy
Senator John Kerry
Representative William Delahunt
Michael Bartlett, United States Fish and Wildlife Service
Andrew Raddant, United States Department of Interior
Jack Terrill, National Marine Fisheries Service-Northeast Region
Margo Fenn, Cape Cod Commission
Greg Watson, Massachusetts Technology Collaborative
Jim Gordon, Cape Wind

Additional Detailed Comments
Corps of Engineers DEIS for the Cape Wind Energy Project
February 24, 2005

Alternatives

An offshore wind power facility of the scale of the Cape Wind project is without precedent in the United States. It is proposed at a time when there are public policy initiatives in place at the state and federal levels which call for increased reliance on renewable energy generation. While we agree with these initiatives we also believe that any project must undergo a rigorous alternatives analysis required by NEPA. In determining the scope of alternatives to be considered, the emphasis is on what is 'reasonable' rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.

The range of reasonable alternatives is determined by the underlying project purpose and need as defined by the Corps. The DEIS states that the purpose and need is "to provide a utility-scale renewable energy facility providing power to the New England grid." The DEIS also defines "utility-scale" facilities as those with generating capacities that range between 200 and 1,500MW. As we have indicated in the past, the "utility-scale" component of the purpose and need definition, as it has been defined in the DEIS, prevents the consideration of smaller commercial energy projects that taken singly or combined could provide renewable energy for use in New England while also helping to satisfy the various state legislative mandates such as the Renewable Portfolio Standards in MA and CT, and commitments such as those in the New England Governors and Eastern Canadian Premiers Climate Action Plan. While we support consideration of the applicant's proposal as it is currently defined we believe that the purpose and need should not constrain the EIS so that evaluation of smaller alternatives is precluded.

The question of reasonableness and viability of smaller scale alternatives, when viewed singly or in combination, requires a transparent presentation of project economics because smaller scale alternatives have been rejected as a result of the applicant's assertions about what is economically feasible. The applicant has asserted that projects smaller than the proposed project are not economically feasible because of the upfront infrastructure costs. To the best of our knowledge no independent review by the Corps of whether smaller scale projects (e.g., projects 25%, 50%, 75% of the size of the applicant's proposal) are economically feasible has been conducted. An examination of smaller scale alternatives with correspondingly smaller impacts and use of public lands could sharpen the EISs presentation of both benefits and tradeoffs associated with the Cape Wind proposal. Throughout the development of the EIS EPA has requested that this be provided, and we continue to believe it is necessary given the potentially significant impacts of a project as large as the Cape Wind proposal.

No Action Alternative

We appreciate the acknowledgment that "alternative renewable energy technologies will continue to evolve and develop" even in the absence of the applicant's proposal. We find no foundation, however, for the statement that "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, at a comparable size and scale of that proposed by the Applicant, will not advance significantly." This statement is not supported, and does not reflect the significant political and industry attention focused on furthering offshore wind energy development. The lack of comprehensive ocean policy, regulations, and leasing provisions may be more of a barrier to future development and private investment than the success or failure of one or more projects proposed in Nantucket Sound.

The No Action alternative should include a discussion of the status of other renewable energy projects (solar, small hydro, biomass, land based wind, etc.) and how they would impact the regional situation for RPS compliance.

Project Impacts

Our scoping comments called for the EIS to establish a baseline from which impacts of the project alternatives can be measured. The same baseline information should then also be used to provide the benchmark that is essential for any monitoring program. Throughout the process we also emphasized the need for the EIS to support any conclusions about potential environmental impacts with relevant information/data so that all of the alternatives can be compared with one another based on objective information. We do not believe the current analysis does this in several key areas highlighted below.

Aquatic Impacts

Conversion of habitat: The placement of 130 monopiles in Nantucket Shoals will create approximately 4 acres of hard substrate surface area, coupled with the loss of 3.21 acres of soft substrate. Though the acreage of hard substrate from the project footprint seems relatively small compared to the total project area, ecological effects of the patches of hard substrate will extend beyond the footprint. The monopiles will function essentially as patch reefs and as a result will support an array of encrusting invertebrates and fish that prefer hard substrate. Additionally, they will provide stationary foraging opportunities for pelagic fish species, sea turtles and sea ducks.

