

Appendix 5.10-E

Regulatory Correspondence



**The Commonwealth of Massachusetts**  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

May 19, 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. COE #199902477.  
EOEA #12643. PAL #1485.01.

Dear Ms. Godfrey:

Staff of the Massachusetts Historical Commission have reviewed the report, *Marine Archaeological Reconnaissance Survey, Cape Wind Energy Project, Nantucket Sound, Massachusetts*, prepared by the PAL. MHC looks forward to receiving from the PAL one (1) additional copy of the final report, and a diskette with the report bibliographic data and archaeological abstract. MHC has reviewed and concurs also with the conclusions and recommendations of the Massachusetts Board of Underwater Archaeological Resources (BUAR), as outlined in the BUAR's letter of May 11, 2004.

The archaeological investigations located areas within the project that appear to be preserved landforms of formerly exposed uplands at the edges of freshwater wetlands. If ancient cultural materials are located within these preserved landforms, it is likely that they would date to the Middle Archaic Period, ca. 7,500-5,500 years ago. Well-preserved organic material identified in vibratory cores include wood, plants, and insects; charcoal and stone fragments in these core samples cannot be conclusively identified as deriving from human activities. Yet, the environmental characteristics of these landforms suggest that these areas would have been highly attractive to resident Native American populations; if cultural resources are in fact present, the well-preserved organic materials would add a significant dimension to understanding the environments of ancient settlement and land use.

Three targets (PAL 03-01, 03-02, and 03-03) have the characteristics to likely represent historical period shipwrecks. It is not known what type or age of vessels might be present.

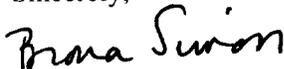
If the report recommendations, as also outlined with the BUAR's letter, can be implemented, then the Corps should develop a suitable proposal to implement the recommendations as part of the project planning documents to ensure that any National Register-eligible archaeological resources are not adversely affected.

220 Morrissey Boulevard, Boston, Massachusetts 02125  
(617) 727-8470 • Fax: (617) 727-5128  
[www.state.ma.us/sec/mhc](http://www.state.ma.us/sec/mhc)

MHC concurs with the report recommendations that further archaeological investigations are required if the archaeologically sensitive portions of the project impact areas cannot be avoided. MHC would at that time be willing to assist in developing an appropriate scope and methodology for further archaeological investigations, in consultation with the BUAR.

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

Sincerely,



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

xc:

Kathleen Atwood, USACOE-NED  
Craig Olmstead, Cape Wind Associates  
Sarah Faldetta, ESS Group Inc.  
√Deborah Cox, PAL  
Victor Mastone, MBUAR  
Secretary Ellen Roy Hetzfelder, EOE/MEPA Unit (Attn. Arthur Pugsley)



# *The Commonwealth of Massachusetts*

*Executive Office of Environmental Affairs*

*251 Causeway Street, Suite 900*

*Boston, Massachusetts 02114-2119*

BOARD OF  
UNDERWATER  
ARCHAEOLOGICAL  
RESOURCES

Tel. (617) 626-1000

Fax (617) 626-1181

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

May 11, 2004

Deborah C. Cox, President  
Public Archaeology Laboratory, Inc.  
210 Lonsdale Avenue  
Pawtucket, RI 02860

Dear Ms. Cox:

The staff of the Massachusetts Board of Underwater Archaeological Resources has completed its review of the technical report entitled *Marine Archaeological Reconnaissance Survey, Cape Wind Energy Project, Nantucket Sound, Massachusetts* and offers the following comments on the report's findings and recommendations.

The Board is satisfied with the overall research design and methodology of the survey and the report's interpretation that the presence of heretofore undiscovered deposits of contextually intact paleosols, representing forest soils, fresh water wetlands and a shallow freshwater pond, suggests that ancient Native American submerged cultural resources could be present in several zones on the eastern side of the project study area. The Board concurs with the report's recommendation that the proposed locations of six WTGs (G3, G4, H9, 14, 15 and L4) and seven portions of the WTG-interconnect cable grid (between WTGs F7-G7, F9-G9, G2-G3, G3-G4, G4-G5, G9-H9, and I4-I5) should be redesigned as necessary to avoid construction activities where sub-bottom profiler reflectors were identified within the current project APE, buried less than 12 feet below the seafloor, in the vicinity of these identified paleosol deposits as defined by Figure 6-1. The Board concurs with the report's further recommendations that if avoidance of these archaeologically sensitive and potentially sensitive areas is not possible, then additional work should be conducted, including, but not limited to:

- vibratory coring of previously untested sub-bottom profiler reflectors within the area of high archaeological sensitivity, the project's area of potential impacts, and less than twelve (12) feet below the sea floor's surface to determine the presence or absence of archaeologically sensitive paleosols;

- analysis of paleosols in vibratory coring specimens to determine the presence or absence of ancient Native American cultural materials; and



-intensive marine archaeological survey, consisting of systematic subsurface testing using a methodology developed in consultation with the USACE and SHPO (including both the Board of Underwater Archaeological Resources and the Massachusetts Historical Commission), of the archaeologically sensitive areas with paleosols to determine the presence or absence of ancient Native American archaeological sites.

With respect to remote sensing targets 03-01, 03-02 and 03-03 detected through this survey, the Board is satisfied with the report's analysis that these anomalies exhibit moderate potential to represent historic submerged cultural resources (shipwrecks). The Board also concurs with the recommendation that the proposed WTGs and the WTG and WTG-ESP interconnect cables should be redesigned as necessary to avoid construction activities at the locations of these targets maintaining a minimum buffer zone of one hundred (100) feet in all directions around each target. If avoidance of these potentially archaeologically sensitive areas is not possible, the Board concurs with the report's recommendation that an intensive marine archaeological survey be conducted consisting of visual inspection, limited surface probing and testing by divers to determine the targets' sources and evaluate their potential historic significance.

The Board appreciates the opportunity to comment on this report. Should you have any questions regarding this letter, please do not hesitate to contact me at the address above, by telephone at (617) 626-1141 or by email at [Victor.Mastone@state.ma.us](mailto:Victor.Mastone@state.ma.us).

Sincerely,



Victor T. Mastone  
Director

VTM/dwt

Cc: Brona Simon, MHC  
Karen Adams, USACE  
Arthur Pugsley, MEPA  
Alexander Strysky, CZM



**The Commonwealth of Massachusetts**  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

April 22, 2004

Deborah C. Cox  
PAL  
210 Lonsdale Avenue  
Pawtucket, RI 02860

RE: Cape Wind, Terrestrial Survey Barnstable & Yarmouth. MHC #RC.29785 PAL #1485.01.

Dear Deborah:

Thank you for providing a copy of the final report prepared for the project referenced above. Please submit one (1) copy of a corrected Table of Contents, punched for spiral binding.

Additionally, please submit the items checked off below:



Original MHC inventory form.



Second copy of the final report (with corrected Table of Contents).



Two copies of the final report.



A copy of the bibliographic entry and abstract on a 3½" diskette.

Please submit these items as soon as possible so that we may update our files and incorporate the results of your investigation into MHC's inventory. Thank you in advance for your consideration. These comments are offered to assist in compliance with 950 CMR 70.

If you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Edward L. Bell".

Edward L. Bell  
Senior Archaeologist  
Massachusetts Historical Commission

P  
A  
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November 26, 2003

Brona Simon  
State Archaeologist  
Massachusetts Historical Commission  
220 Morrissey Boulevard  
Boston, Massachusetts 02125

Attn: Ed Bell

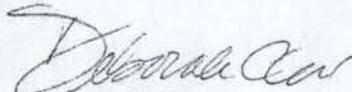
Re: Cape Wind – Terrestrial, Barnstable and Yarmouth, Massachusetts  
Intensive (locational) Archaeological Survey  
PAL #1485.01

Dear Ms. Simon:

Enclosed please find one copy of the technical memorandum entitled *Cape Wind – Terrestrial, Barnstable and Yarmouth, Massachusetts, Intensive Survey* for your review and comment. As you will note, no further archaeological investigation is recommended. A final report is being prepared for submission to your office.

If you have any questions or require further information, please do not hesitate to contact me at your convenience.

Sincerely,



Deborah C. Cox  
President

/kt

Enclosure

cc: Craig Olmstead, Cape Wind Associates (w/o encl.)  
Sarah Faldetta, ESS Group (w/o encl.)

210 Lonsdale Avenue  
Pawtucket, RI 02860  
TEL 401.728.8780  
FAX 401.728.8784



The Commonwealth of Massachusetts  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

PERMIT TO CONDUCT ARCHAEOLOGICAL FIELD INVESTIGATION

Permit Number 2595 Date of Issue September 23, 2003  
Expiration Date September 23, 2004

PAL is hereby  
authorized to conduct an archaeological field investigation pursuant to  
Section 27C of Chapter 9 of General Laws and according to the regulations  
outlined in 950 CMR 70.00.

Cape Wind Energy Alternative #1, Barnstable & Yarmouth  
Project Location

Brona Simon  
Brona Simon, State Archaeologist  
Massachusetts Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125  
(617) 727-8470 • Fax: (617) 727-5128  
www.state.ma.us/sec/mhc



September 18, 2003

Brona Simon  
State Archaeologist  
Massachusetts Historical Commission  
220 Morrissey Boulevard  
Boston, Massachusetts 02125

Re: Cape Wind Energy Project, Alternative #1  
Intensive (locational) Archaeological Survey  
PAL #1485, MHC #RC.29785

Dear Ms. Simon:

Enclosed please find an application for a permit to conduct an intensive archaeological survey. This application concerns the proposed Cape Wind Energy, Alternative #1 project area in Barnstable and Yarmouth, Massachusetts. The project area is located on the Hyannis and Dennis, Massachusetts quadrangle. We would like to begin investigations as soon as possible. Thank you for your time and attention to this matter.

If you have any questions or concerns please do not hesitate to contact Holly Herbster or me at your convenience.

Sincerely,

A handwritten signature in cursive script that reads "Deborah C. Cox".

Deborah C. Cox  
President

/kt

Enclosures

cc: Sarah Faldetta, ESS (w/encl.)  
Craig Olmstead, Cape Wind (w/encl.)

210 Lonsdale Avenue  
Pawtucket, RI 02860  
TEL 401.728.8780  
FAX 401.728.8784

950 CMR: DEPARTMENT OF THE STATE SECRETARY

APPENDIX B  
COMMONWEALTH OF MASSACHUSETTS

SECRETARY OF STATE: MASSACHUSETTS HISTORICAL COMMISSION  
PERMIT APPLICATION: ARCHAEOLOGICAL FIELD INVESTIGATION

A. General Information

Pursuant to Section 27C of Chapter 9 of the General Laws and according to the regulations outlined in 950 CMR 70.00, a permit to conduct a field investigation is hereby requested.

1. Name(s): Deborah C. Cox
2. Institution: The Public Archaeology Laboratory, Inc.  
Address: 210 Lonsdale Avenue  
Pawtucket, Rhode Island 02860
3. Project Location: Cape Wind Alternative #1 Route  
*see attached proposal*
4. Town(s): Barnstable and Yarmouth
5. Attach a copy of a USGS quadrangle with the project area clearly marked.  
*see attached*
6. Property Owner(s): NSTAR
7. The applicant affirms that the owner has been notified and has agreed that the applicant may perform the proposed field investigation.
8. The proposed field investigation is for a(n):
  - a. Reconnaissance Survey
  - b. Intensive Survey
  - c. Site Examination
  - d. Data Recovery

**B. Professional Qualifications**

1. Attach a personnel chart and project schedule as described in 950 CMR 70.11 (b).

**a. Personnel**

Principal Investigator(s): Deborah C. Cox  
Project Archaeologist(s): Anna Graves  
Field Crew: Mike Duffin  
Loren Millard

**b. Schedule**

Fieldwork: October 2003  
Laboratory: November 2003  
Report: January 2003

2. Include copies of curriculum vitae of key personnel (unless already on file with the State Archaeologist).

**C. Research Design**

1. Attach a narrative description of the proposed Research Design according to the requirements of 950 CMR 70.11.
2. The Applicant agrees to perform the field investigations according to the standards outlined in 950 CMR 70.13.
3. The Applicant agrees to submit a Summary Report, prepared according to the standards outlined in 950 CMR 70.14 by: March 31, 2004
4. The specimens recovered during performance of the proposed field investigation will be curated at:

The Public Archaeology Laboratory, Inc.  
210 Lonsdale Avenue  
Pawtucket, Rhode Island 02860

SIGNATURE

*Deborah C Cox*

APPLICANT(S)

DATE

*Sept 18, 2003*

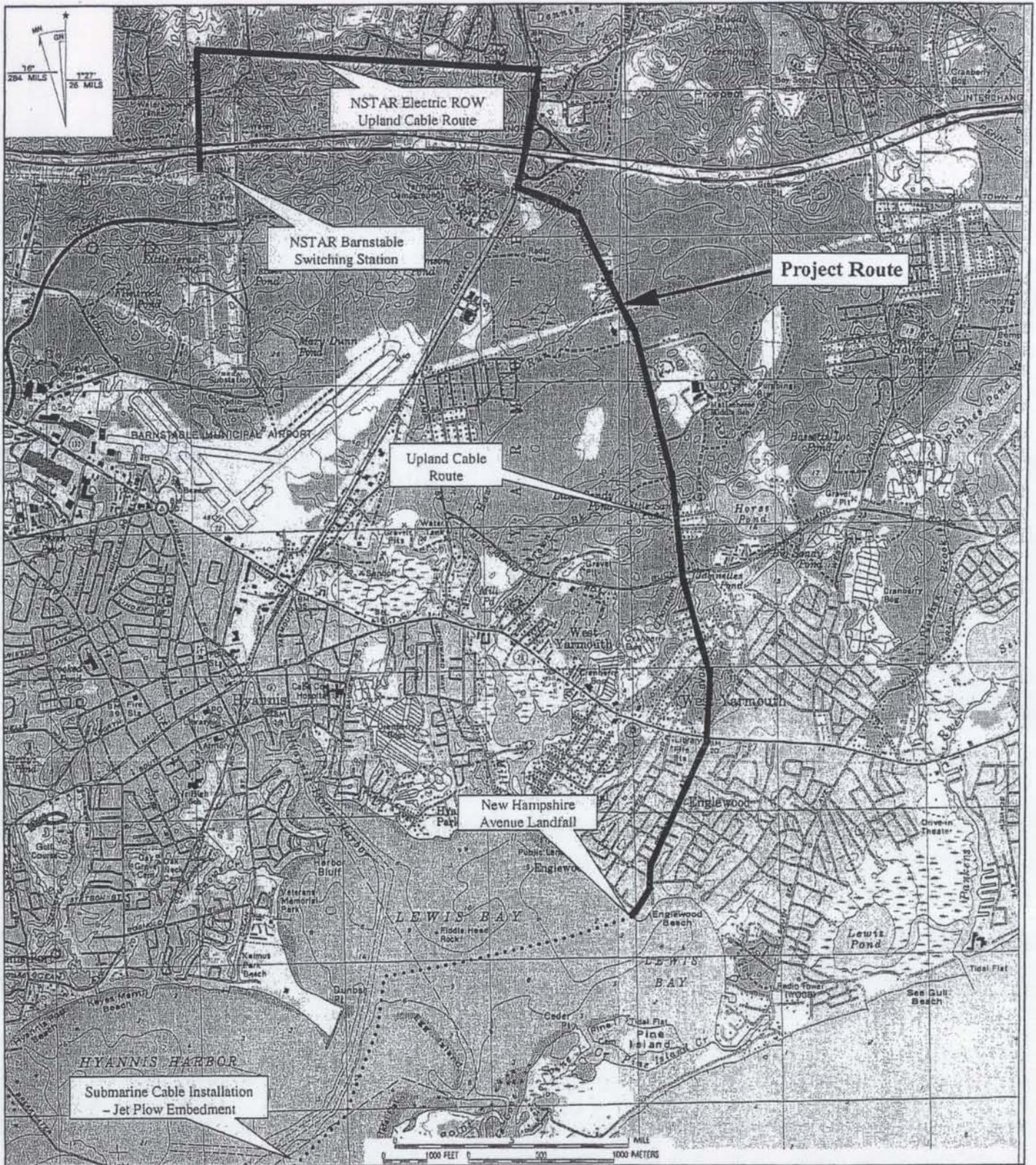


Figure 1. Location of Cape Wind Alternative #1 project route on the Dennis and Hyannis USGS topographic quadrangle, 7.5 minute series.



