United States
Environmental Protection
Agency New England

5 Post Office Square - Suite 100

Boston, MA 02109-3912

FACT SHEET

Outer Continental Shelf Air Permit Approval:
Cape Wind Energy Project

Horseshoe Shoal
Nantucket Sound, Massachusetts

Offshore Renewable Wind Energy Project

EPA Draft Permit Number
OCS-R1-01

Acronyms and Abbreviations

BACT	Best Available Control Technology
BTU	British thermal unit
CAA	Clean Air Act
Cape Wind	Cape Wind Associates, LLC
CDPF	Catalyzed Diesel Particulate Filter
CEM	Continuous Emission Monitor
C.F.R.	Code of Federal Regulations
CI	Compression Ignition
CMR	Code of Massachusetts Regulations
CPA	Comprehensive Plan Approval
COA	Corresponding Onshore Area
CO	Carbon Monoxide
DEP	Massachusetts Department of Environmental Protection
DOC	Diesel Oxidation Catalyst
EGR	Exhaust Gas Recirculation
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESP	Electrical Service Platform
Fed. Reg.	Federal Register
FTF	Flow-through Filters
FWS	US Fish and Wildlife Service
g/hp-hr	Grams per horsepower-hour
g/kw-hr	Grams per kilowatt-hour
IBR	Incorporate by reference
LAER	Lowest Achievable Emission Rate
MM	million
MMBtu	Million British thermal units
NAAQS	National Ambient Air Quality Standards
NMCPA	Non-Major Comprehensive Plan Approval
NRC	NOx Reducing Catalyst
NSR	New Source Review
NOI	Notice of Intent
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxides
OCS	Outer Continental Shelf
$PM_{2.5}$	Particulate Matter – 2.5 microns
PM_{10}	Particulate Matter – 10 microns
ppm	Parts per million
PSD	Prevention of Significant Deterioration
SCR	Selective Catalytic Reduction
SO_2	Sulfur Dioxide
tpy	tons per year
ULSD	Ultra-low Sulfur Diesel
USC	United States Code
VOC	Volatile Organic Compounds
WTG	Wind Turbine Generator

I. GENERAL INFORMATION

Name of Source:	Cape Wind Offshore Renewable Energy Project
Location:	Horseshoe Shoal Nantucket Sound
Applicant's Name and Address:	Cape Wind Associates, LLC 75 Arlington St., Suite 704 Boston, MA 02116
Application Prepared By:	ESS Group, Inc. 888 Worcester Street, Suite 240 Wellesley, MA 02482
Draft Permit Number:	OCS-R1-01
EPA Contact:	Brendan McCahill Air Permits, Toxics, and Indoor Programs Unit (Mail Code OEP05-2) (617) 918-1652

On December 17, 2008, Cape Wind Associates, LLC (Cape Wind) filed an Outer Continental Shelf (OCS) air permit application with the Environmental Protection Agency Region 1 office (EPA). Cape Wind proposes to install and operate 130 wind turbine generators (WTGs) and other supporting equipment (the Project) in a grid pattern on or near the Horseshoe Shoal in Nantucket Sound, Massachusetts. Cape Wind submitted additional documents on the Project's emission estimates, control requirements, and other supplemental information to EPA on March 12, 2009, June 25, 2009, September 23, 2009, March 3, 2010, April 23, 2010 and June 4, 2010. A copy of the application and the additional documents are included in the permit file and available on EPA Region 1's web site at http://www.epa.gov/NE/communities/nsemissions.html.

EPA proposes to approve Cape Wind's application and to issue an air permit that regulates the pollutants emitted from the preconstruction, construction and operation activities of the proposed wind energy facility. This document serves as the fact sheet as required by 40 Code of Federal Regulations (C.F.R.) part 124 (Procedures for Decision Making) and explains the legal and factual basis for EPA's approval.

II. PERMIT ORGANIZATION

For air permitting purposes, EPA is proposing to divide the Project into three sections that closely track the life cycle or phases of the Cape Wind project. Phase 1 includes site preparation and construction of the Project; Phase 2 includes operations, maintenance and repair of the Project; and Phase 3 includes decommissioning and removal of the project. This permit includes emissions and operational requirements applicable to Phases 1 and 2. EPA is not proposing the requirements for Phase 3 at this time.

This permit organization is different from most air permits. Typically, state and federal air regulations define emissions that result from the construction and decommissioning of a new source as "secondary emissions." Secondary emissions are generally not included in a source's "potential emissions" and not regulated in a source's air permit, although they may be included in the source's air impact analysis. In addition, state environmental authorities may include emissions from construction activities in the state's air emission inventories, which are used to develop the state's overall emission control strategies.

The definition of "OCS source" in section 328 of the Clean Air Act, 42 U.S.C. § 7627, and 40 C.F.R. part 55 is broader in scope than EPA's regulations for land-based stationary sources. The OCS source definition includes, among other things, certain on-site construction equipment, and emissions from that equipment are subject to regulation in the air permit. The OCS regulations also require EPA to include pollutants emitted from certain vessels that service the Cape Wind OCS source in the "potential emissions" of the Cape Wind project. These emissions would typically not be included for an analogous on-shore project under stationary source regulations.

EPA's action today includes the proposal of the air permit provisions that regulate the emissions from the project's preconstruction and construction activities (referred to as Phase 1 activities) and the project's operational activities (referred to as Phase 2 activities). EPA is not taking action at this time regarding the emissions that will result from the decommissioning of the project. As explained in more detail below, EPA's proposed permit requires Cape Wind to notify EPA before initiating any Phase 3 activities, and to seek an applicability determination or revised permit for Phase 3 activities at that time.

III. PROJECT LOCATION AND DESCRIPTION

III.A Location

The Cape Wind project is located in a grid pattern on and near the Horseshoe Shoal in Nantucket Sound approximately 3.5 miles off the Massachusetts coast. Figure 1-1 of the December 17, 2008 application provides a map of the project. The project is outside of Massachusetts state waters but well within 25 miles of the state's seaward boundary.

III.B Project Description

The project includes the construction and operation of 130 WTGs, an electrical service platform (ESP), inner-array cables, and two transmission cables. Each of the 130 WTGs will independently generate electricity. The ESP will serve as the common interconnection point for all of the WTGs. Solid dielectric submarine inner-array cables will interconnect each of the WTGs to the ESP. The proposed submarine transmission cable system is approximately 12.5 miles in length from the ESP to the landfall location in Yarmouth, Massachusetts. The two submarine transmission cables will travel north to northeast in Nantucket Sound into Lewis Bay past the westerly side of Egg Island, and then make landfall at New Hampshire Avenue in Yarmouth, MA.

III.C Phase 1 Preconstruction and Construction Activities

Phase 1 includes the site preparation/preconstruction and construction activities for the project. Cape Wind estimates that Phase 1 will last two years.

III.C.1 Preconstruction activities

The Phase 1 preconstruction activities include the following:

- A shallow hazards survey geophysical program designed to collect information to characterize the surface and subsurface geological conditions in the area affected by the project in preparation for final design and construction. Cape Wind will conduct the survey using a diesel lobster vessel. The vessel operates approximately 10 hours per day during relatively calm sea conditions.
- A supplemental geotechnical program design to further analyze sediments and physical conditions within the affected areas for use in final foundation design and to develop site-specific best management practices for construction. The program will use coring and boring equipment to collect sediment samples for laboratory analysis.
- Vibracore sampling along the proposed inner array and transmission cable routes. Cape Wind proposes to use a small gasoline-powered vessel to collect the vibracores.
- Boring sampling of the seafloor to collect site-specific geotechnical data. Cape Wind proposes to use a truck-mounted drill rig placed upon a jack-up barge that rests on spuds lowered to the seafloor. A tug boat will tow the barge. A gasoline or diesel-powered electrical generator will power the drill rig used in the borings.

III.C.2 Construction activities

The Phase 1 construction activities include the installation of the following equipment:

- onshore duct bank and onshore cable,
- the ESP,
- 130 WTGs with monopiles,
- scour protection equipment, and
- submarine cables.

Section 2.0 of the U.S. Minerals Management Service (MMS) Final Environmental Impact Statement for the Project provided detailed descriptions of these items, including their function and installation sequence, and the final configuration of the WTG platform.[1]

Cape Wind anticipates using onshore facilities located in Quonset, Rhode Island to support the offshore construction activity. Cape Wind will use the existing port facilities at this location to stage the materials and equipment and then load the materials and equipment onto various vessels for transportation to the offshore site for installation. Cape Wind will use boats or helicopters, depending on weather conditions, to ferry construction personnel. The vessels will travel from Quonset through Narragansett Bay to Rhode Island Sound to Vineyard Sound north of Martha's Vineyard to the main channel. Total travel distance is approximately 55 miles.