The DEIS cites two studies that suggest that manmade structures placed in the marine environment can benefit fish species that have demersal, philopatric, territorial or reef-obligate life histories. The DEIS states that the fish aggregating effect will be for a relatively small area around each structure. This is statement is factually incorrect. The majority of the organisms that will ultimately comprise the community around each one of the structures will likely recruit there from the larval phase. Most of these larvae will be generated literally miles from their final recruitment location. Additionally, pelagic species that may take advantage of the new foraging opportunities cover great distances, and alterations to their normal movement and foraging patterns cannot be considered a small areal impact. Ultimately, the DEIS provides no support for

its assertion that the aggregating effect is relatively small. This question of scale is one of the most critical for the assessment of changes to the aquatic environment posed by this project.

The DEIS concludes that the cumulative impact of these 130 patch reefs is insignificant by saying they are small and far apart and thus the general community structure will not change. Again, the document provides no support for this assertion. The distance between structures (1/3 to1/2 of a nautical mile) is well within the range of travel for many pelagic fish, sea turtles and sea ducks. Additionally, it is certainly well within the range that larvae produced at one monopile could recruit to another monopile. Thus, there almost certainly will be some interactive effect, between the monopiles, but the DEIS does not provide a full assessment of this effect.

Temporary construction impacts/mitigation: The DEIS describes much of the construction related impacts as insignificant because they are temporary. Impacts to the bottom will occur over 1400 acres and will have the potential to disrupt/alter normal spawning, migration and foraging of a number of species. Traditionally, to minimize impacts to these important life functions for aquatic species, the Corps has required adherence to "time of year" windows which allow marine construction to proceed, while still being protective of critical life processes for a variety of marine resources (for example, winter flounder and shellfish spawning). Generally, these windows will direct work to occur during the winter months, but they are determined by the types of resources present at the project location. The construction of this project is scheduled to occur in the late summer/fall time frame, and thus would represent an impact occurring during a time of year when most marine construction is typically avoided to protect resources (for example, shellfish spawning and winter flounder early life development).

Recently, in Massachusetts Bay, Duke Energy constructed the Hubline natural gas pipeline that traversed 28 miles of seafloor. The Hubline project was subject to time of year construction windows and habitat restoration efforts. We expect that the work to install 102 miles of cable associated with the Nantucket Shoals site will result in impacts that also warrant the development of a time of year restriction and a habitat restoration program. We urge the Corps to work with the participating state and federal agencies to develop the restriction and restoration programs, to present them in the EIS and incorporate both into any permit for a project in Nantucket Sound. We recommend that the EIS describe how the time of year restrictions would alter Cape Wind's current proposed construction schedule and discuss the likely effectiveness of the time of year restriction in protecting marine resources.

Threatened and endangered species: The DEIS provides little site specific data on the use of Nantucket Shoals by threatened and endangered sea turtles (including the loggerhead, Kemp's ridley and leatherback) and other marine mammals. In addition, there is little support for the DEIS' conclusions that the construction and operation of the wind farm will not negatively affect sea turtles or marine mammals. The aggregation of fish and the proliferation of blue mussels and crabs around each structure will serve as an enticement to sea turtles and fishermen alike. Thus, commercial trawlers may be more inclined to trawl near these structures and charter boats and

recreational fishermen will also likely make them destination spots. This focused fishing effort and boat traffic (including vessels to provide maintenance to the structures) may only serve to increase the risk of boat collisions and/or impacts from fishing gear to sea turtles and marine mammals. We recognize that the biological assessment required under the Endangered Species Act will address these issues. We recommend that the EIS continue to incorporate the biological assessment in the EIS and that it address this potential impact more thoroughly.