**The Commonwealth of Massachusetts**  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

July 10, 2003

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, Yarmouth, MA. MHC #RC.29785. COE #199902477.

Dear Ms. Godfrey:

Staff of the Massachusetts Historical Commission have reviewed the report prepared by the PAL, *Marine Archaeological Sensitivity Assessment, Cape Wind Energy Project, Nantucket Sound, Massachusetts*, and received by the MHC on June 23, 2003. MHC has reviewed and taken into account the thoughtful comments of the Massachusetts Board of Underwater Archaeological Resources (BUAR) concerning the proposed identification effort.

MHC reviewed the results of the background research and analysis prepared by the PAL, and considered the PAL's recommendations with the summary memorandum prepared by ESS Group Inc., "Scope of Proposed Marine Archaeological Survey," dated May 28, 2003 and received by the MHC on June 4, 2003.

The proposed methods for the remote sensing survey appear to be adequate to meet the goals and purpose of the archaeological survey, provided however that the survey evaluates all the anticipated project-related impact areas. The BUAR noted in particular that the anchor spreads of the construction vessels should be considered along with all other project-related impacts. MHC looks forward to reviewing the results of the investigation along with the Corps' evaluation of the results of the identification effort.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800) and the Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Fed. Reg. 190 (1983)). Please contact Edward L. Bell of my staff if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Brona Simon".

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

xc:

Kathleen Atwood, USACOE  
Terry Orr, ESS Group Inc.  
Victor Mastone, MBUAR  
Deborah Cox, PAL

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BOARD OF  
UNDERWATER  
ARCHAEOLOGICAL  
RESOURCES

# The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

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Rec'd 7/14/03

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

July 10, 2003

Karen Kirk Adams  
Regulatory Division  
US Army Corps of Engineers  
696 Virginia Road  
Concord, MA 01742-2751

RE: Marine Archaeological Sensitivity Assessment  
Cape Wind Energy Project  
MHC # RC.29785; COE # 199902477; PAL # 1485

Dear Ms. Adams:

The staff of the Massachusetts Board of Underwater Archaeological Resources has completed its review of the technical report entitled *Marine Archaeological Sensitivity Assessment, Cape Wind Energy Project* and offers the following comments on the report's findings and recommendations pursuant to 36 CFR 800.4 (a) (3) and 800.4 (b) (1).

Concerning the potential of the study area to contain submerged prehistoric cultural resources, the Board concurs with the report's assessment that the majority of the area exhibits a low archaeological sensitivity due to the extensive disturbance of sediments by the marine transgression and subsequent modern wave and tidal energy. As the exception to this assessment appears to be that portion of the study area described in the report as the "basin-like feature" on the eastern side of the proposed wind turbine generators (WTG) array field, the Board supports the recommendation of additional geophysical survey of this area and requests that this area be delineated on a nautical chart and submitted for inclusion in the Board's records.

In recognition of the long history of maritime activity in Nantucket Sound, the numerous reported wrecks in the proposed project area and degree of danger to vessel traffic that has historically been associated with Horseshoe Shoal, the Board concurs with the report's assessment that the entire offshore study area exhibits potential to yield submerged historic cultural resources (shipwrecks). Therefore, the Board supports the recommendation that a marine archaeological remote sensing survey be conducted to

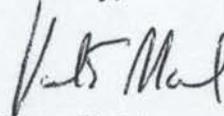


determine the presence or absence of potentially significant submerged historic cultural resources. Such a survey should include the use of a side scan sonar, a marine magnetometer, a sub-bottom profiler, DGPS and recording fathometer. The Board also concurs with the report's recommendation that survey track line spacing for those portions of the proposed project area in which construction will generate sub-surface impacts be no greater than fifty (50) feet. The Board requests that, in addition to those areas "where installation of the submarine electrical transmission cables, WTGs, and the ESP are proposed", the areas of anticipated impact be further defined to include the anchor spreads for vessels that will be utilized in the construction process.

The Board appreciates the opportunity to comment on this report and looks forward to reviewing the scope of work for future archaeological study relative to the proposed project.

Should you have any questions regarding the content of this letter, please do not hesitate to contact me at the address above, by telephone at (617) 626-1141 or by email at [victor.mastone@state.ma.us](mailto:victor.mastone@state.ma.us).

Sincerely;



Victor T. Mastone  
Director

VTM/dwt

Cc: Brona Simon, Massachusetts Historical Commission  
Sarah K Faldetta, ESS Group, Inc.  
Deborah Cox, PAL, Inc.



Engineers  
Scientists  
Consultants

June 19, 2003

Karen Kirk Adams  
Regulatory Division  
US Army Corps of Engineers  
696 Virginia Road  
Concord, Massachusetts 01742-2751

888 Worcester Street  
Suite 240  
Wellesley  
Massachusetts  
02482  
p 781.431.0500  
f 781.431.7434

**Re: Marine Archaeological Sensitivity Assessment Report  
Cape Wind Energy Project  
MHC #RC.29785; COE #199902477**

Dear Ms. Adams:

Enclosed are two copies of the Marine Archaeological Sensitivity Assessment: Cape Wind Energy Project report prepared by Public Archaeology Laboratory, Inc. (PAL). The report is also provided to the distribution list below, in response to a request from Edward L. Bell at the Massachusetts Historical Commission for the proposed research and design methodology in support of the proposed scope for the marine archaeological reconnaissance survey. The scope was previously provided to you by memorandum dated May 28, 2003, and was developed in coordination with PAL's marine Principal Investigator for the Project, based upon recommendations in their report.

Please contact me if you have any questions at (781) 489-1110 or [sfaldetta@essgroup.com](mailto:sfaldetta@essgroup.com).

Sincerely,

**ESS GROUP, INC.**

Sarah K. Faldetta, CPG  
Senior Environmental Scientist

Copy with report enclosed:

Edward L. Bell, Massachusetts Historical Commission  
Victor Mastone, Massachusetts Board of Underwater Archaeological Resources





**The Commonwealth of Massachusetts**  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

June 10, 2003

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, Yarmouth, MA. MHC #RC.29785. COE #199902477.

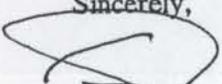
Dear Ms. Godfrey:

Staff of the Massachusetts Historical Commission have reviewed the memorandum prepared by ESS Group Inc., "Scope of Proposed Marine Archaeological Survey," dated May 28, 2003 and received by the MHC on June 4, 2003. The memorandum appears to be an abbreviated summary of a research design and methodology. It is not possible to review and comment on the proposed research design and methodology from this abbreviated memorandum.

Please submit to the MHC and to the Massachusetts Board of Underwater Archaeological Resources the archaeological research design and methodology prepared by the Principal Investigator at the PAL.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800) and the Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Fed. Reg. 190 (1983)). Please contact me if you have any questions.

Sincerely,

  
Edward L. Bell  
Senior Archaeologist  
Massachusetts Historical Commission

xc:  
Kathleen Atwood, USACOE  
Terry Orr, ESS Group Inc.  
Victor Mastone, MBUAR  
Deborah Cox, PAL

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[www.state.ma.us/sec/mhc](http://www.state.ma.us/sec/mhc)



## MEMORANDUM

TO: Karen Kirk Adams, USACE  
DATE: 5-28-03

FROM: Terry Orr, ESS Group, Inc.

SUBJECT: Cape Wind Project  
PROJECT NO.: E159-4.9  
Scope of Proposed Marine Archaeological  
Reconnaissance Survey

COPY TO: Craig Olmsted, CWA  
David Robinson and Deborah Cox, PAL

A marine archaeologist at Public Archaeology Laboratory, Inc. (PAL) has completed review of the preliminary geophysical and geological (46 vibracores and 3 borings) information collected in 2001 within the proposed Wind Park site on Horseshoe Shoal and nearshore Project Areas, as part of a marine archaeological sensitivity assessment. PAL concluded that the majority of the offshore study area has a low probability for containing submerged prehistoric archaeological resources. No evidence of shipwrecks was apparent in the preliminary geophysical or geotechnical data recorded in 2001, although the track line interval employed was not sufficiently spaced to rule out all potential targets. Since 2001, the turbine array has been reduced from 170 proposed turbines to 130, and the layout has been revised. PAL has recommended the following geophysical and geological scope of work for a marine archaeological reconnaissance survey within the revised direct Area of Potential Effect (APE) of the Wind Park and the 115 kV transmission line into the Yarmouth landfall on Lewis Bay, to identify potentially significant submerged cultural resources. The survey was designed to encompass the expected APEs of both construction and operational activities. The duration of the geophysical survey is estimated for 3.5 weeks, and is planned to commence in June 2003. The geological program will be conducted following review of the geophysical data. Your timely review and comment on the following geophysical program scope is appreciated.

At the location of each Wind Turbine Generator (WTG), intersecting geophysical tracklines will be run using the Full Instrumentation Suite (FIS), on centerlines shown on the attached figure. The FIS will include high resolution side-scan sonar, marine magnetometer, single-beam digital depth sounder, Chirp type subbottom profiling for the shallow subsurface and Boomer type subbottom profiling equipment for the deep subsurface. Each North-South centerline will be offset 50 feet on either side with a trackline using the Reduced Instrumentation Suite (RIS), resulting in 3 North-South survey tracklines. The RIS will consist of the FIS instrumentation, minus the Boomer type subbottom profiler. Use of the Chirp only will assist in meeting the objective of identifying the presence or absence of any potentially significant submerged cultural resources, which are relatively shallow. The deep Boomer is needed over the WTG locations only for geotechnical purposes. Intersecting tracklines using the RIS suite are shown on the attached figure.

The ESP Survey Area, where a large number of inner array cables converge, will be surveyed using a gridded approach to achieve 100 per cent coverage at 50-foot trackline spacing. Most lines will be RIS; FIS will be used over the ESP structure itself. Inner array cable routes and the 115 kV interconnection cable route to Yarmouth will be investigated using RIS

Addressee  
ate

instrumentation in two survey lines, offset 25 feet and parallel to the route centerline. The 115 kV route has been re-routed slightly to the west of the previously proposed route, to avoid several reported shipwrecks on Bishops and Clerks Shoals.

The geophysical survey firm (Ocean Survey Inc.) and the marine archaeologist (PAL) will review the side-scan sonar and magnetometer anomalies to identify targets that may be potential cultural resources.

Also as recommended by PAL, additional vibratory coring will be conducted in a limited area to maximum depths of 15 feet below sea bottom. The purpose of the additional coring is to determine the origin (i.e. terrestrial or marine) and delimit the extent of an organic deposit identified in three previously-collected vibracores at depths between 8 to 10 feet below seabottom in the easternmost portion of the Wind Park Project Area. Up to 8 vibracores are planned, and will be inspected and logged to determine whether the organic zone could be a potential paleosol, or inundated former land surface, capable of supporting past human activities.

A marine reconnaissance survey report will be prepared by PAL, which will include background information, cultural contexts and findings of the geophysical and geological survey program. The report will be submitted to USACE, MHC and MBUAR for review.

Due to weather related restrictions, we would like to commence this field work as soon as possible, and we look forward to your comments.



The Commonwealth of Massachusetts  
 William Francis Galvin, Secretary of the Commonwealth  
 Massachusetts Historical Commission

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PERMIT TO CONDUCT ARCHAEOLOGICAL FIELD INVESTIGATION

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Permit Number 2246 Date of Issue March 28, 2003  
 Expiration Date March 28, 2004

PAL is hereby  
 authorized to conduct an archaeological field investigation pursuant to  
 Section 27C of Chapter 9 of General Laws and according to the regulations  
 outlined in 950 CMR 70.00.

Cape Wind Terrestrial Alternatives #1 & #2, Barnstable, Mashpee, Yarmouth  
 Project Location

Brona Simon  
 Brona Simon, State Archaeologist  
 Massachusetts Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125  
 (617) 727-8470 • Fax: (617) 727-5128  
[www.state.ma.us/sec/mhc](http://www.state.ma.us/sec/mhc)

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A  
L

PRESERVATION PLANNING  
ARCHAEOLOGY  
ARCHITECTURAL HISTORY  
EDUCATION

March 12, 2003

Brona Simon  
State Archaeologist  
Massachusetts Historical Commission  
220 Morrissey Boulevard  
Boston, Massachusetts 02125

Re: Cape Wind -Terrestrial, Alternatives #1 and #2  
Reconnaissance Archaeological Survey  
PAL #1485.01

Dear Ms. Simon:

Enclosed please find an application for a permit to conduct an reconnaissance archaeological survey. This application concerns the proposed Cape Wind Terrestrial, Alternatives #1 and #2 project area in Barnstable, Mashpee and Yarmouth, Massachusetts. The project area is located on the Hyannis and Dennis, Massachusetts USGS quadrangles. We would like to begin investigations as soon as possible. Thank you for your time and attention to this matter.

If you have any questions or require further information, please do not hesitate to contact Anna Graves or me at your convenience.

Sincerely,



Deborah C. Cox  
President

/dl

Enclosures

cc: Sarah Faldetta, ESS (w/encl.)  
Craig Olmstead, Cape Wind, LLC (w/encl.)

Public  
Archaeology  
Laboratory

210 Lonsdale Avenue  
Pawtucket, RI 02860  
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FAX 401.728.8784

950 CMR: DEPARTMENT OF THE STATE SECRETARY

APPENDIX B  
COMMONWEALTH OF MASSACHUSETTS

SECRETARY OF STATE: MASSACHUSETTS HISTORICAL COMMISSION

PERMIT APPLICATION: ARCHAEOLOGICAL FIELD INVESTIGATION

**A. General Information**

Pursuant to Section 27C of Chapter 9 of the General Laws and according to the regulations outlined in 950 CMR 70.00, a permit to conduct a field investigation is hereby requested.