Once on-site, Cape Wind will use a variety of vessels, barges, and other construction equipment to install the various equipment listed above.

III.D Phase 2 Operational Activities

Phase 2 includes the activities for the normal operation and maintenance of the wind farm. The activities generally fall into two categories:

- Work that only requires personnel and/or small vessel activity, and
- Work requiring large marine vessel operations.

Cape Wind anticipates operating its main operations center in the town of Yarmouth, Massachusetts. It also anticipates operating two on-shore locations to support the operations and maintenance of the wind farm. Cape Wind will likely locate one of its onshore facilities in New Bedford to operate its larger maintenance supply vessels and to store equipment. It will likely locate an additional facility closer to the project site to provide crew transport.

The December 2008 permit application provided information on service and maintenance requirements for the wind farm. Cape Wind stated that the wind farm facility would not require the use of any stationary sources of emissions. However, Cape Wind anticipates that the facility will require maintenance and periodic repairs. The application provided an

[1] See Section IV.C.1 for more information about the MMS FEIS.

analysis that projected the major WTG and ESP repairs, inspections, and cable repair operations that would occur at the facility in any given year. Cape Wind used these projections to determine the annual emissions from the wind farm during normal operations.

IV. OCS REGULATORY REQUIREMENTS

IV.A OCS Statutory Requirements

Section 328(a) of the Clean Air Act requires that EPA establish air pollution control requirements for OCS sources located within 25 miles of States' seaward boundaries that are the same as onshore requirements. To comply with this statutory mandate, on September 4, 1992, EPA promulgated 40 C.F.R. part 55, which established requirements to control air pollution from OCS sources in order to attain and maintain federal and state ambient air quality standards and to comply with the provisions of part C of title I of the Act (the Prevention of Significant Deterioration of Air Quality requirements).[2] Part 55 applies to all OCS sources offshore of the States except those located in the Gulf of Mexico west of 87.5 degrees longitude. Section 328 of the Act requires that for such sources located within 25 miles of a State's seaward boundary, the requirements shall be the same as would be applicable if the sources were located in the corresponding onshore area (COA), which is typically the onshore attainment or nonattainment area that is closest to the source.

The Energy Policy Act of 2005 amended section 8 of the Outer Continental Shelf Lands Act (OCSLA) to allow the Department of the Interior to authorize activities on the OCS that "produce or support production, transportation, or transmission of energy from sources other than oil and gas." 43 U.S.C. § 1337(p)(1)(C). The proposed Cape Wind project is such an activity. As such, it is an "OCS source" subject to section 328 of the Clean Air Act (CAA) and EPA's implementing regulations at 40 C.F.R. part 55.

IV.B OCS Procedural Requirements

The OCS statutory requirements under section 328 of the CAA are codified under 40 C.F.R. part 55. The OCS regulations create procedures that require an applicant seeking to construct and operate an OCS source to identify the federal regulations, and state and local regulations from the corresponding onshore area (COA), that may apply to the source and to make those regulations apply, as a matter of federal law, to the OCS source. The OCS permit application then follows the procedural requirements for federal permitting outlined in 40 C.F.R. part 124, and the permitting agency (generally, EPA) issues a permit that meets all federal requirements.

The OCS regulations first require the applicant to submit a notice of intent (NOI) to the nearest EPA regional office (§ 55.4). The NOI provides emissions information regarding the OCS source, including information necessary to determine the applicability of onshore requirements and the source's impact in onshore areas. Based on the information

[2] The reader may refer to the Notice of Proposed Rulemaking, December 5, 1991 (56 Fed. Reg. 63,774), and the preamble to the final rule promulgated September 4, 1992 (57 Fed. Reg. 40,792) for further background and information on the OCS regulations.

in the NOI, if the source will be within 25 miles of the seaward boundary of one or more states, EPA identifies the COA that corresponds to the OCS source (§ 55.5).

The federal requirements that apply to OCS sources are provided in 40 C.F.R. § 55.13. EPA also reviews the state and local air requirements of the COA to determine which should be applicable on the OCS, and revises 40 C.F.R. part 55 to incorporate by reference (IBR) those state and local air control requirements that are applicable to OCS sources (§ 55.12). Once EPA completes its rulemaking to revise 40 C.F.R. part 55, the state and local air regulations incorporated into 40 C.F.R. part 55 become federal law, and apply to any OCS source with that COA.

Under this "consistency update" process, EPA must incorporate applicable state and local onshore rules into part 55 as they exist onshore. This limits EPA's flexibility in deciding which requirements will be incorporated into part 55, and prevents EPA from making substantive changes to the requirements it incorporates. As a result, EPA may be incorporating rules into part 55 that do not conform to certain requirements of the Act or are not consistent with all of EPA's state implementation plan ("SIP") guidance. EPA includes all state or local air requirements of the COA except any that are not rationally related to the attainment or maintenance of federal or state ambient air quality standards or part C of title I of the Act, that are designed expressly to prevent exploration and development of the OCS, that are not applicable to OCS sources, that are arbitrary or capricious, that are administrative or procedural rules, or that regulate toxics which are not related to the attainment and maintenance of federal and state ambient air quality standards.

Consistency updates may result in the inclusion of state or local rules or regulations into part 55, even though EPA may ultimately disapprove the same rules for inclusion as part of the SIP. Inclusion in the OCS rule does not imply that a rule meets the requirements of the Act for SIP approval, nor does it imply that the rule will be approved by EPA for inclusion in the SIP.

The OCS permit applicant then follows the procedural requirements to obtain a federal permit as outlined in 40 C.F.R. part 124. The applicant submits an air permit application that provides the information to show that it will comply with all applicable federal requirements, including those requirements found in 40 C.F.R. part 55 (which, as a result of the consistency update, include certain state and local requirements incorporated by reference into federal law), and any other federal standard that may apply to the source. EPA reviews the application and proposes either to approve or deny the application. Next, if EPA decides to propose approval, EPA drafts a proposed air permit and a fact sheet that documents its proposed permit decision. EPA then provides a notice and comment period of at least 30 days for the draft permit, and may also hold a public hearing if there is a significant degree of public interest and/or a hearing might clarify issues involved in the permit decision. Following the comment period, EPA responds to all significant comments and issues the final air permit decision.[3]

[3] See Section XVI below for more details regarding the public comment process for this draft permit.

IV.C Cape Wind Procedural History

IV.C.1 Other Federal Reviews

This project has undergone several forms of federal review since Cape Wind proposed the project in November 2001. This section summarizes the history of that review for background purposes.

National Environmental Policy Act (NEPA): Initially, the United States Army Corps of Engineers assumed the lead federal regulatory role under the River and Harbors Act, and issued a draft NEPA Environmental Impact Statement (EIS) in November 2004. Following the Energy Policy Act of 2005, the U.S. Minerals Management Service (MMS) assumed lead federal responsibility and initiated its own independent environmental review pursuant to NEPA. MMS published a draft EIS in January 2007 and a final EIS in January 2009. While MMS was the lead agency, other federal agencies acted as cooperating agencies in this review in assessing the project under other federal statutes. EPA reviewed and commented on both the draft and final EISs.

Clean Air Act General Conformity: Under CAA § 176, federal agencies cannot permit or approve any activity that does not conform to an approved state implementation plan. MMS undertook a general conformity analysis to ensure that its proposed authorization of the Cape Wind project would not cause or contribute to any new violation of any air quality standard, increase the frequency or severity of any existing violation of any such standard, or delay timely attainment of any such standard or any required interim emission reductions or milestones. MMS issued a draft general conformity determination in November 2008 and a final general conformity determination in December 2009. MMS's conformity determination focused on air emissions in Rhode Island and Massachusetts other than those addressed by this OCS air permit, i.e., emissions on shore, in state waters, and in federal waters outside of the 25 mile radius addressed by this permit. EPA reviewed and commented on the draft and final general conformity determinations.

EPA notes that MMS's general conformity analysis was based on Cape Wind using Quonset, Rhode Island as the staging area for the offshore construction activities (see Section III.C.2: Construction Activities). If Cape Wind wishes to move its onshore staging area to another port facility, MMS may need to conduct a revised general conformity analysis.