Eelgrass: The DEIS claims that the route of the transmission line was chosen to avoid impacts to submerged aquatic vegetation, primarily eelgrass. The project proponent used data from the Mass GIS website on statewide eelgrass distribution and supplemented that with their own consultant's survey in July 2003. Information from this survey is not presented in the DEIS. At a minimum, a map detailing the transmission line route with the vegetation mapped by the consultant and a discussion of the methods used should be provided.

The DEIS states that a pre- and post-construction eelgrass survey will be conducted to determine if eelgrass is lost during construction. The DEIS states that the closest the transmission line comes to existing eelgrass is 70 feet. It has been EPA's experience in a large number of projects that this is not a sufficient buffer distance to assume that no impact will occur. Eelgrass is very sensitive to changes in light, thus it is not unusual to see impacts well outside the footprint of projects that may be causing sediment resuspension. Additionally, distances on the order of tens of feet are well within the normal variability associated with construction in the marine environment. To minimize impacts from construction vessels to eelgrass, EPA suggests that the project proponent mark off the edge of the eelgrass meadow with buoys and implement a "no wake" zone for construction vessels for 200 feet from the edge of the meadow. EPA strongly urges the project proponent to work out the scope of these eelgrass surveys with the state and federal resource agencies before they are conducted, so there will be no disagreements on the determination of impacts and subsequent required mitigation. It will be important for the applicant to demonstrate that impacts to eelgrass have been avoided and minimized before a compensatory mitigation plan for unavoidable impacts is developed. EPA would strongly recommend a Before After Control Impact (BACI) design, which has been implemented for other recent projects (Hubline, Golden Anchor marina, Nantucket electrical cable line).

Monitoring: In Massachusetts, projects that have the potential to impact large areas of the marine environment have typically been required to conduct comprehensive monitoring to assure that large scale changes are not occurring. For example, the Massachusetts Water Resources Authority (MWRA) has a large monitoring program for the Metropolitan Boston Area's sewage discharge due to its potential to impact a large spatial area. EPA has also required substantial monitoring programs for power generating facilities that use once-through cooling water and discharge waste heat to the marine environment. Finally, the Corps in consultation with EPA and other federal and state resource agencies, required substantial monitoring for the Duke Energy Hubline natural gas pipeline project. In the case of the outfall and cooling water discharge examples, the activities represent ongoing sources of impact to the marine environment and as a result the monitoring plans are essentially permanent. The Hubline monitoring protocol was

designed to examine impacts to multiple habitat types over a large area for a finite period of time. In addition, it was intended to look at the recovery of habitats and determine if additional compensatory mitigation should be required. The impact analysis for construction of the Hubline was estimated to result in 5400 acres of disturbance over 28 linear miles. The Cape Wind project is expected to result in 1400 acres of impact over 72 linear miles. Although the Cape Wind project would affect less acreage, nevertheless it is a project of significant size and will require a substantial monitoring and mitigation plan.

Because the applicant's proposed project will include a large suite of temporary impacts combined with a set of permanent structural changes from the monopiles, the challenge will be to devise a monitoring program that effectively addresses both of these situations quantitatively. We recommend that the Corps in consultation with the resources agencies form a technical advisory group (similar to the one put together for the MWRA) to develop the necessary monitoring plan. The components of this monitoring plan should address recovery of impacted habitats and the change in use of the project site by threatened and endangered species and finfish.

Air Quality and Public Health Impact Analysis

While EPA agrees with the DEIS that the Cape Wind project would result in public health benefits and air quality improvements by reducing emissions from other fossil fuel based energy sources, EPA believes that the analysis presented in the DEIS to characterize these benefits has not been done in a manner that will most accurately characterize those benefits.

Specifically, in Sections 5.15, 5.16.3, and 5.16.4, the DEIS provides estimates of air pollution reductions associated with the proposed project. One set of estimates was based on comparisons of emissions from two particular power plants in the region and the others were based on emission rates from the New England Power Grid. However, those emission rates were calculated retrospectively using marginal emission rate data from 2000. This method does not provide a realistic picture of the future benefits of Cape Wind or any other renewable energy project.