1. Name(s): Deborah C. Cox
2. Institution: The Public Archaeology Laboratory, Inc.  
Address: 210 Lonsdale Avenue  
Pawtucket, Rhode Island 02860
3. Project Location: Cape Wind Terrestrial, Alternatives #1 and #2  
*see attached proposal*
4. Town(s): Barnstable, Mashpee and Yarmouth
5. Attach a copy of a USGS quadrangle with the project area clearly marked.  
*see attached*
6. Property Owner(s): Various
7. The applicant affirms that the owner has been notified and has agreed that the applicant may perform the proposed field investigation.
8. The proposed field investigation is for a(n):
  - a. **Reconnaissance Survey**
  - b. Intensive Survey
  - c. Site Examination
  - d. Data Recovery

**B. Professional Qualifications**

1. Attach a personnel chart and project schedule as described in 950 CMR 70.11 (b).

**a. Personnel**

Principal Investigator(s): Deborah C. Cox  
Project Archaeologist(s): Anna Graves  
Field Crew: Jessie Halligan

**b. Schedule**

Fieldwork: April 2003  
Laboratory: N/A  
Report: May 2003

2. Include copies of curriculum vitae of key personnel (unless already on file with the State Archaeologist).

**C. Research Design**

1. Attach a narrative description of the proposed Research Design according to the requirements of 950 CMR 70.11.
2. The Applicant agrees to perform the field investigations according to the standards outlined in 950 CMR 70.13.
3. The Applicant agrees to submit a Summary Report, prepared according to the standards outlined in 950 CMR 70.14 by: August 2003
4. The specimens recovered during performance of the proposed field investigation will be curated at:

The Public Archaeology Laboratory, Inc.  
210 Lonsdale Avenue  
Pawtucket, Rhode Island 02860

SIGNATURE

Deborah Cox  
APPLICANT(S)

DATE

March 14, 2003



**The Commonwealth of Massachusetts**  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

December 26, 2002

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

RE: Cape Wind Energy Project, Yarmouth, MA. MHC #RC.29785. EOE A #12643. COE-NED-R File #199902477.

Dear Ms. Godfrey:

The Massachusetts Historical Commission is in receipt of correspondence from your office, transmitted via fax from Karen Kirk Adams of the Regulatory Division on December 19, 2002, concerning the proposed visual simulation locations and viewshed reconnaissance data for properties on the south side of Cape Cod.

The MHC concurs that the twelve vantage points will assist in assessment of effects, as stated in the correspondence from Karen Adams. Additionally, the proposed direction the Corps will provide to the proponent concerning the revision of the historic sites to be addressed is responsive to MHC's comment letter of December 13, 2002.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), the National Environmental Policy Act, Massachusetts General Laws, Chapter 9, Sections 26-27C as amended by Chapter 254 of the Acts of 1988 (950 CMR 71), and MEPA (301 CMR 11). If you have any questions, please feel free to contact Ann M. Lattinville, Director of Architectural Review, at this office.

Sincerely,

A handwritten signature in cursive script that reads "Brona Simon".

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

xc: Don Klima, Advisory Council on Historic Preservation  
Karen Kirk Adams, USACOE-NED-Regulatory  
Kate Atwood, USACOE  
Rebecca Watson, DOI/Land and Minerals  
Conrad C. Lautenbacher, Jr. NOAA  
Cape Wind Associates, LLC  
Terry Orr, Environmental Science Services, Inc.  
Deborah C. Cox, PAL  
Secretary Bob Durand, EOE A  
Victor Mastone, EOE A, Board of Underwater Archaeological Resources  
Cape Cod Commission  
Alliance to Protect Nantucket Sound  
Yarmouth Historical Commission, Mashpee Historical Commission, Barnstable Historical Commission  
Nantucket Historical Commission, Edgartown Historical Commission, Oak Bluffs Historical Commission  
Chatham Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125  
(617) 727-8470 • Fax: (617) 727-5128  
[www.state.ma.us/sec/mhc](http://www.state.ma.us/sec/mhc)

DEPARTMENT OF THE ARMY  
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS  
696 VIRGINIA ROAD  
CONCORD, MASSACHUSETTS 01742-2751



REPLY TO:  
ATTENTION OF:  
CENAE-R

December 24, 2002

Craig Olmsted  
Cape Wind Associates, LLC  
Suite 704  
75 Arlington Street  
Boston, MA 02116

Post-it® Fax Note	7671	Date	2 Jan 03	# of pages	1
To	TEDDY ORR		From	OLMSTED	
Co./Dept.			Co.		
Phone #			Phone #		
Fax #	981 431 7884		Fax #		

Dear Mr. Olmsted;

Although we have not yet completed the screening of alternatives for the proposed wind power project in Nantucket Sound, we understand that you do want to begin development of the visual simulations anticipating that these will be required for the Horseshoe Shoals site. We have reviewed the two submittals dated 11/12/02 and 11/19/02 regarding the proposed visual simulations viewpoints and the designated properties. We are satisfied that the 12 proposed simulation sites shown on Drawing 2 will adequately represent the potential visual affects at sensitive locations. Details such as time of day/night, weather conditions and elevations should be coordinated directly with Kate Atwood (978-318-8537). It is our intent that these visual simulations will be used to help assess the potential impacts to known historic properties and provide a general sense of the anticipated change in the "seascape". The list of historic sites to be addressed should be revised to include those sites listed on the MHC's Inventory of Historic and Archaeological Assets of the Commonwealth which could have a view of Horseshoe Shoals and are eligible for National Register listing. If you should have any questions, please contact me at 978-318-8828.

Sincerely,

Karen Kirk Adams  
Regulatory Division



**The Commonwealth of Massachusetts**  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

December 13, 2002

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

RE: Cape Wind Energy Project, Yarmouth, MA. MHC #RC.29785. EOE A #12643. COE-NED-R File #199902477.

Dear Ms. Godfrey:

The Massachusetts Historical Commission is in receipt of information regarding proposed visual simulation locations and viewshed reconnaissance data for properties on the south side of Cape Cod. Information pertaining to this portion of the project was submitted in two parts, the final piece of which (photographs) was received at this office on November 20, 2002. After a review of MHC's files, including MHC's Inventory of Historic and Archaeological Assets of the Commonwealth, and the information submitted, MHC has the following comments.

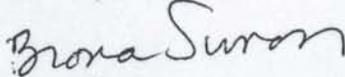
The proposed scope for the visual analysis does not adequately take into account historic properties in the project's area of potential effect. According to the data sheet and maps submitted, the analysis for the location of the viewshed points is based solely on the identification of State and National Register-listed properties (districts and individually listed properties). The analysis leaves out numerous additional properties included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth. It is essential that the scope include these properties, as many of them may be eligible for listing in the National Register of Historic Places (36 CFR 800.4). Many of the properties included in the Inventory are directly along the waterfront and MHC requests that these properties be taken into consideration in determining the representative locations for the viewshed analysis. The scope and determination of locations for the viewshed analysis should also take into account properties that may not be included in MHC's Inventory but may nonetheless be eligible for listing in the National Register of Historic Places.

220 Morrissey Boulevard, Boston, Massachusetts 02125  
(617) 727-8470 • Fax: (617) 727-5128  
[www.state.ma.us/sec/mhc](http://www.state.ma.us/sec/mhc)

Additionally, the viewpoint analysis should include vantage points from Nantucket and Martha's Vineyard.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), the National Environmental Policy Act, Massachusetts General Laws, Chapter 9, Sections 26-27C as amended by Chapter 254 of the Acts of 1988 (950 CMR 71), and MEPA (301 CMR 11). If you have any questions, please feel free to contact Ann M. Lattinville, Director of Architectural Review, at this office.

Sincerely,



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

xc: Don Klima, Advisory Council on Historic Preservation  
Karen Kirk Adams, USACOE-NED-Regulatory  
Kate Atwood, USACOE  
Rebecca Watson, DOI/Land and Minerals  
Conrad C. Lautenbacher, Jr. NOAA  
Cape Wind Associates, LLC  
Terry Orr, Environmental Science Services, Inc.  
Deborah C. Cox, PAL  
Secretary Bob Durand, EOE  
Victor Mastone, EOE, Board of Underwater Archaeological Resources  
Cape Cod Commission  
Alliance to Protect Nantucket Sound  
Yarmouth Historical Commission  
Mashpee Historical Commission  
Barnstable Historical Commission  
Nantucket Historical Commission  
Edgartown Historical Commission  
Oak Bluffs Historical Commission  
Chatham Historical Commission

November 12, 2002

Karen Adams  
Regulatory Division  
Corps of Engineers  
696 Virginia Road  
Concord, Massachusetts 01742

**Re: *Proposed Visual Simulation Locations  
Cape Cod and the Islands  
Cape Wind Project  
ACOE File No. 200102913; MHC RC 29785  
ESS Project No. E159-4.7***

Dear Ms. Adams:

As previously discussed during the July 31, 2002 meeting with Massachusetts Historic Commission staff, Cape Wind Associates, LLC proposes visual simulations of the proposed Wind Park on Horseshoe Shoals from 12 designated historic properties on Cape Cod, Nantucket and Martha's Vineyard. Simulations from these 12 viewpoints, listed on Table 1, will model representative views of the anticipated built structures at the Wind Park, to help assess visual impacts for the DEIS/DEIR. The locations were selected from a plan (see Figure 1) and the enclosed list provided by Public Archeology Laboratory, Inc. (PAL) showing historic properties and districts included on the State and National Registers of Historic Places (S/NRHP), as well as locally designated historic resources.

A number of historic properties and districts along the south side of Cape Cod from Woods Hole to Chatham were visited and photo-documented on October 28, 2002, to determine whether open views are available from the identified historic resource toward the proposed Wind Park. A total of 18 color-coded viewpoints (VP) are identified on Figure 1. Due to the generally level topography, mature wooded vegetation and intervening structures, it was found that open views toward the Wind Park were largely limited to areas in the immediate vicinity of the shoreline.

The locations of the historic properties and/or districts proposed for visual simulations and listed on Table 1 each have open unobstructed views toward the proposed Wind Park. Locations and distances in statute miles of each towards the closest area of the Wind Park are provided on Figure 2.

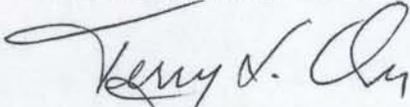
j:\e159-4.7\historic sites\vis sim prop loc to acoe 11-12-02.doc



We would be happy to meet with you to further discuss these locations. Please call me at (781) 489-1148 if you have any questions or to schedule a meeting. After we reach concurrence on the simulation locations, these will be photographed, surveyed and modeled by EDR. Visual simulations will then be provided to your office and the distribution list below.

Sincerely,

**ENVIRONMENTAL SCIENCE SERVICES, INC.**



Terry L. Orr  
Project Manager

C: Brona Simon, Massachusetts Historical Commission  
Ann Latinville, Massachusetts Historical Commission  
Craig Olmsted, Cape Wind Associates, LLC  
John Hecklau, EDR  
Deborah Cox, PAL

Enclosures: Figures 1 and 2; list from PAL

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Table 1 Proposed Visual Simulation Locations Cape Wind Project					
Location	Village Town	View- point	MHC No.	Distance/Direction to Wind Park	Comments
<b>Cape Cod</b>					
Nobska Lighthouse	Woods Hole Falmouth	VP 1	FAL.LH S/NRHP	14.4 miles ESE	Elevated
Cotuit Historic District	Cotuit Barnstable	VP 5	BRNK.HD S/NRHP	6.4 miles SE	Elevated
Wianno Club & Wianno Historic District	Osterville Barnstable	VP 6	BRN.769 BRN.J S/NRHP	6.0 miles SSE	Shorefront
Craigville Historic District	Craigville Barnstable	VP 7	BRN.I S/NRHP	7.3 miles SSE	Elevated
Kennedy Compound & Hyannis Port Historic District	Hyannis Port Barnstable	VP 8	BRN.AJ BRN.E S/NRHP	6.5 miles S	Shorefront
Monomoy Lighthouse	Chatham	NYA	CHA.LS CHA.927 S/NRHP	14.9 miles WSW	Shorefront
<b>Martha's Vineyard</b>					
Campground Historic District	Oak Bluffs	NYA	OAK.E S/NRHP	9.8 miles ENE	Represent- ative View
Village Historic District; Local Historic District	Edgartown	NYA	EDG.A S/NRHP EDG.B Local	9.5 miles NE	Represent- ative View
Cape Poge Light	Edgartown	NYA	EDG.900	5.5 miles NE	
<b>Nantucket</b>					
Nantucket Historic District	Nantucket	NYA	S/NRHP NHL	11.1 miles N	Tucker- nuck Island
Same	Same	Same	Same	15.2 miles NNW	Town
Same	Same	Same	Same	11.5 miles NW	Great Point

Notes:

NYA: Viewpoint not yet assigned.

S/NRHP: State and National Registers of Historic Places

j:\e159\cultural\onshore historic sites\vis sim prop loc to acoe 11-12-02.doc



October 16, 2002

Terry Orr  
Environmental Science Services, Inc.  
888 Worcester Street  
Suite 240  
Wellesley, Massachusetts 02482

Re: Cape Wind Project  
Historic Properties Map  
PAL #1349.01

Dear Mr. Orr:

Enclosed for your review is one printed copy of the map set and a CD containing the electronic file of the map showing the locations of known historic properties in the communities within potential visual range of the Cape Wind Project. The maps include the locations of districts and individual properties that are listed or determined eligible for listing in the National Register of Historic Places, as well as properties that have been locally designated with approval from the Massachusetts Historical Commission (MHC).

If you have any questions or require additional information, please do not hesitate to contact Deborah Cox, President, or me at your convenience.