National Historic Preservation Act: Under Section 106 of the National Historic Preservation Act (NHPA), federal agencies must take into account any adverse effects of their undertakings on historic properties, and, if necessary, seek ways to avoid, minimize, or mitigate the adverse effects. MMS found adverse effects and conducted consultations with state and tribal historic preservation officers and the Advisory Council on Historic Preservation. In December 2009, EPA requested, and MMS agreed, that EPA would designate MMS as the lead federal agency to fulfill EPA's responsibilities under NHPA § 106, but that EPA would receive consulting party status. The U.S. Secretary of the Interior formally terminated Section 106 consultations after the parties were unable to reach an agreement on mitigation measures.

On April 28, 2010, the Secretary of the Interior, on behalf of all consulting federal agencies including EPA, informed the Advisory Council on Historic Preservation that "the balance of considerations weighs in favor of approving the Cape Wind Project" and executed a Record of Decision (ROD) that approved the Project. *See* Record of Decision, Cape Wind Energy Project, Horseshoe Shoal, Nantucket Sound (hereafter "MMS ROD"), *available at* http://www.doi.gov/news/doinews/upload/Cape-Wind-ROD.pdf.

Many of MMS's documents supporting its decision are available through its web site at http://www.mms.gov/offshore/RenewableEnergy/CapeWind.htm.

IV.C.2 Notice of Intent

On December 7, 2007, Cape Wind submitted an OCS NOI to EPA Region 1 that identified Massachusetts as the COA, provided information on potential emissions from the construction and operation of the project, and identified the state and federal requirements that may apply to the project (§ 55.4).

IV.C.3 Corresponding Onshore Area

As discussed, the OCS regulations require EPA to identify the COA for potential OCS sources located within 25 miles of a state's seaward boundaries. The COA means, with respect to any existing or proposed OCS source located within 25 miles of a State's seaward boundary, the onshore area that is geographically closest to the source unless the Administrator designates another onshore area as the COA (§ 55.5). Based on the location of the project in Nantucket Sound, just outside of the Commonwealth of Massachusetts waters, EPA designated Massachusetts as the COA for this project.

IV.C.4 OCS Consistency Update

In a Federal Register notice dated September 17, 2008, EPA incorporated by reference the Massachusetts regulations that may be applicable to OCS sources. See 73 Fed. Reg. 53,718. These regulations have been incorporated by reference into 40 C.F.R. part 55.14 and Appendix A to 40 C.F.R. part 55. The regulations include:

- the Massachusetts fee provisions (310 Code of Massachusetts Regulations (CMR) 4.00),
- the Ambient Air Quality Standards for the Commonwealth of Massachusetts (310 CMR 6.00),
- the Massachusetts Air Pollution Control regulations (310 CMR 7.00), including both the Massachusetts Plan Approval regulations (310 CMR 7.02), and the Massachusetts nonattainment NSR requirements (310 CMR 7.00, Appendix A) for major new sources of air pollutants in areas that do not comply with the National Ambient Air Quality Standards (NAAQS),
- the provisions for the Prevention and/or Abatement of Air Pollution Episode and Air Pollution Incident Emergencies (310 CMR 8.00).

In addition, Cape Wind identified the following federal stationary source requirements that may apply to the project:

- 40 C.F.R. part 60, Standards of Performance for New Stationary Sources (NSPS).
- 40 C.F.R. part 63, National Emission Standards for Hazardous Air Pollutants.

Also, the Cape Wind project may be subject to other federal provisions including:

- Federal Prevention of Significant Deterioration (PSD) program under 40 C.F.R. § 52.21. The PSD program applies to major new sources of air pollutants in areas that are in compliance with the NAAQS. EPA Region 1 currently administers the federal PSD program in Massachusetts.
- Federal standards for nonroad engines under 40 C.F.R. part 89, Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines, and
- Federal standards for marine engines under 40 C.F.R. part 94, Control of Emissions from Marine Compression–Ignition Engines.

V. OCS APPLICABILITY AND REQUIREMENTS

V.A OCS Applicability

As stated above, for an "OCS source" as defined by section 328 of the Clean Air Act and the OCS regulations in 40 C.F.R. part 55, EPA must apply the same requirements as would be applicable if the source were located in the corresponding onshore area. This includes, in certain instances, stationary source requirements. However, in some cases the OCS source regulations apply stationary source requirements differently from how those requirements might apply onshore.

V.A.1 OCS Source

Section 328 of the CAA and EPA's OCS regulations require EPA to apply the applicable air regulations to an "OCS source." Section 328(a)(4)(C) defines "OCS source" as:

> any equipment, activity, or facility which—
>
> (i) emits or has the potential to emit any air pollutant,
>
> (ii) is regulated or authorized under the Outer Continental Shelf Lands Act [43 U.S.C. 1331 et seq.], and
>
> (iii) is located on the Outer Continental Shelf or in or on waters above the Outer Continental Shelf.
>
> Such activities include, but are not limited to, platform and drill ship exploration, construction, development, production, processing, and transportation.

42 U.S.C. § 7627(a)(4)(C). EPA's regulations repeat this definition, and further clarify that:

> This definition shall include vessels only when they are:
>
> (1) Permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing or producing resources therefrom, within the meaning of section 4(a)(1) of OCSLA (43 U.S.C. §1331 et seq.); or
>
> (2) Physically attached to an OCS facility, in which case only the stationary sources [*sic*] aspects of the vessels will be regulated.

40 C.F.R. § 55.2.

In the case of the Cape Wind project, the OCS source activities are not the wind turbines themselves, but rather certain construction and maintenance activities, including emissions from vessels and equipment on them. As explained in more detail in Section VI below, the OCS source will include any vessel, barge, or equipment on a vessel or barge, when the vessel or barge is anchored within the project's area or tethered to a piece of equipment that is attached to the seafloor, and is performing any activity that supports the construction or operation of the project. EPA has determined applicability of the OCS air permit requirements on the total emissions for each pollutant aggregated across the numerous emission units that may or may not be operating at the facility at any given time. This is the most conservative analysis. The OCS permit will apply to each pollutant emitted from each emission unit when operating at the OCS source.

As noted above, the Cape Wind OCS source will include pollutants emitted from construction activities. While emissions from construction activities are typically not counted as part of an onshore stationary source, the definition of "OCS source" in CAA § 328(a)(4)(C) specifically includes "construction." Moreover, such construction is "regulated or authorized under the Outer Continental Shelf Lands Act" because the lease that MMS is issuing to Cape Wind authorizes construction of the Cape Wind project under OCSLA § 8(p).

V.A.2 Stationary Source Permitting

Once EPA determines that an emissions source located on the OCS is properly classified as an "OCS source," then that emissions source becomes subject to the requirements of 40 C.F.R. part 55. Further, the permitting programs and other requirements to which the OCS source is subject through part 55, including New Source Review permitting, then apply to the OCS source based on the regulations that define the scope of those programs. *See In re Shell Offshore, Inc., Kulluk Drilling Unit & Frontier Discoverer Drilling Unit*, OCS Appeals Nos. 07-01 & 07-02 (EAB, Sept. 14, 2007), slip op. at 32. Of particular importance to the Cape Wind project is the applicability of the state and federal New Source Review (NSR) program requirements.

There are two major source NSR programs: the Nonattainment NSR (NANSR) program and Prevention of Significant Deterioration (PSD) program. NANSR applies to new major sources (or major modifications to major sources) of pollutants in areas that are not attaining the applicable NAAQS. The PSD program applies to new major sources (or major

modifications to major sources) of pollutants in areas that are attaining the applicable NAAQS.

Eastern Massachusetts is currently designated a moderate nonattainment area under the 1997 8-hour ground level ozone standard. In addition, Eastern Massachusetts was designated a serious nonattainment area under the 1-hour ground level ozone standard. Massachusetts continues to implement the federal nonattainment NSR requirements for a serious ozone area under its State Implementation Plan (SIP) approved rules codified in 310 CMR 7.00, Appendix A: "Emission Offsets and Nonattainment Review." These rules apply to new stationary sources with potential emissions of 50 tons per year (tpy) or more of nitrogen dioxide (NOx) or volatile organic compounds (VOC).

Massachusetts is designated in attainment for all other criteria pollutants. As mentioned, EPA Region 1 administers the federal PSD program under 40 C.F.R. § 52.21 for new major stationary sources of pollutants in areas that attain the federal ambient standards in Massachusetts. The PSD program applicability threshold level is 100 tpy for new sources in certain source categories listed in § 52.21, and 250 tpy for all other new sources.

Finally, Massachusetts administers a general permitting program under 310 CMR 7.02, "Plan Approval and Emission Limitations." This regulation applies to all new sources of air pollutants with potential emissions greater than 1 tpy.