EPA suggests that the Corps revise its air quality analysis to reflect the following:

- It should be prospective in nature and based on a dispatch model that integrates realistic assumptions about conventional and renewable energy growth, electricity imports/exports, and fuel prices to project emission benefits in the years that the project would be in operation. A study using this methodology entitled "Electric Sector Emissions Displaced due to Renewable Energy Projects in New England" was conducted by LaCapra Associates for the Massachusetts Technology Collaborative in February 2003.

- It should analyze the potential air quality benefits within the framework of the mandated emission caps on SO_2 and NO_x that have been established for the electric generation

sector. This analysis should examine potential air quality benefits within the construct of these cap and trade programs that addresses applicability differences between the SO_2 and NO_x programs, the seasonal nature of the NO_x program, and emission setasides in the NO_x program for renewable energy projects in certain states, and whether the existence of such cap and trade programs would negate any potential benefits associated with the Cape Wind Project.

- It should address potential reductions of pollutants not included in the cap and trade programs such as particulate matter and mercury.

- It should include the project's prospective impact on regional CO_2 emissions and how that would contribute to the Administration's goal of reducing greenhouse gas (GHG) intensity by 18% by 2012, and the New England Governor's Conference goal of reducing CO_2 emissions to 1990 levels by 2010 and 10% below 1990 by 2020.

- Finally, EPA suggests that any air quality analysis include potential local impacts on the Cape and the Islands.

Avian Impacts

In our comments throughout the DEIS development (most recently in comments on the ADEIS in June 2004) we urged that the DEIS clearly indicate what technical studies were requested by expert agencies, and, if those agencies' advice was not followed, explain the basis for the decision. The DEIS lacks a description of how agency input was incorporated into the analysis, especially input from the United States Fish and Wildlife Service (USFWS) pertaining to field study designs with respect to how to establish baseline conditions and to evaluate project impacts. We continue to believe that at a minimum, the DEIS should explicitly note areas where recommendations of the resource agencies and other avian experts were not followed.

The DEIS at page 5-102 explains that agencies were consulted. While it is accurate to report that the agencies were consulted, the DEIS leaves the impression that agency input was fully integrated into the data collection and impact analysis components of the DEIS. This deficiency should be corrected and the analysis revised and supplemented to incorporate the input of the USFWS and other experts.

In general, we believe that the efforts to characterize avian baseline conditions, and subsequently impacts from the proposed project, fall short of the specific recommendations of the USFWS, and other recognized avian experts. This shortcoming, especially with respect to the collection of site specific data to characterize bird use throughout the year and in a number of conditions (at night, in bad weather, etc.) at the project site and pertaining to the estimation of how many bird deaths will result each year due to collisions with wind turbines, must be addressed with supplemental study and analysis before any comprehensive public interest evaluation can be completed by the Corps.

We note that the USFWS requested in numerous interagency meetings that the avian study include three years of remote sensing (radar) to collect data to fully characterize the risk turbines might pose to birds. Because the EIS approach to date has not included data collection consistent with the USFWS input it is difficult to know what impacts will be caused in the rotor swept area under a variety of conditions. Instead of three years, the radar data collection took place for two one month periods in the spring and fall of 2002 and the data was then extrapolated to predict impacts.

In addition, data collection techniques have resulted in discrepancies. For example, we remain concerned about the discrepancy between the number of targets observed in the rotor swept zone by radar (127,697) and the number of birds counted (365) in the rotor swept zone during 46 aerial surveys from 2002 to 2004. Additional remote sensing appears warranted to adequately characterize baseline conditions and to predict potential avian impacts from the proposed project.

In other areas of the avian impact analysis comparisons are made to other sources of bird mortality including collisions with buildings, towers and hunting. As we stated in our comments on the ADEIS, we are not confident that such comparisons are relevant unless those comparisons are offered as a means to characterize cumulative impacts or to suggest that the project will prevent that source of mortality. We do not believe that the latter is the case. Moreover, such descriptions may be relevant to understand the sources and magnitude of threats to birds but they do little to specifically answer questions about what additional impacts to birds (through death, displacement by barrier effect, harassment, etc.) can be expected from the project.