Sincerely,

  
Stephen Olausen  
Executive Director

/dl

Enclosures

210 Lonsdale Avenue  
Pawtucket, RI 02860  
TEL 401.728.8780  
FAX 401.728.8784

Key to Historic Property Location Map  
Cape Wind Project

MHC (Map)	Name	Address/Location	Designation(s)
<b>Barnstable</b>			
BRN.A	Sandy Neck Cultural Resources District	Borders the northern shore of the Cape Cod Bay just north of West Barnstable	NRDIS
BRN.AD	Hyannis Main Street Waterfront Historic District	Main, North and South Streets	LHD
BRN.AT	Yarmouth Camp Ground Historic District	(Barnstable/ Yarmouth) South of Mid-cape Highway (State Route 6) and roughly bounded by County Avenue, Willow Street, Wood Road and the Camp Ground Pond, Yarmouth	NRDIS
BRN.C	Hyannis Road Historic District	Bounded by Old King's Highway, Bow Lane, Cape Cod Branch Railroad and Hyannis Road	NRDIS
BRN.D	West Barnstable Village Historic District	Meeting House Way from County Road to the Meetinghouse	NRDIS
BRN.E	Hyannis Port Historic District	Roughly bounded by Massachusetts Avenue and Edgehill Road, Hyannis Avenue, Hyannis Harbor and Scudder Avenue	NRDIS
BRN.F	Municipal Group Historic District	Roughly bounded by Main, South and Pearl Streets	NRDIS
BRN.G	Pleasant - School Street Historic District	Roughly bounded by Main, School, South and Pleasant Streets	NRDIS
BRN.I	Craigville Historic District	Roughly bounded by Centerville Harbor, Nantucket Sound, Red Lily Pond and Lake Elizabeth	NRDIS
BRN.J	Wianno Historic District	Roughly bounded by East Bay Road, Wianno and Sea View Avenues, between Nantucket Sound and Crystal Lake	NRDIS
BRN.K	Cotuit Historic District	Main Street, Lowell and Ocean View Avenues, bounded by Osterville Harbor, Nantucket Sound and Popponessatt	NRDIS
BRN.M	Old King's Highway Historic District	Old King's Highway from Sandwich town line on the west to Yarmouth town line on the east	NRDIS
BRN.O	Old King's Highway Regional Historic District	State Routes 3, 6 and 6A in Sandwich, Barnstable, Yarmouth, Dennis, Brewster and Orleans	LHD
BRN.X	Centerville Historic District	Main Street, roughly between Church Hill Road and Briarcliff Lane	NRDIS
BRN.730	Joseph Robbins House	12 Bay Street	NRIND
BRN.731	Daniel Crosby House	18 Bay Street	NRIND
BRN.732	Nymphus Hinckley House	38 Bay Street	NRIND
BRN.743	Lincoln House Club	135 Bridge Street	NRIND
BRN.742	Josiah A. Ames House	145 Bridge Street	NRIND
BRN.1468	Capt. Allen H. Barse House	48 Camp Street	NRIND
BRN.1062	Matthias Smith House	375 Cedar Street	NRIND
BRN.1002	Jenkins Homestead	410 Church Street	NRIND
BRN.661	William Marston House	71 Cotuit Road	NRIND

MHC (Map)	Name	Address/Location	Designation(s)
BRN.669	Gifford Farm	261 Cotuit Road	NRIND
BRN.727	Capt. George Lovell House	8 East Bay Road	NRIND
BRN.726	Capt. Shubael Baxter House	9 East Bay Road	NRIND
BRN.AJ	Kennedy Compound	Erving and Merchant Avenue	NRIND
BRN.295	Gideon Hawley House	4766 Falmouth Road	NRIND
BRN.606	Lot Crocker House	284 Gosnold Street	NRIND
BRN.980	West Barnstable Town Boundary Marker	Great Hill Road	NRIND
BRN.1074	Barzillai Weeks House	313 High Street	NRIND
BRN.9060	Town Boundary Marker	410 High Street	NRIND
BRN.286	Bejamin Baker Jr. House	1579 Hyannis Road	NRIND
BRN.285	Nathaniel Baker House	1606 Hyannis Road	NRIND
BRN.1457	Edward Francis Gleason House	88 Lewis Bay Road	NRIND
BRN.78	Barnstable Old Jail	3365 Main St and Old Jail Lane	NRIND
BRN.297	US Post Office - Santuit Branch	Main Street	NRIND
BRN.672	Liberty Hall	Main Street	NRIND
BRN.673	Marston Mills Methodist Church	Main Street	NRIND
BRN.1456	Capt. Thomas Gray House	14 Main Street	NRIND
BRN.1458	Capt. Seth Baker Jr. House	35 Main Street	NRIND
BRN.301	Charles L. Baxter House	77 Main Street	NRIND
BRN.659	Seth Hallet House	110 Main Street	NRIND
BRN.302	Nelson Rhodehouse House	131 Main Street	NRIND
BRN.658	Captain Sylvester Baxter House	156 Main Street	NRIND
BRN.651	Main Street 237-239	237-239 Main Street	NRIND
BRN.303	Harlow Homestead	391 Main Street	NRIND
BRN.633	Capt. William Hallet House	570 Main Street	NRIND
BRN.632	600 Main Street	600 Main Street	NRIND
BRN.631	606 Main Street	606 Main Street	NRIND
BRN.630	614 Main Street	614 Main Street	NRIND
BRN.725	Nehemiah Lovell House	691 Main Street	NRIND
BRN.724	E. E. C. Swift Store	699 Main Street	NRDOE
BRN.721	Osterville Baptist Church	824 Main Street	NRIND

MHC (Map)	Name	Address/Location	Designation(s)
BRN.350	Josiah Scudder Jr. House	886 Main Street	NRDOE
BRN.707	Herman Isham House	1322 Main Street	NRIND
BRN.95	Barnstable County Superior Courthouse	3195 Main Street	NRIND
BRN.79	United States Customs House	3353 Main Street	NRIND
BRN.1058	Josiah B. Whitman House	210 Maple Street	NRIND
BRN.L	Santuit Historic District	Massachusetts Route 28	NRDIS
BRN.B	Mill Way Historic District	Mill Way Road	NRDIS
BRN.367	Col. Charles Codman Estate	43 Ocean View Avenue	NRIND
BRN.30	Sampson's Folly- Josiah Sampson House	40 Old King's Road	NRIND
BRN.419	Capt. Joseph Hinckley House	142 Old Stage Road	NRIND
BRN.798	Fuller House	Parker Road	NRIND
BRN.617	Capt. Oliver Barse House	31 Pearl Street	NRIND
BRN.807	Ancient Burying Ground	Phinney's Lane	NRIND
BRN.416	John Richardson House	242 Phinney's Lane	NRIND
BRN.414	William Phinney House	555 Phinney's Lane	NRIND
BRN.619	Crosby House	33 Pine Street	NRIND
BRN.621	S. Alexander Hinckley House	151 Pine Street	NRIND
BRN.1000	Jenkins - Whelden Farmstead	221 Pine Street	NRIND
BRN.799	Joseph Jenkins House	310 Pine Street	NRIND
BRN.795	Phinney - Smith House	315 Plum Street	NRIND
BRN.794	Blish-Garrett House	350 Plum Street	NRIND
BRN.1913	Ebenezer Crocker Jr. House	49 Putnam Avenue	NRIND
BRN.957	Town Boundary Marker	Race Lane at the Sandwich Town Line	NRIND
BRN.668	Goodspeed House	271 River Road	NRIND
BRN.572	Lamuel B. Chase House	Scudder Avenue	NRIND
BRN.607	Capt. Alexander Crocker House	358 Sea Street	NRIND
BRN.769	Wianno Club	107 Sea View Avenue	NRIND
BRN.674	Hinckley Homestead	1740 South County Road	NRIND
BRN.692	Merrill Estate	1874 South County Road	NRIND
BRN.612	Capt. Rodney J. Baxter House	South Street	NRIND

MHC (Map)	Name	Address/Location	Designation(s)
BRN.675	Marston Mills Hearse House	State Route 149	NRIND
BRN.813	Marston Mills Cemetery	State Route 149	NRIND
BRN.412	Round House	971 West Main Street	NRIND
BRN.1047	Benomi - Barnabas Crocker House	325 Willow Street	NRIND
BRN.1051	Adams-Crocker-Fish House	449 Willow Street	NRIND
BRN.1458	Canary-Hartnett House	113 Winter Street	NRIND
BRN.1460	Collen C. Campbell House	599 Winter Street	NRIND

### Chatham

CHA.595	Louis Brandies House	Neck Lane, north side of Cedar Street, 8 miles southwest of Stage Harbor Road intersection	NRIND, NHL
HA.LS, CHA.92	Monomoy Point Lighthouse	Monomoy National Wildlife Refuge	NRDIS
CHA.W	Old Village Historic District	Roughly bound by Main Street, Silver Leaf Avenue, Hammond Hill Road and the eastern shore of Mill Pond	NRDIS
CHA.95	Chatham Windmill	Chase Park off Shuttuck Place	NRIND
CHA.428	Chatham Railroad Depot	153 Depot Road	NRIND
CHALH	Chatham Light Station	Main Street	NRDIS
CHA.227	Eldredge Public Library	564 Main Street	NRIND
CHA.229	Port Royal House	606 Main Street	NRIND
CHA.217	Brick Block	Main Street and Chatham Bars Avenue	NRIND
CHA.U	Chatham Historic Business District	Main Street, Crowell and Stony Hill Roads	LHD
CHA.T	Marconi - RCA Wireless Receiving Station	Old Corners and Orleans Roads	NRDIS

### Dennis

DEN.E	South Dennis Historic District	Main Street from State Route 6 to State Route 28	LHD
DEN.38	"Tom Sailor" Howes House	New Boston Road	LHD
DEN.331	West Schoolhouse	Nobscusset road at Whig Street	NRIND
DEN.56	Josiah Dennis Manse	Nobscusset Road and Whig Street	NRIND
DEN.283	West Dennis Graded School	67 School Street	NRIND

### Edgartown

EDG.900	Cape Poge Light	Chappaquiddick Island	NRIND
EDG.A	Edgartown Village Historic District	Bounded by Water Street (north and south) and Pease's Point Way (north and south)	NRDIS

MHC (Map)	Name	Address/Location	Designation(s)
EDG.B	Edgartown Local Historic District	Includes North Water Street, Thayer, South Water, Dunham and Main Streets, bounded by Edgartown Harbor on the east	LHD
EDG.901	Edgartown Harbor Lighthouse	North Water Street	NRIND

### Falmouth

FAL.900	Cleveland Ledge Light Station	Buzzards Bay - Cleveland Ledge Channel	NRIND
FAL.AF	East Falmouth Historic District	Davisville Road from Menauhant Road to Shaker Road	LHD
FAL.AJ	Waquoit Historic District	Waquoit Highway (Rt 28) from Barrows Street for 700 feet	LHD
FAL.AK	West Falmouth Village Historic District	West Falmouth Highway (State Route 28A) from Great Sippewisset Marsh to Crocker Pond, including portions of Blacksmith Shop, Chase and Old Dook Rds., Bowman Lane and Friends Way	NRDIS
FAL.AL	Woods Hole Historic District	Woods Hole, Little Harbor and Cowdry Roads, Water and School Streets, Church and Butler Streets and Luscombe and Railroad Avenues	LHD
FAL.AQ	Falmouth Village Green Historic District	Portions of Main, North, Locust and Hewins Streets and Palmer Avenue	NRDIS
FAL.AW, FALA	North Falmouth Village Historic District	85-408 Old Main Road and 6 Wild Harbor Road	NRDIS
FAL.738	Lawrence Academy	20 Academy Lane	NRIND
FAL.1029	Central Fire Station	399 Main Street	NRIND
FAL.28	Falmouth Poor House and Methodist Cemetery	744 Main Street	NRIND
FAL.LH	Nobska Point Light Station	Nobska Road	NRTRA
FAL.307	Elnathan Nye House	33 Old Main Road	NRIND
FAL.173	Josiah Tobey House	67 Oxbow Road	NRIND
FAL.1035	Falmouth Pumping Station	Pumping Station Road	NRIND
FAL.428	Woods Hole School	24 School Street	NRIND
FAL.1034	Teaticket School	340 Teaticket Highway	NRIND
FAL.332	Crowell-Bourne Farm	West Falmouth Highway	NRIND

### Harwich

HRW.I, HRW.K	Harwich Historic District	Main, Parallel, Forest, Bank and Oak Streets, Sisson Road and Pleasant Lake Avenue	NRDIS
HRW.382	South Harwich Methodist Church	270 Chatham Road	NRIND
HRW.221	Capt. James Berry House	37 Main Street	NRIND

### Mashpee

MAS.9	Avant House	414 Main Street	NRIND
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MHC (Map)	Name	Address/Location	Designation(s)
B, MAS.B, MA	Old Indian Meeting House (Old Indian Church)	410 Meetinghouse Road	NRIND
<b>Oak Bluffs</b>			
OAK.326	Oak Bluffs Christian Union Chapel	Bordered by Circuit, Kennebec Avenue, Narragansett Avenue and Grove Street	NRIND
OAK.AA	East Chop Light	At the northern tip of Cape Pog	NRTRA
OAK.E	Martha's Vineyard Campground Historic District	Roughly bound by Lake, Siloam, Central, Circuit and Clinton Streets and Dukes County Court House	NRDIS
OAK.593	The Arcade	134 Circuit Avenue	NRIND
AK.621, OAK.91	Flying Horses Carousel	33 Oak Bluffs Avenue	NRIND, NHL
OAK.637	Dr. Harrison A. Tucker Cottage	42 Ocean Avenue	NRIND
<b>Tisbury</b>			
TIS.56	Ritter House (Jirah Luce House)	Beach Street (in Vineyard Haven)	NRIND
TIS.32	Tisbury Town Hall - Association Hall	21 Spring Street	NRDIS
TIS.LH	West Chop Station	West Chop Road	NRTRA
TIS.A	William Street Historic District	William Street to Woodlawn Avenue	NRDIS
<b>West Tisbury</b>			
WTLD	West Tisbury Historic District	Edgartown Road, Vineyard Haven Road, Old Vineyard Haven Road, South Road, Music Street	LHD
WTL171	The Old Mill	Edgartown - West Tisbury Road	NRIND
WTL7	Martha's Vineyard Agricultural Society	South Road	LHD
<b>Yarmouth</b>			
YAR.B	Yarmouth Camp Ground Historic District	(Barnstable/ Yarmouth) South of Mid-cape Highway (State Route 6) and roughly bounded by County Avenue, Willow Street, Wood Road and the Camp Ground Pond, Yarmouth	NRDIS
YAR.G	King Highway Regional Historic District	Routes 3, 6, 6A in Sandwich, Barnstable, Yarmouth, Dennis, Brewster and Orleans	LHD
YAR.H	South Yarmouth - Bass River Historic District	Roughly bounded by Main Street from Pine to South Streets, River Street from Main Street to Bass River Parkway, and Willow Street from River to South Streets	NRDIS
YAR.84	Swedenborgian Church	266 266 Hallet Street	NRDIS
YAR.I	Taylor - Bray Farm	Bray Farm Road	NRIND
YAR.312	Baxter Mill	Main Street between Camp Street and Mill Pond Road	NRIND
YAR.901	Judah Baker Windmill	River Street	NRIND
YAR.A	Northside Historic District	State Route 6A	NRDIS

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MHC  
(Map)

Name

Address/Location

Designation(s)

---

YAR.E

Thomas Bray Historic Farm  
District

280 Weir Road

NRDIS



June 25, 2002

**The Commonwealth of Massachusetts**  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

Heather Rafferty Heater  
Environmental Science Services, Inc.  
888 Worcester Street, Suite 240  
Wellesley, MA 02482

RE: Cape Wind, Yarmouth, MA. MHC #RC.29785, BOEA #12643, ACOE File #199902477.

Dear Ms. Heater:

Thank you for your inquiry regarding the proposed project referenced above. Staff of the Massachusetts Historical Commission have reviewed the information and have the following comments.