As noted above, for OCS sources located within 25 miles of the seaward boundary of a state, EPA incorporates applicable state and local regulations by reference into 40 C.F.R. part 55. In the 2008 OCS consistency update for Massachusetts, EPA updated 40 C.F.R. part 55 to incorporate by reference Massachusetts's plan approval regulations at 310 CMR 7.02 and its nonattainment NSR regulations at 310 CMR 7.00 Appendix A. Thus, although EPA is proposing to issue this OCS permit, the law that EPA is applying includes not just the federal PSD program (which EPA applies onshore in Massachusetts), but also the Massachusetts plan approval and nonattainment NSR programs, as they have been incorporated into the federal OCS regulations.

These requirements apply similarly, but not identically, to how they would apply onshore. Differences include:

- In applying the requirements incorporated into part 55, "new source" means "new OCS source." 40 C.F.R. §§ 55.13(b)(1) & 55.14(b)(1).
- For requirements adopted before 1992, language limiting the applicability of those requirements to onshore sources or to sources within state boundaries does not apply. 40 C.F.R. §§ 55.13(b)(4) & 55.14(b)(4).
- Emissions from construction are explicitly included in the scope of the "OCS source" definition.
- Vessels are included when they constitute (or are part of) an "OCS source" as defined by CAA § 328(a)(4) and 40 C.F.R. § 55.2.

V.A.3 Potential Emissions

Both OCS regulations and the state and federal air regulations determine NSR program applicability by comparing the potential emissions from a new source to the applicability threshold levels found in each NSR regulation. However, the OCS regulations use a different definition of "potential emissions" (also called "potential to emit," or "PTE") than state and federal regulations for onshore sources:

> *Potential emissions* means the maximum emissions of a pollutant from an OCS source operating at its design capacity. Any physical or operational limitation on the capacity of a source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as a limit on the design capacity of the source if the limitation is federally enforceable. Pursuant to section 328 of the Act, emissions from vessels servicing or associated with an OCS source shall be considered direct emissions from such a source while at the source, and while enroute [*sic*] to or from the source when within 25 miles of the source, and shall be included in the "potential to emit" for an OCS source. This definition does not alter or affect the use of this term for any other purposes under §§55.13 or 55.14 of this part, except that vessel emissions must be included in the "potential to emit" as used in §§55.13 and 55.14 of this part.

40 C.F.R. § 55.2. In other words, "potential emissions" includes two elements:

> 1) the emissions from an OCS source operating at its design capacity, and
> 2) the emissions from all vessels servicing or associated with an OCS source while at the source, and while en route to or from the source when within 25 miles of the source.

The second aspect of this definition differs from the definitions of "potential emissions" found in state and federal air permitting regulations. These definitions generally only include the emissions from the "stationary source" itself, and typically do not include service vehicles or vessels at or en route to the source in calculating potential emissions.

It is important to distinguish between two situations: (1) when a vessel is (part of) an OCS source, as opposed to (2) when a vessel is not itself (part of) an OCS source, but the vessel's emissions are counted in an OCS source's potential to emit. As noted above, the definition of "OCS source" in 40 C.F.R. § 55.2 only includes vessels when they are attached to the seabed or an OCS facility. However, a vessel that is servicing or associated with an OCS source and is either at, or en route within 25 miles of, the OCS source will nevertheless have its emissions counted towards the OCS source's potential emissions. Emissions from such associated vessels are therefore counted in determining whether the OCS source is required to obtain an NSR permit, as well as in determining the pollutants for which control technology is required and whether emissions from the OCS source cause or contribute to a violation of the NAAQS or applicable increment. 57 Fed. Reg. 40,792, 40,793-94 (Sept. 4, 1992) ("[V]essel emissions related to OCS activity will be accounted for by including vessel emissions in the 'potential to emit' of an OCS source. Vessel emissions must be included in

offset calculations and impact analyses, as required by Section 328 and explained in the NPR."); 56 Fed. Reg. 63,774, 63,777 (Dec. 5, 1991) ("The inclusion of vessel emissions in the total emissions of the stationary source is a statutory requirement under section 328(a)(4)(C). In this manner vessel emissions of attainment pollutants will be accounted for when PSD impact analyses are performed and increment consumption is calculated. For nonattainment pollutants the OCS source will have to obtain offsets as required by the COA, and vessel emissions will be offset.").

V.B OCS Requirements

Generally, state and federal NSR programs include two substantive requirements:

1) a technology based emission control requirement to minimize the emissions from a new source, and
2) an air quality impact analysis or air impact mitigation requirement to ensure new emissions do not cause or contribute to a violation of any applicable NAAQS or other emission standard.

V.B.1 Technology-based Emissions Control Requirements

In applying the requirements that apply to OCS sources located within 25 miles of states' seaward boundaries, a "new source" means a new OCS source. 40 C.F.R. § 55.14(b)(1). EPA interprets this definition to mean that the NSR program's technology-based emissions control requirements and any other applicable stationary source emissions standards are limited to the emissions from activities included under the definition of "OCS source." Therefore, emissions from vessels travelling to and from the project are not included.

V.B.2 Air Quality Analysis and Mitigation

The OCS regulations' definition of "potential emissions" means the maximum emissions of a pollutant from an OCS source operating at its design capacity. The definition also states that emissions from vessels servicing or associated with an OCS source shall be considered direct emissions from such a source while at the source, and while en route to or from the source when within 25 miles of the source. Since the OCS regulations consider vessel emissions as direct emissions from the source, EPA will conduct all air quality analyses and analyze all emission mitigation actions (i.e., emission offsets) based on potential emissions that include en route vessel emissions.

VI. AIR PERMIT APPLICATION

VI.A Air Permitting History

On December 17, 2008, Cape Wind submitted an OCS air permit application to EPA Region 1. [4] The application provided information to support Cape Wind's view that the project meets the air permit requirements codified in 40 C.F.R. part 55 and all other applicable federal requirements. The application included stationary and vessel source emission estimates for the construction and operation phases of the project, identified the applicable federal requirements for each phase, and provided the analysis to show how the project will meet the applicable requirements.

Additional correspondence followed, summarized below:[5]

> February 10, 2009: EPA requested further information from Cape Wind regarding its air permit application, including more comprehensive BACT and LAER analyses.
>
> March 12, 2009: Cape Wind responded to EPA's February 10 letter, including more detailed BACT and LAER analyses.
>
> June 25, 2009: Cape Wind submitted revised emission estimates.
>
> September 23, 2009: Cape Wind submitted revised emission estimates. Cape Wind based its revised calculations using the most up-to-date EPA guidance for these calculations.
>
> February 8, 2010: Cape Wind submitted additional information regarding BACT for construction equipment**.**
>
> March 3, 2010: Cape Wind submitted further information regarding the BACT analysis for particulate matter, including cost analysis.
>
> April 20, 2010: EPA requested further information from Cape Wind regarding operational details of the construction vessels and engines, and technical and economic analyses of various potential control technologies.
>
> April 23, 2010: Cape Wind responded to EPA's April 20 letter, including further operational, technical, and economic information.
>
> May 25, 2010: EPA provided Cape Wind an unofficial draft permit for technical comment.

---

[4] Most of the documents submitted as part of Cape Wind's air permit application were submitted by its consultant, ESS Group, Inc. For simplicity, this fact sheet refers to "Cape Wind" even when the document in question was actually prepared and/or submitted by ESS.
[5] See also Section XVII regarding the administrative record.

May 28, 2010: Cape Wind submitted technical comments.

June 4, 2010: Cape Wind revised its emissions estimates to account for additional preconstruction activities required by MMS. In addition, Cape Wind requested to extend the duration of Phase 1 from 24 months to 36 months to account for the additional preconstruction requirements and possible seasonal delays.

The application and the revised emission estimates provided a detailed emission analysis that identified:

- The emission estimates for the various diesel engines that Cape Wind proposes to use in the construction and maintenance of the project during Phases 1 and 2;
- The emission estimates for the propulsion engines used in the various vessels travelling within 25 miles of the project;
- The vessel trip duration estimations for the construct and maintenance activities,
- The estimated major repair actions required during the life of the project, and
- The sulfur content of the fuel used in engines.

VI.B Phase 1 Source Description

VI.B.1 Factual Description

The description below summarizes Cape Wind's proposed construction equipment and operations. For more details, see: Cape Wind's June 4, 2010 letter; the table entitled "Cape Wind Energy project, Construction Emissions Inside of 25 miles – Stationary Activities (Revised May 2010)"; Attachment A of Cape Wind's September 23, 2009 submission; and the Final Environmental Impact Statement (FEIS) prepared for the Project by the U.S. Minerals Management Service (MMS) in January 2009.