The analysis also lacks specific empirical data to help address the impact of the project to birds during bad weather, early morning, and at night. Supplemental analysis aimed at providing site specific temporal and spacial remote sensing data on avian use of the project airspace, specifically the rotor swept area, would help to characterize avian impacts during inclement weather and at night. Moreover, we believe that more comprehensive analysis of the potential for the turbine lighting to attract and kill birds of various species should be provided.

Public Interest Review

The Corps has indicated that its decision on the Section 10 permit will be based on a public interest review which will weigh the project's benefits against its impacts from a public perspective. One of the most important impacts that EPA and others have requested be considered in this review is the impact of siting a private power generation facility on 24 square miles of the Outer Continental Shelf (OCS), land held in public trust under federal jurisdiction. Since the scoping process, increasing public concern has focused on the limitations of the Rivers and Harbors Act Section 10 authority and the lack of an established process through which the federal government can effectively address a number of precedent setting issues associated with the proposed project. This "regulatory gap" includes issues such as the lack of existing policy and regulation dictating which agency has authority over siting issues, whether competition should exist for development sites, how and whether easements, leases or fees should be required

for the use of public property and its resources by a private entity, and what sort of requirements should be imposed to ensure proper site restoration and management after the useful life of the project ends.

We recognize that the Corps is not responsible for filling the regulatory gap. However, we believe that under NEPA, the Corps has an obligation to ensure that the EIS fully addresses this project's impacts on the federal government's interest in the OCS land which would be occupied. The Corps public interest review will require consideration of this issue, but the DEIS provides no specific information to describe how the Corps will evaluate and weigh the numerous issues as part of the decision-making process. The EIS should be expanded to fully explain how the public interest review factors will be applied.

Jurisdictional Issues (drying Rocks)

In June of 2004 we suggested that developing information regarding so-called "drying rocks" should be reflected in the DEIS analysis. We offered that a comprehensive discussion of this emerging issue would include figures showing the drying rocks in question, how they might change the state/federal boundary, and what changes in jurisdiction/authority over a portion of one or more of the project configurations in Nantucket Sound might be expected. Based on our review, we could not find any discussion of this issue in the DEIS. The recent announcement by the Massachusetts Highway Department that the limits of the Commonwealth's jurisdiction will expand, and the ramifications of this shift, should be reflected in any subsequent NEPA analysis for the project.

Process

We have a number of process suggestions we believe would improve the analysis under NEPA.

Third Party Agreements

We recommend that the Corps should develop specific third party agreements with the consultant team responsible for the generation of the supplemental analysis required to respond to input from federal, state and local agencies and the interested public. The agreements should specifically describe the Corps management responsibilities over the consultant team and should limit the applicant's involvement in the environmental analysis in the future to funding the third party consultant's efforts. We suggest that the Corps review the third party arrangements the United States Forest Service utilizes as one example of how this issue could be addressed.

Consideration of Input from Agencies and the Public

The Corps' efforts to respond to comments and provide supplemental information necessary to understand the environmental impacts of the project, and to conduct a complete public interest review, should include a process to address the input from agencies and the public. The current effort lacks an explanation of how input from agencies and the public was considered and addressed. In the future, in those instances where the advice is not followed the EIS should

explain why a different approach is followed.

Other

- We suggest that the content of Appendix 3-E be expanded to include copies of the peer reviewers comments, not just a summary of those comments. This section should also include a copy of the assignment and any supporting information the peer reviewers were provided at the time the work was requested.

- We suggest that introductory text could be added to each appendix to indicate whether or not the Corps established the scope of the analysis performed in each instance.

Summary of Rating Definitions and Follow-up Action

Environmental Impact of the Action

LO--Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC–Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate
EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3–Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.