The preferred overland cable route (New Hampshire Avenue route) falls within close proximity to three clusters of buildings that are included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth and near the Yarmouth Campground Historic District, a district that is listed in the State and National Registers of Historic Places. It is also in close proximity to two Ancient Native American archaeological sites (MHC site #s 19-BN-237, -238). The alternate route through Mashpee runs through or adjacent to an ancient Native American archaeological site (MHC #19-BN-29).

The MHC requests the opportunity to review current original photographs of the three clusters of buildings identified along the preferred overland cable route in order to determine National Register eligibility (36 CFR 60). Photographs should include images of the buildings themselves and context views of the buildings in their surroundings. Please label and key the photographs to sketch maps indicating the direction of the photographs. The MHC also requests more detailed drawings and plans showing existing and proposed conditions of any areas of the overland routes that are outside of the currently paved road.

Please note that in previous correspondence regarding the underwater portions of the project, including the proposed data tower, MHC requested the following information, which is subject to compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800).

The MHC requested a visual assessment study be conducted in order to evaluate the visual effects of the project on the character and setting of the historic resources referenced in our December 24, 2001 letter to Secretary Durand. At a minimum, the visual assessment study should include: a map that clearly indicates the location of the above listed historic resources relative to the proposed project area, including the distances from the project area to these historic resources. The MHC also requested that additional photographic simulations be taken from multiple locations within and at the edges of the above listed historic resources, showing both day and night and lighting conditions. Please also submit photographic simulations looking from within the project area to these land areas.

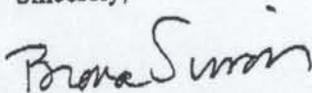
With regard to archaeology, the MHC also requested that an archaeological reconnaissance survey be conducted for the underwater portions of the project area. The purpose of the reconnaissance survey is to identify archaeologically sensitive areas within the project area that will require further testing to locate and identify any important archaeological resources that they may contain. The archaeological sensitivity of

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[www.state.ma.us/sec/mhc](http://www.state.ma.us/sec/mhc)

these areas are assessed on the basis of an in-depth study of land and water-use history, current conditions, proposed plans, and proximity to favorable environmental characteristics and known archaeological sites. Specific portions of the project area may be recommended for additional archaeological evaluation. MHC additionally recommended that the project proponent consult with a marine archaeologist, Massachusetts Board of Underwater Archaeological Resources, and the MHC to evaluate the underwater data already collected, determine if it is sufficient for the purposes of identifying significant underwater archaeological sensitivity, and conduct additional survey if necessary. We look forward to reviewing the proposed research design and methodology for the archaeological reconnaissance survey.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), Massachusetts General Laws, Chapter 9, Sections 26-27C as amended by Chapter 254 of the Acts of 1988 (950 CMR 71), and MEPA (301 CMR 11). If you have any questions, please feel free to contact Margo Muhl Davis, Archaeologist/Preservation Planner, or Stacey Wetstein, Preservation Planner, at this office.

Sincerely,



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

xc: Crystal Gardner, Chief, USACOE-NED-Regulatory  
Kate Atwood, USACOE  
John Silva, FAA  
USCG, Rhode Island Office  
Secretary Bob Durand, EOEA, Attn.: Arthur Pugsley, MEPA Unit  
DEP-SERO  
MCZM  
MHD-District 5  
Phil Dascom, Cape Cod Commission  
Victor Mastone, EOEA, Board of Underwater Archaeological Resources  
Glen Marshall, Mashpee Wampanoag Tribal Council Inc.  
Laurie Perry, Interim THPO, WTGHA  
Yarmouth Historical Commission  
Mashpee Historical Commission  
Barnstable Historical Commission  
Nantucket Historical Commission  
Edgartown Historical Commission  
Oak Bluffs Historical Commission  
Chatham Historical Commission



**The Commonwealth of Massachusetts**  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

June 20, 2002

Heather Rafferty Heater  
Environmental Science Services, Inc.  
888 Worcester Street, Suite 240  
Wellesley, MA 02482

RE: Cape Wind, Yarmouth, MA. MHC #RC.29785. EOEA #12643. ACOE File #199902477.

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Please note that in previous correspondence, MHC has also requested the following information, which is subject to compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800).

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With regard to archaeology, the MHC also requested that an archaeological reconnaissance survey be conducted for the underwater portions of the project area. The purpose of the reconnaissance survey is to identify archaeologically sensitive areas within the project area that will require further testing to locate and identify any important archaeological resources that they may contain. The archaeological sensitivity of these areas are assessed on the basis of an in-depth study of land and water-use history, current conditions,

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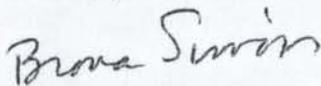
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Chatham Historical Commission



**THE COMMONWEALTH OF MASSACHUSETTS**  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
OFFICE OF COASTAL ZONE MANAGEMENT  
251 CAUSEWAY STREET, SUITE 900, BOSTON, MA 02114-2136  
(617) 626-1200 FAX: (617) 626-1240

May 16, 2002

Charles J. Natale, Jr.  
Senior Vice President  
Environmental Science Services, Inc.  
888 Worcester Street, Suite 240  
Wellesley, MA 02482

RE: CZM Federal Consistency Review of Scientific Measurement Devices Station;  
Horseshoe Shoals, Nantucket Sound.

Dear <sup>Charlie</sup>~~Mr. Natale~~:

The Massachusetts Office of Coastal Zone Management Office (CZM) has completed its review of the proposed Scientific Measurement Devices Station on Horseshoe Shoals, Nantucket Sound, to ensure consistency with CZM's enforceable program policies:

CZM supports the development of renewable, nonpolluting energy sources. The data collection tower currently being proposed is an example of the type of information-gathering that can be of great assistance in identifying appropriate sources of renewable energy. We therefore concur with your certification and find that the activity is consistent with CZM enforceable program policies within the context of data collection to support the alternatives analysis required by the Certificate of the Secretary of Environmental Affairs dated April 22, 2002 for the Draft Environmental Impact Report (EIR) and the upcoming Army Corps of Engineers Scope for the Environmental Impact Statement (EIS). We would expect a similar level of data collection for any feasible alternative examined through the EIS/EIR process.

We note that, following the issuance of the Army Corps of Engineers Section 10 permit, Cape Wind will need to obtain approval from the US Coast Guard for the tower as a private aid to navigation. Please provide this office with a copy of the Coast Guard authorization when it is available.

If the above-referenced proposal, which has received this concurrence from CZM, is modified in any manner or is noted to be having effects on the coastal zone or its uses that are substantially different than originally proposed, please submit an explanation of the nature of the change to this Office pursuant to 301 CMR 21.17 and 15 CFR 930.66.



Thank you for your cooperation with CZM.

Sincerely,



Tom Skinner  
Director

TWS/jm/th

Cc: Karen Kirk Adams,  
Regulatory Branch, US Army Corps of Engineers  
Brian Valiton,  
Regulatory Branch, US Army Corps of Engineers  
Lt. jg Stephanie Morrison,  
Aids to Navigation, 1st District, US Coast Guard  
Truman Henson, Jr.,  
CZM Cape & Islands Regional Coordinator



# CAPE COD COMMISSION STAFF REPORT

## PROJECT

Cape Wind Energy Project, JR#20084

## STAFF

Philip Dascombe, AICP, Planner  
Steve Tucker, Marine Resources Specialist  
Martha Twombly, Planner  
Heather McElroy, Natural Resources Specialist  
Andrea Adams, Planner  
Greg Smith, Planner

## SUBCOMMITTEE

Susan Kadar, Chair  
Ian Aitchison  
David Ansel  
Thomas Broidrick  
Ernest Virgilio  
Elizabeth Taylor, Alt.  
Jay Schlaikjer, Alt.

## DATE

December 12, 2001

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## INTRODUCTION

The proposed project is for the construction and operation of an off-shore wind park and associated infrastructure in Nantucket Sound, at a site known as Horseshoe Shoal. The wind park facility will consist of 170 Wind Turbine Generators (WTG) covering an area of approximately 25 square-miles (16,000 acres) which is anticipated to generate 420 MW of electricity at maximum output. This electricity will be transmitted from each turbine via submarine cable to an Electrical Service Platform (ESP) located within the WTG array. The ESP will then transform and transmit this electric power to Cape Cod via two 115kV alternating current submarine cables. These cables make landfall in the Town of Yarmouth. From this point, an overland cable will be installed underground within the existing rights-of-way of Yarmouth to connect to the NSTAR electric transmission line at Willow Street in Yarmouth.

The proponent submitted an Expanded Environmental Notification Form (ENF) to the Executive Office of Environmental Affairs – MEPA Unit and the Cape Cod Commission on November 16, 2001. The ENF appeared in the *Environmental Monitor* on November 24, 2001. Although the proponent titled these documents as an Expanded ENF, no request has been made for a single

Environmental Impact Report (EIR), and therefore the proponent will be required to file both a Draft and Final EIR in the future.

At the request of the proponent, MEPA has granted an extension of the public comment period on the project. The public comment period will now end on December 31, 2001. A joint public hearing/scoping session to receive testimony on the project has been scheduled for December 19, 2001 at 6:30 p.m. at the Mattacheese Middle School in West Yarmouth, MA.

## **PROJECT DESCRIPTION**

This section describes information submitted by the proponent in the ENF and includes a summary of the proposed facilities, the siting analysis, the proposed alternatives and a description of the impacts of the project.

### Proposed Facilities

The proponents provide a detailed description of the proposed facilities in the ENF, this information can be summarized as follows.

#### *Wind Turbine Generators and Wind Park layout*

The WTG array consists of 170 generators, each of which has a capacity of 2.7 MW of electricity. The combined installation capacity of the array would potentially be 460 MW but an operational capacity of 420 MW is expected, due to inherent energy losses within the system. The ENF describes the average wind speed of the site as being in the region of 19 m.p.h., which the proponent estimates would result in a net energy production of approximately 1,491,000 MW Hours/year.

The array will be located outside Massachusetts' 3-mile jurisdictional limit and is entirely within Federal waters. The distance from shore varies with the closest part of the Wind Park being approximately 4 miles to SSW of Point Gammon, Yarmouth. Figure 1.2 of the ENF details distances to selected points on the Cape and Islands.

Each WTG consists of the following parts;

- i. *Three-blade rotor.* The rotors, which are mounted on a hub, have a diameter of 328 feet and are manufactured of fiberglass reinforced epoxy. The hub stands 263 feet above the mean sea level datum, which results in a total height of 426 feet from sea level to the highest point of the rotors. The blades are pitch-regulated, which allows them to continually adjust the angle of pitch to the wind.
- ii. *Nacelle.* The nacelle houses the drive train and generating systems that produce energy. It is sealed to prevent salt spray and moisture penetrating and includes access hatches, maintenance equipment and wind sensors.
- iii. *Tower and Foundation.* The tower is manufactured of tubular steel and contains an internal access ladder and platforms to access the nacelle. The tower is designed to withstand the site-specific wind load, earthquake loads and sea conditions. The tower is supported by a monopile foundation, which is the most common type used in offshore wind parks. The ENF describes this foundation type as more flexible than alternative types, which extends the WTG's design life. The foundation will be coated in an epoxy

coating to prevent erosion and installed by vibratory or impact hammer driving. (Further details on the design of the foundation can be found in the ENF).

The WTG's will be arranged in parallel rows in a northwest-southeast alignment to provide optimal energy output based on the prevailing wind pattern for the area. The WTG's are also spaced in a manner that minimizes power losses due to wind shear and turbulence. The WTG has a computer-controlled yaw system that places the rotors perpendicular to the wind direction. Other factors such as water depth, transmission losses and use of the water between the WTG's also influenced the pattern of the park.

#### *Electric Service Platform (ESP)*

The ESP will be located centrally in the wind park and will be connected via submarine 34.5 kV cables to each WTG. The ESP contains circuit breakers and transformers and is where the electrical voltage will be stepped up for transmission to the shore. The platform also contains a heliport and crew quarters for servicing the wind park equipment.

The 15,000-square-foot platform will be situated 39 feet above mean sea level and will be supported on six, 3-foot diameter piles. All equipment will be contained in an enclosed weather-protected service area, with the heliport on top of the structure (see ENF figure 2.5).

#### *Submarine cable to the shore*

Electrical energy is transmitted to shore via two 115kV AC submarine cables, which are installed 40-60 feet apart and approximately six feet below the present seabed surface. The cable is proposed to be laid by jet-plowing techniques. This depth was selected to avoid potential damage by vessel groundings or anchor penetration. Within Massachusetts waters, the site area disturbed by jet plowing land under the sea would be approximately 6.4 acres in area and 6.5 statute miles in length. The total length of the submarine cable, including that in Federal waters, will be 10.2 miles.

The ENF states that the route selected for the submarine cable was chosen as it was determined to be the most technically feasible and that it avoided and minimized environmental and navigational impacts.

The submarine cable system is due to make landfall at 43 Shore Road in Yarmouth and will be connected to the upland cable installing a cable conduit system using Horizontal Directional Drilling (HDD) methods. An underground transfer station, located on the property at 43 Shore Road, will be constructed to connect the submarine cable from the wind park to the overland wiring. The transfer station will be constructed within 100 feet of a salt marsh but will be located on previously paved or disturbed areas. The route of the submarine cable to the transfer station will be constructed using directional drilling to negate the need for excavation. Erosion and sedimentation controls will be in place during construction and re-vegetated as appropriate and monitored after construction to ensure its stability.

#### *Overland Route*

The applicant has secured an easement on the private property located at 43 Shore Road, which will accommodate the cable and below-grade transition vault. The area to be disturbed will be

approximately .3 acres at this site. Although the site in Yarmouth is the preferred land fall location, sites in Barnstable, Mashpee and Yarmouth are still under consideration and are offered in the ENF as alternative sites.

The two land circuits will be buried approximately 38 inches below grade in a bank of PVC conduits within existing cleared public streets and rights-of-way. The construction will have localized and temporary impacts on the roadways affected by this construction and will involve excavation of a 6-foot-wide trench by a backhoe. The overland cable will be approximately 4 miles in length and affect an area of 3.8-acres. The proponent anticipates that some tree trimming along the route will be necessary, but that no tree removal is expected. The cable route is likely to traverse listed habitats for rare species that includes endangered plants and wildlife.

At the NSTAR electrical transmission interconnection point on Willow Street, a riser tower would be needed to allow for the transition from underground cable to above ground tie-in. In addition, some vegetative clearing will be required for vehicle/equipment access and the work area will be restored to the original contours and re-planted with an upland seed mixture.

### Siting Analysis

Section 3 of the ENF includes a detailed description of the siting analysis conducted by the proponent, the information provided in this section is summarized below.

The proponent analysis determined that the current transmission system to the Cape operated by NSTAR was capable of handling up to 450 MW of new generating capacity with minimal upgrades. According to the ENF, this established the maximum capacity for the wind park. The available technology for WTGs is in the range of 2.7 to 3.6 MW per tower, which in turn determined the number of WTGs needed to reach the desired capacity.