For purposes of permit analysis, Cape Wind proposes to use the following types of construction equipment identified in Table 1 to install the wind farm equipment listed in section III.C.2 of this fact sheet. Cape Wind also confirmed in discussions with EPA that all engines will have a displacement of less than 10 liters per cylinders.

TABLE 1
Proposed Construction Equipment

Equipment Type	Power output (horsepower)	Power output (kilowatts)
Primary 500 ton Crane	800	597
Crane	400	298
Crane	3000	2237

Hydraulic Ram	3200	2386
Hydraulic Ram	1600	1193
Jacking system	476	355

Cape Wind will install one of the cranes on a specialized self-propelled vessel equipped with a jacking system.[6] This vessel contains a diesel engine used for propelling the vessel. The other construction equipment will also be installed on jack-up barges that will be towed out to the site by tugs. These barges do not include independent marine propulsion engines.

Cape Wind anticipates that all construction equipment will be positioned on vessels or barges with jack-up capability. No anchoring is anticipated for these jack-up units. The jack-up units will likely be equipped with 3-6 legs equipped with footings known as "spuds," which will rest on the seafloor. Once three of the legs have attached to the seafloor, the vessel will be stabilized into position by the jacking system, and then construction activities will begin. The barges will remain attached to the seabed during the construction operations. After the construction operations are finished, the jacking system lowers the vessel to the sea surface and removes the legs from the seafloor. All construction activities will take place from jack-up systems as described above, i.e., no construction will take place from vessels or barges that are attached by anchors.

Cape Wind stated in its permit application that the construction equipment used for the project will have transient and highly variable load operating characteristics. These operations greatly influence the type of emissions controls that may be applicable for the engines. Cape Wind provided additional information in the table attached to the April 23, 2010 letter to support this statement. The table described the operations for each piece of construction equipment and for each Phase 1 activity. In summary, the equipment's operational outputs vary significantly over short periods. The engines are throttled from high to low to high power levels numerous times over the course of a day. These operations are significantly different from most stationary sources that remain at a specific output level for an extended period of time.

Cape Wind has stated that it does not intend to use any vessel propulsion engines for construction. Cape Wind has indicated that it intends to use a specialized contractor (which it has not yet selected) to install the wind farm equipment, and the final equipment used in the construction and the operation and maintenance of the wind farm may vary

[6] Generally speaking, a jack-up rig is a floating vessel or barge that is equipped with long support legs and a lifting system that enables it to attach to the seafloor and elevate the vessel above the sea surface, essentially converting the vessel into a fixed platform. For general information (including photos) regarding jack-up rigs, see "*Ships on legs*," BBC News (Jan. 30, 2008), available at http://news.bbc.co.uk/2/hi/uk_news/magazine/7206780.stm; "*Jack Up Units: A Technical Primer for the Offshore Industry Professional*," Bennett & Associates, LLC (July 1, 2005), available at http://www.bbengr.com/jack_up_primer.pdf ; and "*Jackup rig*" from Wikipedia, available at http://en.wikipedia.org/wiki/Jackup_rig. These references are provided for general information only; Cape Wind's jack-up units may not be identical to the systems portrayed in these articles.

from the equipment identified in the application. The equipment identified in the application was intended to develop the control and operational requirements for the project. EPA notes that the engines authorized under the permit must meet the same control and emission requirements as the engines identified in the application. In addition, the permit only allows the use of the same type of engines identified in the application: compression-ignition diesel engines with power outputs less than or equal to 3200 hp installed on jack-up units and displacement of less than 10 liters per cylinder.

VI.B.2 Initial OCS Source Determination

VI.B.2.a Nonroad Engine Inclusion

As noted above, EPA's OCS regulations define an "OCS source" to

> . . . include vessels only when they are:
>
> (1) Permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing or producing resources therefrom, within the meaning of section 4(a)(1) of OCSLA (43 U.S.C. §1331 et seq.); or
>
> (2) Physically attached to an OCS facility, in which case only the stationary sources [*sic*] aspects of the vessels will be regulated.

40 C.F.R. § 55.2.

All the engines described in the preceding section are typically characterized as nonroad engines under 40 C.F.R. § 1068.30. In most instances, nonroad engines are not included within the definition of a stationary source and are therefore exempt from stationary source requirements. *See* CAA § 302(z), 42 U.S.C. § 7602(z) (definition of "stationary source"); *see also* CAA § 216(10), 42 U.S.C. § 7550(10) (definition of "nonroad engine"). However, CAA § 328, which applies specifically to OCS sources, defines "OCS source" to include "activities … [such as] platform and drill ship exploration, construction, development, production, processing, and transportation." Since many of these activities consist almost entirely of emissions from engines that otherwise would be considered nonroad engines, CAA § 328's inclusion of these activities within the definition of "OCS source" means that an "OCS source" can include engines that otherwise would be considered nonroad engines.[7]

---

[7] Moreover, as provided in CAA § 328(a)(1), all standards adopted under CAA § 328 are considered standards under CAA § 111 (which apply only to stationary sources) and the term "new OCS source" is defined in "stationary source" terms pursuant to CAA § 111(a). *See* CAA § 328(a)(4)(D). Similarly, the regulatory definition of OCS source in 40 C.F.R. § 55.2 provides that, for vessels physically attached to an OCS facility, "only the stationary source aspects of the vessels will be regulated. *See* 40 C.F.R. § 55.2 (definition of OCS source). There would be no point to considering the "stationary source aspects" of a vessel attached to an OCS source to be part an OCS source in 40 C.F.R. § 55.2 unless "such stationary source aspects" were considered and regulated in some other way than as emissions from vessels within 25 miles of an OCS source, since emissions from otherwise nonroad engines on vessels within 25 miles of the OCS source count as direct emissions from the OCS source for purposes of ambient impact assessment.

Specifically, even though a given engine might ordinarily be considered a nonroad engine while the vessel is in motion or is otherwise not an OCS source, as soon as the vessel becomes an OCS source, that same engine may be considered to be a stationary engine when it is used while the vessel is an OCS source. Thus, while the vessel is an OCS source, the engines on it may be subject to stationary source requirements, including, if applicable, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 C.F.R. part 60, subpart IIII); National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (40 C.F.R. part 63, subpart ZZZZ); and/or new source permitting programs such as NANSR, PSD, and state new source permitting requirements for major or minor sources.

EPA has determined that any vessel (including a barge) carrying one or more of the above-described engines will constitute an OCS source under 40 C.F.R. § 55.2 when the vessel is attached to the seabed, erected thereon, and used for the purpose of exploring, developing or producing resources therefrom.

VI.B.2.b OCS Source Initiation and Conclusion

As discussed in section VI.B.1 above, construction equipment will be carried on either a self-propelled jack-up vessel or towed on a jack-up barge. Cape Wind will site the jack-up unit in the proper location, and lower the legs of the jack-up unit to the seafloor.

As explained above, the jack-up units will likely be equipped with three or more legs equipped with "spuds" that will rest on the seafloor. Once three of the legs have attached to the seafloor, the jack-up unit has become stationary and is no longer operating as a vessel or barge. From that point forward (which, for brevity, we refer to as the unit's "attachment"), the unit's operations and emissions involve OCS source activities, namely, jack-up system stabilization and subsequent construction.[8] Therefore, EPA proposes (and solicits comment on alternatives to its proposal) that a jack-up unit (including the construction equipment on it) becomes an OCS source as soon as three legs have attached to the seafloor. Once three legs have attached to the seafloor, the jack-up unit is sufficiently attached (and erected) to constitute an OCS source, and is subject to the terms and conditions of this permit. At the conclusion of jack-up unit operations, the construction equipment ceases operating and the jack-up legs are raised from the seafloor. The jack-up unit and equipment thereon remain an OCS source, and subject to the term and conditions of the permit, until the point in time (which, for brevity, we refer to as the unit's "detachment") when enough jack-up legs have been removed from the seafloor that fewer than three jack-up legs are attached to the seafloor. After the jack-up unit detaches, it returns to "vessel" status.

Section 328 plainly requires that emission units on OCS sources be regulated as stationary sources except with respect to propulsion engine emissions from vessels attached to an OCS source.

[8] The OCS source initiation determination is source-specific, and an OCS source initiation determination for a different project, even one using similar or identical jack-up units, could differ. This determination is not intended to affect the OCS source initiation determination for any other project.

VI.B.3 OCS Source Aggregation Analysis

As discussed above, each vessel's attachment to the seabed is a necessary element in establishing that the vessel has become an OCS source, and subsequent detachment returns the vessel to its status as a vessel.