The proponent determined that the solid dielectric cables selected are the most technically reliable, and economically feasible type for the submarine cabling requirements, which are limited to lengths of less than 15 miles.

Horseshoe Shoal was selected because:

- it met the proponents siting and design criteria while minimizing marine impacts,
- the location minimizes potential visual and noise impacts from Martha's Vineyard, Nantucket and Cape Cod,
- it minimized impacts on commercial and recreational navigation, aviation and fishing,
- it was the most suitable for construction and maintenance access,
- it was the most economically viable given the construction costs and operating and maintenance expenses.

### Alternatives

The following description is a summary of information contained in Section 4 of the ENF that deals with alternative sites for the infrastructure and facilities.

The proponents focused on an off-shore wind park primarily due to the high cost of land acquisition for a terrestrial facility and the lack of a site of the required size in the region.

The ENF identifies several offshore sites that were considered for a wind park. These areas were selected based on US Department of Energy Wind Energy Resources Atlas that illustrates the areas of highest wind energy potential in the northeast. The three areas that were considered were Monomoy Shoals, Nomans Land (south of Martha's Vineyard) and Nantucket Sound. Nantucket Sound was selected as it was the more suitable and technically feasible site of the three (Section 4.1.2 of the ENF describes this analysis more fully).

Several sites within Nantucket Sound were evaluated for their economical and technical feasibility that provided adequate wind power ratings.

### Project Impacts

The ENF states that the proponents aimed to minimize any negative impacts through the siting, design, development and operation of the facility. The ENF describes the following benefits of the project:

- Clean renewable energy facility providing 420 MW of power
- Improve air quality, reduction of million tons/year of Carbon Dioxide and claim Wind Park will produce the equivalent of the energy dispatched to New England and Cape Cod.
- Reduce electricity costs to ratepayers – estimate savings of \$800 MM over 20-years of project (design life = 20 years)
- Reduce dependency on foreign oil or other natural resources
- Displace 170 MW of fossil fuel burning production
- Help Cape Cod become more energy self-sufficient, as claim natural gas capacity will become more restricted in future
- Cost of energy fixed at financial close (no fuel costs), protects against fuel spikes from other energy sources
- Create year round jobs
- Facilitate energy transfer

### **STAFF COMMENTS**

A goal of the energy section of the Regional Policy Plan (RPP) is to encourage the development of renewable energy sources. The proposed project is one of the first of its kind in this nation and if successful, could make renewable wind energy a contributor to the future electricity needs of New England. Furthermore, a successful non-polluting alternative to fossil-fuel generation could provide the catalyst for expansion of renewable energy production, which could have wide ranging benefits both regionally and nationally. The ENF submitted provides a broad analysis but greater detail is needed on a variety of issues before a thorough evaluation of the project as a whole can be made. The ENF states that the design of the project as described is only 15% completed and staff recognizes that the applicant intends to study many of the issues identified more thoroughly. Therefore, the staff offers the following comments in respect to the project in general and in relation to resources protected under the RPP.

### GENERAL

- G1. The ENF describes how the proponent will be filing a Draft Environmental Impact Report (DEIR) and Final Environmental Impact Report (FEIR) on a voluntary basis. The Secretary of Environmental Affairs should clarify that both these documents are required and that the scope and mitigation measures must be implemented on a mandatory, not voluntary, basis.
- G2. The Expanded ENF only addresses the impacts of the infrastructure within Massachusetts' jurisdiction (3 miles from shore) and thus ignores potential impacts of the wind park located within Federal waters. As a regional agency representing Cape Cod, staff believe that potential impacts of the wind park itself will be felt by the region. For instance, the towers will be visible from shore and from marine craft (both recreational and commercial) that use Nantucket Sound. Fisherman based on Cape Cod may also be impacted by the wind park. Therefore, it is more appropriate that a complete Environmental Impact Report be prepared that addresses the project in its entirety to enable governmental agencies and members of the public to consider and weigh the benefits and impacts of the proposal as a whole.
- G3. The ENF states that the proposed project will set a new standard for clean energy production but does not discuss what future place such energy production has in the local energy market. The DEIR should describe the potential for renewable energy in the region and projected market share potential. This discussion should also identify what future potential exists for off-shore wind parks in the waters surrounding Massachusetts and New England. Furthermore, this discussion should stipulate the future goals of Cape Wind Associates, especially concerning the company's intentions for operation of the facility and the potential for future sale of the facility once constructed or permitted.
- G4. The ENF outlines the siting criteria used for selecting Horseshoe Shoal in Section 4 and the rationale for proposing a facility of this size. While staff understand that the project must be economically viable to move ahead, the generating capacity desired would influence the size and configuration of the array, the number of units required, and the resulting environmental impacts. Therefore, the applicant should provide a more complete alternatives analysis that assesses the feasibility of smaller installations, and their suitability to other locations. Moreover, this analysis should provide details on whether other sites were considered in the vicinity of Massachusetts, or off-shore in any other part of the country.
- G5. The ENF makes reference to the installation of a SMS that is intended to establish baseline oceanographic and atmospheric conditions on Horseshoe Shoal both pre and post-construction. The DEIR should provide details on this equipment and how the data it collects will be utilized throughout the project.
- G6. The ENF did not provide any information on the phasing or timing of construction needed to commission the facility. The DEIR should provide a project timeline that gives an overview of the anticipated schedule as well as details on the expected staging areas to

be used during construction. This outline should also describe what contingency has been made for delays.

- G7. The ENF does not provide information on the anticipated maintenance schedule for the facilities. This should include the number of scheduled maintenance visits as well as the contingency for emergency repairs. For all maintenance visits, the number of trips necessary, means of transport and personnel involved should be detailed. Furthermore, the description should outline what contingency has been made for maintenance in bad weather and what potential exists for a catastrophic failure of the turbines.
- G8. The ENF describes how the WTGs could be removed from the sea-bed and recycled if necessary once they have reached the end of their design life. However, no discussion is presented on whether the applicants intend to remove the entire installation at the end of the design life or whether older model WTGs will merely be replaced by newer machines. In addition, no information was provided that outlined how the foundations, that are buried 80 feet in the seabed, would be removed. Therefore, the DEIR should provide further details on issues relating to the decommissioning of the facility. Such an analysis might also outline what financial contingency exists for removal of the WTGs in the event the proponent's business becomes financially insolvent.
- G9. The DEIR should include a discussion of the issues relating to use of state and Federal waters by for-profit entities. For example, the proponent should outline the project's standing as it relates to Chapter 91 licensing which regulates water dependant uses within State tide lines. The DEIR shall detail how the project might comply with these statutes. Furthermore, the project requires the privatization of portions of resources held in public trust in federal waters for use by a commercial venture. The proponents are requesting an exclusionary buffer zone (which reaches into state waters) where structures and uses that could degrade the wind resource are proposed to be prohibited. The applicant is therefore constraining use of portions of the public trust resource, and the installation of WTG structures will preempt other activities that could occur at the site. The DEIR should therefore outline how the project fits Federal statutes controlling the use of public trust areas.
- G10. All materials needed for a complete Development of Regional Impact (DRI) application should be provided as part of the DEIR filing. The proponent shall submit the following to complete their application for a DRI:
- Development Plans including a locus map with the outline of the entire property clearly shown (Two copies in 24" x 36" format, plus a reduced set to fit on 11" x 17" paper);
  - Fee payable by certified check to Barnstable County Treasurer to be submitted to Cape Cod Commission only;
  - Deed or Purchase and Sale agreement for all involved parcels (or easement agreements and documentation for permission to use federal water sheet area);
  - Acknowledgement of filing completed applications with all relevant municipal agencies

- Proof of receipt of Project Notification Form by the Massachusetts Historical Commission;
- Documentation regarding the project's consistency with the Regional Policy Plan's Minimum Performance Standards (MPS).
- All plans shall include the information listed in Section B, Part 2, of the Cape Cod Commission's DRI Application Form dated September 7, 2001.

### LAND USE/GROWTH MANAGEMENT

The proposed project does not pose any direct impacts to land use issues on Cape Cod, as all above ground facilities are located in Federal waters outside the Massachusetts 3-mile waters. The proposal consists of an underground cable that follows the existing road and right-of-way to connect to the NSTAR transmission grid on Willow Street, Yarmouth. Therefore, staff has no comments relating to this issue area at the present time.

### NATURAL RESOURCES

#### **Water Resources**

The cable route runs through a Wellhead Protection Area, Marine Resource Area and Fresh water Recharge area (Little Sandy Pond). The overland cable route poses little impact to the resources located on land, however the applicant is requested to supply the following information.

- NR1. Details on the trenching of the cable need to show the relationship of the cable depth to maximum high groundwater. Groundwater is near record lows presently. The project proponent should use the technical bulletin 92-001 to calculate high groundwater.

#### **Coastal Resources/Marine Environment**

Goal 2.2.1 of the RPP is *"to protect the public interest in the coast and rights of fishing, fowling, and navigation, to preserve and manage coastal areas so as to safeguard and perpetuate their biological, economic, historic, maritime, and aesthetic values, and to preserve, enhance and where appropriate, expand public access to the shoreline"*. This goal is used in the consideration of the potential impacts of the project.

- NR2. Additional information is also required regarding the proposal's effects on both protected and federally managed avian species and mammals. The applicant has stated that the size of the blades of the turbines produces a low rate of revolutions per minute, and increases the visibility of the structures to avian species. Literature from some prior studies suggests that some species in Europe seem to respond to these visual cues and exhibit avoidance behavior. The applicant needs to present additional information regarding the extent to which managed migratory species and protected species will be displaced if they exhibit avoidance behavior, and impacts that may result when visual cues are not present such as at night or when foggy conditions prevail.
- NR3. The applicant also maintains that the blades of the WTGs are positioned in airspace that is not heavily utilized by avian species in the area. However, no supporting data was offered to substantiate the hypothesis that the distribution of avian species may be

delineated based on elevation within the air column, or that such an assessment would be consistent across seasons, different climatological conditions and sea states.

- NR4. The ENF provides little information regarding the biotic and abiotic resources likely to be disturbed in the nearshore and intertidal area at the point of landfall. Additional information needs to be gathered and presented regarding species and abundance of shellfish and other living resources in the area that may be effected by installation of the cable connection. Coastal resources at the landfall site need to be delineated, and plans for mitigation of alterations associated with the installation of the cable and underground station needs to be presented in greater detail.
- NR5. The applicant has proposed to utilize monopile foundations to deploy the WTGs which would range from 16 to 21 feet in diameter, and be installed by vibrating them into the substrate or driving them to a depth of 80 to 85 feet. Staff are concerned about the extent and severity of underwater noise impacts to adjacent areas. The applicant should provide an analysis of these temporary construction impacts at sea level and to the submerged habitat characteristics within the affected area. Information regarding the structural loading analysis performed to determine pile diameter and depth. Sufficient information should be gathered to provide an estimation of total biomass likely to be displaced by the project.
- NR6. Structures placed in the marine environment often serve as “fish aggregating devices”, which may cause effects on fisheries which should be evaluated in collaboration with fishers and fishery managers. For instance, aggregations of small species of fish that are likely to show an affinity for shallow shoaling waters may in turn effect the behavior of organisms at higher trophic levels. Cumulative and secondary effects of this alteration may have implications for migratory fish stocks such as striped bass, game species such as diving waterfowl and marine mammals. These impacts should be studied further and fully assessed.
- NR7. The applicant should provide information about the expected use of marine growth inhibitors or the protocol for the management of biological organisms on structural elements of the project, and any mechanisms that may be employed to manage corrosion such as cathodic devices. Information about the performance of these elements on structures fixed in the marine environment, their service life and maintenance requirements should be disclosed for evaluation of possible habitat impacts. In addition, the effects of electromagnetic fields generated by corrosion inhibition devices or power transmission lines need to be analyzed and their effects on organisms that may be sensitive to any such emissions should be evaluated.
- NR8. The ENF states that fishing and recreational boating are not expected to be substantially impacted by the project and that the interstitial area between the WTGs will remain open to navigation and fishing. Staff believes that a more comprehensive assessment and explanation of this claim should be included in the DEIR. For instance, it seems possible that an orderly grid of 170 towers will serve to concentrate fishing effort by some methods into discreet lanes. This could focus certain methods of fishing into smaller

areas, which would be subject to more frequent disturbance that may inhibit natural recovery of non-motile fished species. The analysis should also address the potential for icing of the rotor blades, which may present a drop hazard to vessels beneath at certain times of the year. Furthermore, this analysis should also include what contingencies have been made for accidental collision of vessels into the structures as a result poor navigation, poor visibility or mechanical failure.

NR9. Information in the ENF describes a centralized network whereby individual WTGs each have independent ties to the ESP. While this arrangement may provide a high degree of reliability should one of the individual WTGs fault, such an arrangement may require additional disturbance when compared to sequential wiring of the units. This principle may also apply to the redundant connections from the ESP to the point of landfall. Therefore, additional description of efforts to minimize alteration from underwater cable installation should also be included in the DEIR.

NR10. In addition, information regarding shading, alterations to current, sediment transport, structural habitat alteration and influences on wave climate should be provided in order for a proper assessment to ensue.

### **Wildlife**

The overland portions of the projects are largely located within previously developed or altered areas. According to information provided in the ENF, some of these areas occur within the 100 foot buffer to salt marsh wetlands and within areas mapped as estimated rare species habitat. However, the ENF states that all work will occur within paved or previously disturbed areas. The RPP does permit utility related work within wetland buffer areas where there is no alternative.

NR11. Staff recommends that plans showing proposed site work within the 100 foot buffer to wetlands and estimated rare species habitat be submitted for review. This should include construction plans, a more accurate description of siltation controls and other mitigating measures to ensure that adequate protection is provided. In addition, the Massachusetts Natural Heritage and Endangered Species Program should be contacted regarding any concerns they may have associated with the project.

### **Air Quality**

The RPP has a goal to maintain and improve Cape Cod's air quality so as to ensure a safe, healthful, and attractive environment for present and future residents and visitors. Minimum Performance Standard 2.6.1.1 requires that projects "shall be in compliance with the Massachusetts State Implementation Plan (SIP) and DEP's Air Pollution Control Regulations, 310 CMR 7.00." The main focus of the Commission's role in managing air quality has been managing land use and transportation to minimize emissions. However, power plant emissions contribute to the creation of ground level ozone and smog and are therefore also a factor in the Cape's overall air quality.

NR12. The ENF states that the expected energy generation from the facility will be 1.5 million MW-hrs which offsets 180 MW of fossil-fuel power that would burn 600,000 tons of coal, 100 million gallons of oil or 10 billion cubic feet of natural gas per year. The

Expanded ENF states the proposed project will result in significant reductions in air pollutant emissions from fossil fuel-burning power plants presently serving the New England region. However, staff believes that it is unlikely that existing fossil-fuel burning power plants will be removed from production as a result of the proposed Wind Park but rather that it may help off-set the need for construction of new fossil-fuel burning plants in the future. Therefore, the DEIR should address in more detail how the proponents believe the wind park would displace existing air emissions from existing sources.