However, these attachments, detachments, and re-attachments are not independent activities; they are steps in the construction of a single integrated 130-turbine wind farm. As explained below, the different "OCS sources" established by separate or successive jack-up unit attachments are best viewed as constituting a single, aggregated "stationary source" under stationary source permitting regulations.

The Massachusetts NANSR regulations define "stationary source" as "any building, structure, facility, or installation which emits or which may emit any air pollutant subject to regulation under the [Clean Air] Act." 310 CMR 7.00, Appendix A, § 2. "Building, structure, facility, or installation," in turn, means:

> all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Any marine vessel is a part of a facility while docked at the facility. Any marine vessel is a part of an Outer Continental Shelf (OCS) source while docked at and within 25 miles en route to and from the OCS source. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same Major Group (i.e., which have the same two-digit code) as described in the Standard Industrial Classification Manual, 1987.

Id. EPA interprets this definition to aggregate the emissions from activities that occur at different periods on separate emission units provided the units are on contiguous or adjacent properties and under common control. In most cases, the property boundary and common control (usually common ownership) are easily determined. A frequent question, however, particularly at large industrial complexes, is how to deal with multiple emissions units at a single location that do not fall under the same two-digit SIC code. In this situation, the source is classified according to the primary activity at the site, which is determined by its principal product (or group of products) produced or distributed, or by the services it renders. Facilities that convey, store, or otherwise assist in the production of the principal product, which are called support facilities, may therefore be considered part of the same stationary source even if their own two-digit SIC code would differ from the facilities involved in the primary activity.

In the case of Cape Wind, the WTG installation activities are part of a single project even when separated in space and/or time. All 130 turbines will be connected to a single electrical service platform (ESP), and the ESP, via submarine cable, will be connected to the land-based electric grid. The entire project (and each WTG within it) depends completely on the interconnected system: without the ESP, the cables from the WTGs to the ESP, and the submarine cable from the ESP to shore, the project serves little or no purpose. If a construction vessel installs a WTG, travels to a new location, and installs a

new WTG, these are not separate, unrelated activities, but rather components of a larger activity. Thus, with respect to re-attachments of the same vessel during Phase 1 of the Cape Wind project, EPA views each subsequent re-attachment of a vessel as a continuation of the OCS source that was terminated by the previous detachment, rather than as a completely new OCS source.[9]

The same analysis applies to additional vessels, whether they are operating sequentially (e.g., Vessel 1 engages in stationary source activities such as turbine monopile installation or jetplowing, then returns to shore, and Vessel 2 conducts similar activities at the same or another part of the project site) or in parallel (e.g., Vessel 1 engages in stationary source activities at one part of the project site while Vessel 2 is engaging in similar or different stationary source activities at another part of the project site) or both (e.g., Vessel 1 and Vessel 2 are each engaging in a sequence of stationary source activities at various parts of the project site, whether they ever happen to be attached simultaneously or not). Because each vessel and each vessel attachment are part of a single, integral project, EPA finds that it is reasonable to aggregate all vessel attachments over both space (i.e., across the project site) and time (i.e., over Phase 1's estimated two-year duration). Therefore, EPA proposes to treat all stationary source vessel activities during Cape Wind Phase 1 as constituting a single OCS source.

EPA proposes to define the beginning and end of Phase 1 as follows. Phase 1 begins the first time that any jack-up system associated with the project actually attaches to the seafloor and commences OCS source operations as discussed in Section VI.B.2.b above ("Phase 1 start date"). Phase 1 ends on the last day of the calendar month that is 24 months after the Phase 1 start date ("Phase 1 end date").

Although Phase 1 is expected to be completed within 24 months, it is possible that unforeseen circumstances could result in a delay. To account for this possibility without needing to revise the permit after issuance, EPA also proposes that Phase 1 may be extended as follows. Cape Wind may submit a request no later than 18 months after the Phase 1 start date, demonstrating the following:

(a) Cape Wind has been in compliance with all Phase 1 permit requirements; and
(b) For good cause, Cape Wind requires limited additional operation under the permit conditions applicable to Phase 1, rather than Phase 2; and
(c) Cape Wind can continue to comply with all Phase 1 permit requirements (including the obligation to possess adequate emissions offsets) during the additional period under Phase 1; and
(d) All requirements applicable to the project outside of the OCS permit (e.g., general conformity) will continue to be satisfied if EPA grants the extension.

[9] This analysis distinguishes Cape Wind Phase 1 from other types of projects where each attachment and detachment of a given vessel, or attachments and detachments of separate vessels, may be better characterized as representing separate OCS sources.

EPA will then review the request and any other relevant information to determine whether the request satisfies the above requirements, whether the proposed extension date is reasonable in light of the information in the request and all other relevant circumstances, and whether extending the Phase 1 end date would be consistent with the Clean Air Act, its implementing regulations, and this permit. If EPA determines that the request satisfies these requirements, then EPA will extend the Phase 1 end date.[10]

Upon such a request, EPA may, by letter, extend the Phase 1 end date by a specified number of days. EPA is not proposing that the permit itself contain a maximum duration for any such extension to Phase 1, but EPA reserves the right to deny a request to extend Phase 1 by an inappropriately long period.

VI.C Phase 1 Emissions

Notwithstanding Cape Wind's request that EPA define Phase 1 as 36 months, Cape Wind anticipates that Phase 1 activities (i.e., preconstruction and construction of the wind farm) will last approximately two years. Cape Wind's potential emissions estimates for Phase 1, years 1 and 2, are provided in Table 2. Table 2 shows that the potential emissions for nitrogen oxide (NOx) during year 1 of Phase 1 is 169.8 tons per year (tpy) and 56.2 tpy during the second year.[11] Based on these emission estimates, Phase 1 is subject to Massachusetts major nonattainment NSR program at 310 CMR 7.00, Appendix A, "Emission Offsets and Nonattainment Review," for NOx for years 1 and 2. The emissions are also subject to the Massachusetts plan approval program at 310 CMR 7.02, "Plan Approval and Emission Limitations."

TABLE 2
Cape Wind Energy Project - Phase 1

	NOx (tpy)	**VOC (tpy)**	**SO_2 (tpy)**	**CO (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**	**HAP (tpy)**
Projected Annual Emissions - Phase 1 - Year 1	169.8	9.3	1.6	62.3	6.7	6.3	0.1
Projected Annual Emissions - Phase 1 - Year 2	56.2	2.4	0.6	7.4	2.1	2.0	0.1
MA 310 CMR 7.00 Appendix A Nonattainment NSR threshold levels	50	50	NA	NA	NA	NA	NA
PSD Program threshold levels	250	250	250	250	250	250	250
MA 310 CMR 7.02 Plan Approval threshold level	1.0	1.0	1.0	1.0	1.0	1.0	1.0

[10] EPA is also requesting comment on whether Phase 1 should be defined in the permit itself as some other duration (e.g., 36 months as requested by Cape Wind) rather than 24 months.
[11] It is possible that Phase 1 construction will not be conducted with this precise division of emissions between year 1 and year 2, and, as noted above, it is also possible that Phase 1 could extend beyond the second year. The draft permit accounts for these possibilities.

The table also shows that the potential emissions for the remaining criteria pollutants and hazardous air pollutants (HAPs) are far less than the potential emissions for NOx emissions, and are below the major source threshold levels for the PSD program (and, in the case of VOC emissions, nonattainment NSR under 310 CMR 7.00 Appendix A). Therefore, these pollutants are not subject to major NSR. However, NOx, VOC, SO_2, CO, PM_{10}, and $PM_{2.5}$ are subject to the Massachusetts plan approval program at 310 CMR 7.02, "Plan Approval and Emission Limitations," excep for HAPs, which are below even the 1.0 tpy threshold under the Massachusetts plan approval program.[12]

VI.D Phase 2 Source Description

Phase 2 includes the activities for the normal operation and maintenance of the wind farm. The wind farm (i.e., the WTGs, ESP, and associated cabling) does not itself have potential emissions of any air pollutants. However, vessels involved in inspection, maintenance, and repair do have potential emissions, and at least some of these potential emissions may occur while a vessel is classified as an OCS source.

Much of the vessel activity during Phase 2 will involve relatively small crew vessels. However, some operations, classified by Cape Wind as "major repairs," could involve a heavy lift jack-up vessel similar to the equipment Cape Wind proposed for the Phase 1 construction operations, which could constitute OCS sources. If Cape Wind needs to repair the submarine cable, the vessels involved could also constitute OCS sources.

The somewhat unpredictable nature of Phase 2 activities means that it is not possible to define the Phase 2 emissions sources as precisely as for Phase 1. In any given year, the activities constituting OCS sources could range from zero to substantial, depending on maintenance and repair needs. Emissions from vessels in transit within the 25 mile radius are only counted as potential emissions of an OCS source if they are "en route to or from the OCS source within 25 miles of the OCS source." CAA § 328(a)(4)(C); 40 C.F.R. § 55.2. Given the uncertainty as to when activities constituting an OCS source may occur, it is not possible to precisely define at this time which vessel emissions (if any) will be en route to an OCS source and therefore necessarily count towards potential emissions of the OCS source. Furthermore, unlike Phase 1 which consists of a single, integral construction project, Phase 2 OCS source activities may or may not make sense to aggregate, depending on particular facts that are not available at this time.[13]

---

[12] The project will also emit more than 250 tons of carbon dioxide per year during both Phases 1 and 2. However, at present carbon dioxide is not a "regulated NSR pollutant" under the PSD program; PSD requirements do not apply to greenhouse gases until January 2, 2011. *See* Reconsideration of Interpretation of Regulations that Determine Pollutants Covered by Clean Air Act Permitting Programs, 75 Fed. Reg. 17,004 (Apr. 2, 2010). Moreover, even once that date arrives, EPA's greenhouse gas tailoring rule excludes smaller carbon dioxide sources from PSD permitting for GHG emissions until at least April 30, 2016. *See* Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514 (June 3, 2010). See also Section VI.F regarding Massachusetts greenhouse gas requirements at 310 C.M.R. §§ 7.70 and 7.71.

[13] For example, if Cape Wind must conduct a major repair in June and a second major repair in October, it may or may not be appropriate to treat those activities as a single OCS source, and it could be complex to account for the different status of vessel emissions en route during January-May, June, July-September,

In light of these uncertainties, Cape Wind has proposed, and EPA agrees, to evaluate Phase 2 as if there is an OCS source at all times during Phase 2, constituting the entire project site, thus aggregating all OCS source activities *and* counting all vessel emissions within the 25 mile radius as potential emissions of that source. In fact, this is unlikely to occur. However, this worst-case assumption serves several beneficial purposes. First, it is the most environmentally protective set of assumptions, as it results in the maximum estimated emissions. Second, it is the most practically workable for the applicant and for EPA, since it results in a permitting scenario that authorizes Cape Wind to conduct repairs (including major repairs) as needed, and minimizes the need for Cape Wind to apply for, or EPA to issue, a new OCS permit on short notice. Third, it provides the interested public with the most comprehensive information now available regarding potential Phase 2 emissions.

VI.E Phase 2 Emissions

The estimated emissions for Phase 2 activities (i.e., emissions from attached vessels acting as stationary sources, and vessel transit en route to such sources within the 25 mile radius) are shown in Table 3. Table 3 shows that the estimated emissions for all pollutants are well below the major NSR threshold levels. Similar to Phase 1, potential emissions of these pollutants are subject to the Massachusetts plan approval requirements at 310 CMR 7.02, "Plan Approval and Emission Limitations."

TABLE 3
Cape Wind Energy Project - Phase 2

	NO_X (tpy)	**VOC (tpy)**	**SO_2 (tpy)**	**CO (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**	**HAP (tpy)**
Projected Annual Emissions, Phase 2	13.0	1.0	0.0	10.0	1.0	1.0	0.0
MA 310 CMR 7.00 Appendix A Nonattainment NSR threshold levels	50	50	NA	NA	NA	NA	NA
PSD threshold levels	250	250	250	250	250	250	250
MA 310 CMR 7.02 Plan Approval threshold level	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Cape Wind's emission estimates for Phase 2 are based on Cape Wind's predictions regarding maintenance and repair of the facility during normal operations. However, Cape Wind acknowledges that some years the project could exceed these predicted annual emissions due to increased repair and maintenance activities. To accommodate the potential for such higher emission years, Cape Wind has requested that the permit include an emissions cap for Phase 2 that will limit emissions of NOx to just below the nonattainment major source threshold level of 50 tpy. EPA proposes to authorize Cape

---

October, and November-December, not to mention vessels en route to a different part of the project site than the locus of the major repair.

Wind to discharge up to 49 tpy of NOx during Phase 2. This will enable Cape Wind to conduct repairs as needed so long as NOx emissions remain below 49 tpy.

Cape Wind will monitor and record emissions to ensure the project does not emit more than 49 tpy of NOx and thereby exceed major nonattainment NSR threshold levels. The cap provides Cape Wind with the additional capacity needed to increase repair and maintenance activities while ensuring the project's emissions do not exceed major NSR threshold levels or violate its existing permit conditions.

VI.F Other Requirements

In addition to the NSR requirements, the following are other state and federal requirements that apply or do not apply to the project, and how EPA will require Cape Wind to comply with those requirements that are applicable.[14]

- 40 C.F.R. Part 60, Standards of Performance for New Stationary Sources: While engaged in OCS stationary source activities, Cape Wind's construction engines are subject to Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. In particular, for direct NSPS applicability, Cape Wind must meet the requirements applicable to owners and operators of non-emergency stationary CI engines under 40 C.F.R. §§ 60.6204 (requiring owners and operators of covered engines to comply with the emission standards of either subpart IIII table 1 or 40 C.F.R. § 60.6201, depending on model year), 60.4206 (requiring owners and operators to "operate and maintain [the engines to] that achieve the emission standards as required in §§60.4204 and 60.4205 according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine"), 60.4207 (requiring owners and operators to use only diesel fuel that meets the requirements of 40 C.F.R. § 80.510(a), and, starting October 1, 2010, to use only diesel fuel that meets the requirements of 40 C.F.R. § 80.510(b) for nonroad diesel fuel), 60.4209 (monitoring requirements), 60.4211 (compliance requirements), 60.4212 (testing requirements), and 60.4214 (notification, reporting, and recordkeeping requirements). It is particularly worth noting that, for model year 2007 and later engines, 40 C.F.R. § 60.6204 requires compliance with the emissions standards of § 60.6201, which in turn requires compliance with the emissions standards of both § 89.112 (containing emissions standards for NMHC + NOx, CO, and PM) and § 89.113 (exhaust opacity standards).[15] Moreover, EPA has considered the part 60 standards in determining the Lowest Achievable Emission Rate (LAER) and Best Available Control Technology (BACT) as part of its New Source Review determination. This is discussed in greater detail later in the New Source Review section of this fact sheet (Sections VII and VIII).

[14] Many of the requirements discussed in this section are self-executing and will not be specifically included in the OCS permit.
[15] *Cf.* note 20 below.

- 40 C.F.R. Part 61, National Emission Standards for Hazardous Air Pollutants: None of the subparts of part 61 appear to apply to the emissions units used by Cape Wind.

- 40 C.F.R. Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories (also known as Maximum Achievable Control Technology Program): Cape Wind's engines are subject to Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. However, because Cape Wind is not a major source of hazardous air pollutants, subpart ZZZZ is satisfied by meeting the requirements of 40 CFR part 60 subpart IIII for compression ignition engines and "[n]o further requirements apply for such engines under this part." 40 C.F.R. § 63.6590(c). Therefore, part 63 does not impose any distinct requirements beyond those of part 60 subpart IIII (although violations of such requirements may be separately enforceable through part 63).

- 40 C.F.R. Part 71, Federal Operating Permit Program: Part 71 does not apply in Massachusetts because Massachusetts has an approved state operating permit program at 310 CMR 7.00 Appendix C (see discussion below).

- 40 C.F.R. Part 89, Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines: Part 89 is not directly applicable, for several reasons. First, 40 C.F.R. § 55.13 does not make 40 C.F.R. part 89 directly applicable to OCS sources. Second, part 89 applies to engine manufacturers, not owner/operators. Third, Cape Wind's engines are not "nonroad engines" within the meaning of part 89 while the engines are part of an OCS source. However, as a practical matter, part 60 subpart IIII (discussed above) essentially cross-references part 89 for applicable emission standards.

- 40 C.F.R. Part 1039, Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines: Part 1039 is not directly applicable, for the same reasons that part 89 is not directly applicable. Moreover, part 1039's standards only apply to engines of model year 2011 or later.[16]

- 40 C.F.R. Part 94, Control of Engines from Marine Compression-Ignition Engines: Part 94 is not directly applicable, for several reasons. First, 40 C.F.R. § 55.13 does not make 40 C.F.R. part 94 directly applicable to OCS sources. Second, part 94 applies to engine manufacturers, not owner/operators. Third, Cape Wind's construction engines are not "nonroad engines" within the meaning of part 94 while the engines are part of an OCS source. Fourth, Cape Wind's construction engines are not "marine engines" within the meaning of part 94

[16] *Cf.* note 20 below.

because, while they are located on marine vessels, their fueling, cooling, and exhaust systems are not integral parts of the vessel. See 40 C.F.R. § 94.2.