NR13. In order to substantiate this benefit, the applicant should model the expected degree and the extent of improvements in air quality to justify the claims made in the ENF of measurable improvements in air quality. The timing of these benefits should also be discussed in relation to existing contributors in the area and any pending developments that could significantly alter air quality projections. This analysis should include a discussion of the extent to which the managing entity could participate in existing or pending programs which allow “emissions trading” between energy facilities, and how this participation might effect air quality projections. The air quality discussion should be comprehensive and include emissions from vessels and other modes of transportation used to address operation and maintenance of the facility.

### **Noise**

Noise is considered an air pollutant under 310 CMR 7.00. The Expanded ENF provides no information on the projected noise generated by the project. Staff anticipates that the WTG’s will generate some level of noise during operation (from the turbine blades, turbine mechanical equipment) and that any transformers and switching equipment on the Service Platform may also generate noise. Furthermore, if switching equipment or transformers are needed along the land-based facilities, there may be noise generated by these facilities. The ENF also describes how four of the towers will be equipped with sound signals, which are audible to one nautical mile. In addition, the construction activities, especially the installation of the WTG monopile foundations, are likely to result in impacts (although temporary) above and below the water.

NR14. Staff recommends that the EIR should provide a complete acoustical analysis of all noise generated in the course of the construction and operation of the project, inclusive of the marine and the land-based facilities. The analysis should also provide a thorough analysis of expected impacts on marine life, avian populations and residents/visitors to the area. The noise analysis should address all impacts from construction, WTG and ESP operation, maintenance and marine navigation aids (foghorns) associated with the project.

### **ECONOMIC DEVELOPMENT**

The Economic Development section of the Regional Policy Plan addresses three Goals: 3.1 *To promote businesses that are compatible with Cape Cod’s environmental, cultural, and economic strengths in order to ensure balanced economic development*; 3.2 *To locate development so as to preserve the Cape’s environment and cultural heritage, minimize adverse impacts, and enhance the quality of life*; and 3.3 *To encourage the creation and diversification of year-round employment opportunities*. Economic development goals and policies are reviewed in the context of the Regional Policy Plan and in consideration of all other potential impacts in all other

issue areas of the RPP. Environmental protection and quality of life are extremely important on Cape Cod and the Commission views economic development in this broad context.

Environmental review through the MEPA Unit does not take into consideration economic development issues and is, therefore, not required as part of the MEPA submittals. However, because the Cape Cod Commission does review economic development, it is suggested that the project proponent include the economic development analysis as part of its MEPA submittals in order to address these issues in a timely manner.

Due to the uniqueness of the project, the applicant should address economic development issues as they pertain to the specifics of this project. Information and data regarding the following economic development issues should be included in the scope of the MEPA documents, since these are required by the Cape Cod Commission:

#### *Trade Area*

ED1. Staff recommends that the DEIR include a thorough break down of the trade area(s). The DEIR should indicate the percentage of sales/customers served that would be drawn from each of these three market areas and should include the market area purchasing power and market share.

#### *Sales/Cost of Service*

ED2. Through the use of tables, the DEIR should break down the projected sales/cost of service into a dollar amount and a percentage for each market area. Account for new sales and natural growth within trade area for both year-round and seasonal markets and show cost impacts to residents and businesses for both year-round and seasonal residents.

#### *Employment*

ED3. The DEIR should provide numbers of workers and types of positions for both construction jobs and full-time and part-time employees, including approximate salary ranges and benefits provided. It should also show the anticipated source of these employees. The project proponent should indicate how many construction jobs and subcontracts would go to Cape Cod residents and indicate the method for hiring Cape residents for all types of positions. The DEIR should provide a discussion of employment training opportunities.

#### *Fiscal Impact*

ED4. The DEIR should present a detailed fiscal analysis showing benefits to the Town of Yarmouth and the region and provide a summary of costs to the Town for the provision of services.

#### *Health Impacts*

ED5. The DEIR should provide a detailed discussion of the anticipated health impacts and associated costs/benefits of the project. This should include, but not be limited to, supporting documentation of the realistic potential air quality benefits of the project and a discussion of the anticipated electro-magnetic fields (EMF) resulting from the turbines and the underground cabling. The analysis should include background information on

EMF impacts studied to date and associated with facilities of a similar type and generating output.

### *General*

- ED6. The ENF does not address potential impacts to tourism in the area resulting from the project. In addition, presentations given by the proponent have indicated that similar facilities in other countries have provided a tourism benefit in the form of attracting new visitors. Therefore, the DEIR should provide detailed background information and studies that illustrate all potential impacts to the tourist industry.
- ED7. In addition to the required information noted above addressing the economic development goals and Minimum Performance Standards, the project proponent should address Development Review Policies and Other Development Review Policies. Addressing these policies, as appropriate, is an opportunity for the applicant to provide benefits to the project, which would be weighed in the benefits/detriments analysis by the Commission.

## COMMUNITY FACILITIES

### **Transportation**

Based on the information in the ENF, there do not appear to be long term regional transportation impacts (land based) from this project. Regional transportation impacts are expected, however, during construction.

- CF1. The ENF provides very little detail on the construction operations associated with the wind park. Therefore, the DEIR should provide a thorough outline of all aspects of construction, including staging areas, transportation routes and ports to be used. Staff would particularly recommend that off-Cape ports be used as staging areas.
- CF2. The DEIR should aim to address mitigation for the overland laying of the cable by limiting when utility work is allowed on Cape Cod roads (such as limiting the work to the period October 15 through May 1 and avoiding the Christmas shopping season).
- CF3. The DEIR should in more detail outline how the roads, sidewalks, vegetation and shoulders are restored to their original condition or improved.

### **Solid and Hazardous Waste Management**

#### *Solid Waste*

MPS 4.2.1.1 requires information about the quantities and types of solid waste generated by the project and how they are handled. Also, MPS 4.2.1.3 requires that construction and demolition debris shall be removed from construction sites and disposed of in accordance with the integrated solid waste management system outlined in Section 4.2.1.1 of the RPP. Staff has reviewed the ENF and notes that it does not provide information on the construction details associated with the project.

- CF4. Staff recommends that the EIR describe in detail the activities (both construction and operational) that will involve the generation of construction demolition waste materials for both the marine and land-based facilities. This should include anticipated types and quantities of construction demolition waste materials, strategies to minimize the disposal amounts of this material, and plans for materials that can be recycled. Also, staff recommends that the EIR detail the destination of materials to either be recycled or disposed of as construction demolition waste.

#### *Hazardous Materials/Wastes*

Minimum Performance Standards 4.2.2.1 and 4.2.2.2 require that development and redevelopment make reasonable efforts to minimize their hazardous waste generation, and that they comply with Massachusetts Hazardous Waste Regulations. Minimum Performance Standard 4.2.2.3 requires that commercial and industrial development and redevelopment that involves the use, treatment, generation, storage or disposal of hazardous wastes or hazardous materials, with the exception of household quantities, shall not be allowed within Wellhead Protection Districts.

Based on maps included in the Regional Policy Plan, the NSTAR facility is located in an existing Wellhead Protection District. As such, MPS 4.2.2.3 would apply to the land-based facilities for this project. The Expanded ENF does not address the use of hazardous materials or generation of hazardous wastes during construction and operation of the project, for either the WTGs or the associated land-based infrastructure.

- CF5. Staff recommends the EIR describe in detail what construction and post-construction activities will involve hazardous materials or generate hazardous wastes, for both the marine and land-based facilities. This should include the anticipated types and quantities of hazardous materials/wastes, strategies to minimize hazardous materials use and waste generation, spill control plans and employee training.

#### **Capital Facilities and Infrastructure**

Minimum Performance Standard 4.3.1.2 states that, *“development of new infrastructure shall occur only after an analysis of the impacts of this infrastructure with regard to land use, traffic, water quality, natural resources, historic preservation and community character as well as other applicable issue areas noted in the Regional Policy Plan and shall be consistent with the town’s Local Comprehensive Plan and Capital Improvements Plan.”*

- CF6. The applicant should address the provision of infrastructure as it relates to the Regional Policy Plan and should also refer to and address the Yarmouth Draft Local Comprehensive Plan and the Capital Improvements Plan in the discussion and analysis of the provision of capital facilities and infrastructure.

#### **Energy**

The Cape Cod Commission Regional Policy Plan recognizes that Cape Cod has the potential for harnessing wind energy. Historically, the Cape was dotted with windmills used by settlers in the 18th and 19th centuries to pump water for the salt works and grind grain for the farming industry. The development of clean, renewable energy is consistent with many of the goals of the

RPP. However, the ENF provides little information to back the claims relating to the project benefits made by the proponent.

- CF7. The ENF claims that the wind park will directly benefit Cape Cod with cheaper, green electricity but does not specify the mechanism for this to occur. The staff understanding of the electricity supply industry is that the power from the wind park will be delivered to the New England Power grid and would most likely be sold to meet State-mandated Renewable Energy Portfolio Standard requirements. This would likely result in the output commanding a premium price in supply contracts. Staff therefore believes that local utilities and competitive suppliers would then purchase this output and resell it to consumers on the Cape at this higher price. Therefore, staff recommends that the proponent give a very detailed overview of the electricity supply market, and of “green power” in particular and provide the rationale for their claims of providing \$800 MM savings to New England ratepayers. This discussion should also outline any additional customer fees/surcharges for renewable energy and information on how the market value will be determined by the supplier.
- CF8. The ENF also claims that the project will encourage energy conservation and improve energy efficiency, however, no specific details are provided that would support this statement. The staff believes that contributing to an overall reduction in the consumption of electricity on Cape Cod and in the northeast would further off-set the need for future fossil-fuel burning power plants. For instance, a program to replace energy inefficient appliances and light fixtures as well as improving the energy efficiency of homes and businesses would provide a regionally significant benefit to the project. Staff would therefore suggest that the proponent establish programs in their DEIR that tackle the demand side of the electricity market by encouraging conservation programs which would have the added effect of providing a more tangible local benefit of the project.
- CF9. The DEIR should also provide an overview of current technology in the field of renewable energy, particularly a discussion of what alternative generation devices could be utilized. For instance, some designs incorporate wind and wave turbines that have higher generation rates than those proposed. Such an analysis might provide information on potential alternatives to the number of turbines proposed.

## HISTORIC PRESERVATION/COMMUNITY CHARACTER

### **Archaeological/cultural resources**

Cape Wind has retained Public Archaeological Laboratory (PAL) who have completed research into potential archaeological and significant historical sites within 1.5 mile of the overland cable route. provide assessment of cultural resources. The ENF also describes how an “Unanticipated Discovery Plan” will be created prior to construction over land.

The ENF also describes research and study of potential marine archaeological and cultural resources in the underwater portion of the project. A geophysical survey was completed by the proponent in an attempt to locate resources in the vicinity of the cable route and within the turbine array. The ENF states that the proponent will work with Massachusetts Board of

Underwater Archaeological Resources to develop appropriate mitigation should any impacts be discovered.

- CC1. The DEIR should more thoroughly describe the role of PAL consultants and indicate what Massachusetts Historical Commission's role will be in evaluating the data they have collected. Furthermore, the results of the studies completed to date should be included in the DEIR to establish the scope of the research conducted and to provide an outline of future additional work that may need to be performed. This analysis should also detail the jurisdictional responsibilities of the state and federal agencies with purview of these kinds of resources.

### **Community Character**

The Community Character section of the RPP addresses issues that are outside the scope of the MEPA review, but would be applied to the review of a Development of Regional Impact. Environmental review through the MEPA Unit does not take into consideration such issues and is, therefore, not required as part of the MEPA submittals. However, because the Cape Cod Commission does review community character, staff would suggest that the project proponent include an analysis of potential community character impacts as part of its MEPA submittals in order to address these issues in a timely manner.

The ENF states that the project has been sited and designed to minimize the visual impacts from land based vantage points. The proponent describes how the towers will be painted light gray to blend into the skyline at the horizon and have been sited as far as practicable from shore. A portion of the 42- foot tower will be visible from the surrounding shore, but the ENF describes them as appearing fairly small. The ENF does provide a computer generated visual simulation for selected sites at sea level, but staff believes the information provided is lacking sufficient detail.

Section 9.9.1 describes how the WTG'S are intended to comply with the US Coast Guard approved lighting scheme to allow safe passage between the turbine towers. This would consist of two amber obstruction lights on each tower, located at least 10 feet above sea level and which are designed to be visible from at least a mile away. Furthermore, the ENF also states that lights to aid air travel safety will be provided. These consist of two flashing obstruction lights located on top of the generator that are angled upwards to increase visibility from the air but to decrease visibility from the shoreline.

- CC1. Staff recommends that a complete and comprehensive visual impact analysis should be completed for the project. Such an analysis should include, but not be limited to, the following:
- A study of the perceived height of the structures from shore that makes allowance for the curvature of the earth. The vantage points selected should consist of not only the closest land, but also the view from selected high points around the Cape and Islands.
  - The analysis should also provide a comparison of similarly sized structures in the region that permit a visual reference for those reviewing the proposal (for example, comparison of the tower size relative to the Provincetown

Monument, Canal Bridges, telecommunications towers or emission stacks of the Canal Station Power Plant in Sandwich).

- The study should provide information on possible alternatives in the arrangement, height and number of WTG's in the facility that might further reduce the visual impacts of the project. This could include exploring the consolidation of profiles of the WTG's to minimize the extent of their visibility on the horizon. Furthermore, the applicant should establish the methodologies for proposing WTG's of the size proposed and provide details of the generation potential from shorter WTG's.
- The analysis should also evaluate the visual impact of the facility on those who use Nantucket Sound and what impact it has on the experience of sailors and boaters.

CC2. Staff recommends that the DEIR should complete a full lighting analysis that should fully illustrate the potential impacts of the proposed lighting. This analysis should include, but not be limited to, an illustration of where these lights may be seen from, whether they are visible from shore and what intensity of light might be expected.



BOARD OF  
UNDERWATER  
ARCHAEOLOGICAL  
RESOURCES

*The Commonwealth of Massachusetts*  
*Executive Office of Environmental Affairs*  
*251 Causeway Street, Suite 900*  
*Boston, Massachusetts 02114-2119*

January 4, 2002

RECEIVED  
JAN 10 2002  
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Fax (617) 626-1181  
<http://www.magnet.state.ma.us/envir>

Mr. Brian E. Valiton  
Regulatory Division  
U.S. Army Corps of Engineers  
New England District  
696 Virginia Road  
Concord, MA 01742-2751

RE: File No. 199902477

Dear Mr. Valiton:

The Massachusetts Board of Underwater Archaeological Resources has reviewed the above referenced project's public notice.

The Board has conducted a preliminary review of its files and secondary literature sources to identify known and potential submerged cultural resources in the area of the proposed scientific measuring tower. Research suggests that in addition to several known shipwreck sites in Nantucket Sound and numerous reported vessel losses for which accurate locations are not readily determined, there exists a high probability that heretofore-unknown historic and prehistoric cultural resources are located in the proposed project vicinity. It is important to note that despite its numerous natural hazards to navigation, the proposed project area served as a significant route for vessel traffic particularly prior to the opening of the Cape Cod Canal. This fact, combined with the ambiguity of wreck locations in the historical record reinforces the appraisal of high sensitivity for possible shipwreck occurrence in the proposed project vicinity.

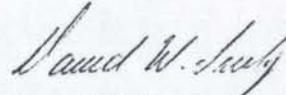
Further, the loss of earlier and smaller coastal vessels and the purposeful abandonment of obsolete or damaged vessels are generally not found in the documentary record. The level and diversity of maritime commerce, fishing, and recreational activities throughout the Cape Cod region, particularly along Nantucket Sound, may have resulted in the creation of a number of undocumented and anonymous underwater archaeological sites such as small craft, derelict vessels, or dumpsites. These possible site types represent classes of vessels of which our knowledge is severely limited and, thus, are potentially historically and archaeologically significant.

In addition to the high sensitivity of the proposed project area for possible shipwreck presence, the area of Horseshoe Shoal is considered to be an inundated land formation and as such there exists the strong possibility for the preservation of now submerged prehistoric cultural resources.

In summary, the Board takes this opportunity to express its concern that heretofore-unknown cultural resources, both historic and prehistoric, might be encountered during the course of work and hopes that the proposed project's sponsor will take the necessary steps to identify these resources and limit adverse affects. The Board requests that the project proponent secure the services of a qualified marine archaeologist in developing an adequate survey design and that this survey design be approved by the Board. Additionally, the Board requests that the project proponent notify the Board and the Massachusetts Historical Commission, as well as other appropriate agencies if historical or archaeological resources are identified.

Thank you for your consideration of these comments. If you should have any questions, please do not hesitate to contact me at the address above or by telephone at (617) 626-1032.

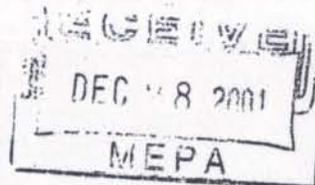
Sincerely yours,



David W. Trubey  
Deputy Director

For Victor T. Mastone  
Director

VTM/dwt



**The Commonwealth of Massachusetts**  
William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

December 24, 2001

Secretary Bob Durand  
Attn.: MEPA Office  
Executive Office of Environmental Affairs  
251 Causeway Street, 9th Floor  
Boston, MA 02114-2150

12-28-01 A09:50 IN

ATTN: Arthur Pugsley

RE: Cape Wind, Yarmouth, MA. MHC #RC.29785. EOE #12643. ACOE File #199902477.

Dear Secretary Durand:

Staff of the Massachusetts Historical Commission have reviewed the expanded Environmental Notification Form (ENF) for the proposed project referenced above and have the following comments.

MHC understands that this project entails the installation of an array of 170 wind turbine generators on Horseshoe Shoal in Nantucket Sound, which will transmit electricity to the mainland via a submarine cable system that will interconnect with existing NSTAR electric transmission lines in Yarmouth, or alternatively in Barnstable or Mashpee. MHC also understands that prior to the construction of the wind park that the project proponent intends to build a pile-supported scientific measuring tower on Horseshoe Shoal.

Undisturbed portions of the preferred project area and project area alternatives are archaeologically sensitive and are likely to contain historic and archaeological sites associated with the ancient Native American and historic-period occupation of Yarmouth, Barnstable, and Mashpee. The areas' archaeological sensitivities are determined by their favorable environmental characteristics including areas of well-drained soils and relatively level terrain, proximity to natural features such as water bodies (e.g. Lewis Bay, Nantucket Sound, Popponset Bay), and cultural features such as known archaeological sites.

Underwater portions of the project area are also considered archaeologically sensitive. Both heretofore unknown shipwrecks and drowned ancient Native American sites may exist within the wind park and along the underwater cable routes. The Massachusetts Board of Underwater Archaeological Resources (MBUAR) has identified several shipwrecks in the general area, however the exact locations of shipwrecks are difficult to pinpoint without conducting underwater surveys. MHC understands that a marine geophysical survey was conducted within the turbine array location and along the proposed cable route during the summer of 2001. The project proponent should be aware that this data may not be sufficient as an underwater survey designed to locate archaeological resources. Such surveys are usually designed in consultation with a marine

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archaeologist before data is collected in order to ensure that adequate coverage is provided to discover any potentially significant archaeological resources.

MHC requests that an archaeological reconnaissance survey be conducted for the terrestrial and underwater portions of the project areas. The purpose of the reconnaissance survey is to identify archaeologically sensitive areas within the project area that will require further testing to locate and identify any important archaeological resources that they may contain. The archaeological sensitivity of these areas is assessed on the basis of an in-depth study of land and water-use history, current conditions, proposed plans, and proximity to favorable environmental characteristics and known archaeological sites. Specific portions of the project area may be recommended for archaeological testing. MHC additionally recommends that the project proponent consult with a marine archaeologist, MBUAR, and the MHC to plan additional underwater survey if the current data are determined to be insufficient for the purposes of identifying significant underwater archaeological sites. We look forward to seeing the results of the underwater survey in the reconnaissance report.

If they have not already done so, the project proponents should also contact the Wampanoag Tribe of Gay Head (Aquinnah), and the Mashpee Wampanoag Tribal Council, Inc.

The proposed project location is also within close proximity to the following historic resources that are listed in the State and National Registers of Historic Places: Cotuit, Wianno, Centerville, Craigville, Hyannis Port historic districts in Barnstable; South Yarmouth / Bass River Historic District in Yarmouth; Monomy Point Light in Chatham; Edgartown Village Historic District, Cape Pogue Light, and Edgartown Harbor Lighthouse in Edgartown, Martha's Vineyard; Martha's Vineyard Campground Historic District and East Chop Light in Oak Bluffs, Martha's Vineyard; Nantucket Island National Historic Landmark, including Nantucket Village, Crooked Record, Monomy and Wocuwinet areas and properties along the Nantucket Cliffs. In addition Tuckernuck Island is included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth and listed in the State Register of Historic Places.

The preferred overland cable route falls within close proximity to three clusters of buildings that are included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth and near the Yarmouth Campground Historic District, a district that is listed in the State and National Registers of Historic Places. The Hyannis alternate overland route is partially within the Hyannis Main Street Waterfront Historic District, a district that is listed in the State Register of Historic Places. The Cotuit alternate overland route follows Main Street within the Cotuit Historic District, a district listed in the State and National Registers of Historic Places.

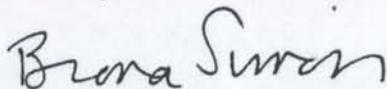
The MHC requests that a visual assessment study be conducted in order to evaluate the visual effects of the project on the character and setting of the historic resources referenced above. At a minimum, the visual assessment study should include: a map that clearly indicates the location of the above listed historic resources relative to the proposed project area, including the distances from the project area to these historic resources. The MHC also requests that additional photographic simulations be taken from multiple locations within and at the edges of the above listed historic resources, showing both day and night and lighting conditions. Please also submit photographic simulations looking from within the project area to these land areas.

In addition, the MHC requests the opportunity to review current original photographs of the three clusters of buildings identified along the preferred overland cable route in order to determine National Register eligibility (36 CFR 60). Photographs should include images of the buildings themselves and context

views of the buildings in their surroundings. Please label and key the photographs to sketch maps indicating the direction of the photographs.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), Massachusetts General Laws, Chapter 9, Sections 26-27C as amended by Chapter 254 of the Acts of 1988 (950 CMR 71), and MEPA (301 CMR 11). If you have any questions, please feel free to contact Stacey Wetstein, Preservation Planner, or Margo Muhl Davis, Archaeologist/Preservation Planer, at this office.

Sincerely,



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

xc: Karen Kirk Adams, Chief, USACOE-NED-Regulatory  
Kate Atwood, USACOE  
John Silva, FAA  
USCG, Rhode Island Office  
DEP-SERO  
MCZM  
MHD-District 5  
Phil Dascom, Cape Cod Commission  
Victor Mastone, EOEA, Board of Underwater Archaeological Resources  
Glen Marshall, Mashpee Wampanoag Tribal Council Inc.  
Matthew Vanderhoop, THPO, WTGHA  
Yarmouth Historical Commission  
Mashpee Historical Commission  
Barnstable Historical Commission  
Nantucket Historical Commission  
Edgartown Historical Commission  
Oak Bluffs Historical Commission  
Chatham Historical Commission



# The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

251 Causeway Street, Suite 900

Boston, Massachusetts 02114-2119

BOARD OF  
UNDERWATER  
ARCHAEOLOGICAL  
RESOURCES

## MEMORANDUM

Tel. (617) 626-1000

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

TO: Bob Durand, Secretary, EOEА  
ATTN: Mr. Arthur Pugsley, MEPA Unit  
FROM: Victor T. Mastone, Director, Massachusetts Board of Underwater  
Archaeological Resources  
DATE: December 18, 2001  
RE: EOEА No. 12643, Cape Wind Project

The Massachusetts Board of Underwater Archaeological Resources has reviewed the above referenced project's Environmental Notification Form in the *Environmental Monitor* and the project's Expanded Environmental Notification Form and Combined Cape Cod Commission Development of Regional Impact Review.

The Board has conducted a preliminary review of its files and secondary literature sources to identify known and potential submerged cultural resources in the proposed project area. Research suggests that in addition to several known shipwreck sites in Nantucket Sound and numerous reported vessel losses for which accurate locations are not readily determined, there exists a high probability that heretofore-unknown historic and prehistoric cultural resources are located in the proposed project vicinity.

It should be noted that the southern portion of the proposed project area and the proposed cable route are adjacent to and transect significant channels of both small and large vessel traffic prior to the opening of the Cape Cod Canal; up to that time, the majority of vessels traveled through Nantucket Sound (with its numerous and treacherous shoals including Horseshoe Shoal) rather than south of Martha's Vineyard and Nantucket Islands. This fact, and the ambiguity of wreck locations in the historical record reinforce the appraisal of high sensitivity for possible shipwreck occurrence in the project vicinity.

Further, the loss of earlier and smaller coastal vessels and the purposeful abandonment of obsolete or damaged vessels are generally not found in the documentary record. The level and diversity of maritime commerce, fishing, and recreational activities throughout the Cape Cod region, particularly along Nantucket Sound, may have resulted in the creation of a number of undocumented and anonymous underwater archaeological sites such as small craft, derelict vessels, or dumpsites. These possible site types represent classes of vessels of which our knowledge is severely limited and, thus, are potentially historically and archaeologically significant.

Although Section 7.8.2 of the Expanded Environmental Notification Form indicates, "a comprehensive marine geophysical survey was conducted" that included both side-scan sonar



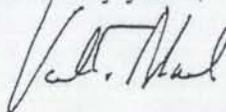
and magnetometer data collection, the parameters of the survey appear to be too broad and therefore inappropriate for this area. In particular, the Board is concerned that the lane spacing for this survey is too gross for the adequate detection of submerged archaeological sites. Additionally, the section states that any "potential cultural resources that cannot be avoided by Project routing or redesign will be evaluated for potential cultural significance by a qualified marine archaeologist, in consultation with the Massachusetts Board of Underwater Archaeological Resources." While such an evaluation is certainly significant, the Board feels strongly that consultation with a qualified marine archaeologist should have been part of the initial research and survey design as well, rather than solely subsequent to data acquisition. Thus, it is unclear that the research design adequately addresses the identification and protection of cultural resources.

In addition to the high sensitivity of the proposed project area for possible shipwreck presence, the area of Horseshoe Shoal is considered to be an inundated land formation and as such there exists the strong possibility for the preservation of now submerged prehistoric cultural resources. A regional model for the southern Gulf of Maine suggests the expected site frequency for the study area would be low for all site types dating prior to 6000 BP, but would increase from low-medium (habitation) to high (shell middens, habitations, camps) for the period 6000 to 3000 BP. While this model does not provide sufficient resolution to specifically identify potential site locations at the scale of the study area, it points to the need to consider the occurrence of prehistoric sites. Although Section 7.8 of the Expanded Environmental Notification Form acknowledges the need to research potential historic sites, there is no mention of prehistoric sites or how Cape Wind Associates, LLC proposes to ensure their identification, protection or mitigation.

In summary, the Board takes this opportunity to express its concern that heretofore-unknown cultural resources, both historic and prehistoric, might be encountered during the course of work and hopes that the proposed project's sponsor will take the necessary steps to identify these resources and limit adverse affects. The Board requests that the project proponent secure the services of a qualified marine archaeologist in developing an adequate survey design and that this survey design be approved by the Board. Additionally, the Board requests that the project proponent notify the Board and the Massachusetts Historical Commission, as well as other appropriate agencies if historical or archaeological resources are identified.

Thank you for your consideration of these comments. If you should have any questions, please do not hesitate to contact me at the address above or by telephone at (617) 626-1141.

Sincerely yours,



Victor T. Mastone  
Director

VTM/dwt

Cc: Margo Muhl Davis, Massachusetts Historical Commission  
Karen Kirk Adams, Chief of Permits Branch - MA, US Army Corps of Engineers,  
Regulatory Division  
Barbara Voulgaris, Naval Historical Center



December 15, 2003

## The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth  
Massachusetts Historical Commission

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. PAL #1485.01. MHC #RC.29785. COE #199902477.

Dear Ms. Godfrey:

Staff of the Massachusetts Historical Commission have reviewed the technical management memorandum prepared by the PAL, reporting on the results of the intensive (locational) archaeological survey of the terrestrial (overland) Cape Wind Alternative #1 route for the construction of underground utilities. Cape Wind Alternative #1 begins at Lewis Bay in Yarmouth, and then continues north and then west to the NSTAR Barnstable Switching Station in Barnstable. MHC looks forward to receiving from the PAL two (2) copies of the final report, an original MHC site form (D-PHST), and a diskette with the report bibliographic data and archaeological abstract.

The archaeological investigations located one ancient Native American archaeological site called the Pole #20 Site. The site consists of a low-density deposit of rhyolite chipping debris (the byproduct of stone tool manufacture or maintenance). Three of the four pieces of chipping debris were located in disturbed soils. These artifacts are not diagnostic of any particular time period or archaeological tradition. Because the archaeological site does not have integrity and lacks research value, it does not meet the Criteria of Eligibility (36 CFR 60) for listing in the National Register of Historic Places.

MHC concurs with the report recommendations that no further archaeological investigations of the terrestrial Cape Wind Alternative #1 utilities route, as it is presently planned, is required. If the project route changes, scaled project plans with the changes to the impact area highlighted should be submitted to the MHC for review and comment.

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

Sincerely,

A handwritten signature in cursive script that reads "Brona Simon".

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

xc:

Kathleen Atwood, USACOE  
Terry Orr, ESS Group Inc.  
Deborah Cox, PAL

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