- 40 C.F.R. Part 1042, Control of Emissions from New and In-Use Marine Compression-Ignition Engines and Vessels: Part 1042 is not directly applicable, for the reasons stated for part 94.

- 40 C.F.R. § 52.21, Prevention of Significant Deterioration Program: The project's emissions are below the PSD program applicability threshold levels and not subject to the PSD program.

- 310 CMR 4.00: Timely Action Schedule and Fee Provisions: Under 40 C.F.R. § 55.10(a)(2), "EPA will collect all [non-Title V] fees from OCS sources calculated in accordance with the fee requirements imposed in the COA if the fees are based on regulatory objectives, such as discouraging emissions. If the fee requirements are based on cost recovery objectives, however, EPA will adjust the fees to reflect the costs to EPA to issue permits and administer the permit program." EPA plans to require Cape Wind to pay a permit application fee pursuant to 310 CMR 4.04, and a compliance assurance fee pursuant to 310 CMR 4.03, as adjusted to the extent required by 40 C.F.R. § 55.10(a)(2). These fee requirements will not, however, be part of the OCS permit.

- 310 CMR 6.00: Ambient Air Quality Standards for the Commonwealth of Massachusetts: These ambient air quality standards are not themselves directly applicable to OCS project applicants. Rather, these are standards that other regulatory programs implemented by Massachusetts and EPA aim to attain and maintain. In this case, the principal requirements at issue are Massachusetts's plan approval and nonattainment NSR requirements, incorporated by reference into 40 C.F.R. § 55.14 and Appendix A to part 55, and implemented through this permit. This permit will ensure that the project's emissions do not result in a violation of any ambient air quality standard that is already being attained. For ozone, for which Eastern Massachusetts is presently not attaining the standard, this permit will ensure that the project complies with the lowest achievable emission rate for ozone precursors, and furthermore that, by the time the project commences, the project will have obtained offsetting emissions reductions elsewhere in the Massachusetts non-attainment area.[17]

- 310 CMR Section 7.00: Statutory Authority; Legend; Preamble; Definitions: The section does not impose any specific requirements.

- 310 CMR Section 7.01: General Regulations to Prevent Air Pollution: Cape Wind will comply with this section by certifying the accuracy and completeness of its recordkeeping systems and submittals and by complying fully with the

[17] See also section IV.C.1 above regarding MMS's general conformity determination.

terms and conditions of any approvals granted under EPA administrating the Massachusetts regulations.

- 310 CMR 7.02: Plan Approval and Emission Limitations: The project will comply with all applicable requirements, including Best Available Control Technology, which is described in Section VII of this fact sheet. EPA's proposed OCS permit for Cape Wind is intended to fulfill all the applicable requirements of a plan approval under 310 CMR 7.02.

- 310 CMR 7.03 Plan Approval Exemptions: Construction Requirements: This section does not apply to the project.

- 310 CMR 7.04 Fossil Fuel Utilization Facilities: This section does not apply to the project.

- 310 CMR 7.05 Fuels All Districts: Cape Wind will use fuels in all vessels that meet or surpass the specified sulfur content limit of 0.3% for diesel oil. Cape Wind will not use residual oil, hazardous waste fuel, used oil fuel or fuel additives in any vessels or nonroad engines.

- 310 CMR 7.06 Visible Emissions: Cape Wind will comply with the standard using clean burning fuels, the use of engines that meet all applicable nonroad engine and marine specifications, and good operating and maintenance practices.[18]

- 310 CMR 7.07 Open Burning: This section does not apply to the project.

- 310 CMR 7.08 Incinerators: This section does not apply to the project.

- 310 CMR 7.09 Dust, Odor, Construction and Demolition: Cape Wind will comply with this section by covering and securing all material transported to the project.

- 310 CMR 7.11 Transportation Media: Cape Wind will ensure that all vessels associated with the project comply with the tube blowing and soot removal activity restrictions of this section. This requirement is self-executing and is not included in the draft permit.

- 310 CMR 7.12 Source Restrictions: Cape Wind will comply by completing and submitting all forms to EPA as required by this section.

- 310 CMR 7.13 Stack Testing: Cape Wind will comply with the permitted emission limits through manufacturing certifications. However, EPA will retain its authority to require stack testing of any OCS source.

[18] See also Section VIII.B.4.

- 310 CMR 7.14 Monitoring Devices and Reports: This section does not apply to the project.

- 310 CMR 7.15 Asbestos: This section does not apply to the project.

- 310 CMR 7.18 Volatile and Halogenated Organic Compounds: Cape Wind has confirmed that it will not perform any activities on the jack-up barges that are subject to this section.

- 310 CMR 7.19 Reasonably Available Control Technology (RACT) for Sources of Oxides of Nitrogen (NOx): This section does not apply since this permit establishes BACT and LAER for the NOx emissions. See 310 CMR 7.19(1)(c)(9).

- 310 CMR 7.21 Sulfur Dioxide Emissions Limitations: Cape Wind will comply will all annual SO_2 emission reporting requirements.

- 310 CMR 7.22 Sulfur Dioxide Emissions Reductions for the Purpose of Reducing Acid Rain: The project is below the heat input threshold level and not subject to this requirement.

- 310 CMR 7.24 Organic Materials Storage and Distribution: This section does not apply to the project.

- 310 CMR 7.24 Organic Material Storage and Distribution: This section does not apply to the project.

- 310 CMR 7.25 Best Available Controls for Consumer and Commercial Products: This section does not apply to the project.

- 310 CMR 7.26 Industry Performance Standards: The project is exempt from this section pursuant to § 7.26(40).

- 310 CMR 7.27 NOx Allowance Program: This section has been superseded by 310 CMR 7.32 (“Massachusetts Clean Air Interstate Rule”) and furthermore does not apply to the project.

- 310 CMR 7.28 NOx Allowance Trading Program: This section been superseded by 310 CMR 7.32 and furthermore does not apply to the project.

- 310 CMR 7.29 Emissions Standards for Power Plants: This section does not apply to the project.

- 310 CMR 7.32 Massachusetts Clean Air Interstate Rule: This section does not apply to the project because the project does not meet the applicability requirements of 310 CMR 7.32(1)(d).

- 310 CMR 7.60 Severability: This section imposes no specific requirements.

- 310 CMR 7.70 Massachusetts CO_2 Budget Trading Program: This section does not apply to the project.

- 310 CMR 7.71 Reporting of Greenhouse Gas Emissions: This section does not apply to the project because the direct stack emissions from all stationary emission sources and processes will not exceed 5,000 short tons of greenhouse gases in carbon dioxide equivalents per year.

- 310 CMR 7.00 Appendix A: Emission offsets and Nonattainment Review: The requirements of this section apply to Phase 1 of the project and are described in Section VII of the fact sheet.

- 310 CMR 7.00 Appendix B: Emission Banking, Trading and Averaging: The requirements of this section apply to Phase 1 of the project and are discussed in Section VII of this fact sheet.

- 310 CMR 7.00 Appendix C: Operating Permit and Compliance Program: The requirements of this section do not apply to the project because, once the project becomes operational, it will not be a major source.

- 310 CMR 8.00: Prevention and/or Abatement of Air Pollution Episodes and Air Pollution Incident and Compliance Program: The requirement applies to the project. EPA is proposing that Cape Wind develop appropriate communications with EPA and Massachusetts so that construction can be stopped during a declared Air Pollution Episode Alert, Warnings, and Incident Emergencies. EPA is also proposing that Cape Wind prepare an Emission Reduction Plan for Phase 1 of the project.

VII. NONATTAINMENT NEW SOURCE REVIEW

VII.A Nonattainment NSR Review

Eastern Massachusetts is designated as moderate nonattainment for ozone. Nitrogen oxides (NOx) are an important precursor to ozone in Massachusetts. NOx is produced during combustion, especially at high temperatures. The combustion of air and fuel in an internal combustion engine produces combustion temperatures high enough for the nitrogen and oxygen in the flame to react and form NOx.

The Cape Wind emission analysis shows that the potential emissions of NOx for years 1 and 2 of phase 1 exceed the major source threshold level of 50 tpy found in the Massachusetts nonattainment NSR regulation, 310 CMR 7.00 Appendix A, “Emission Offsets and Nonattainment Review.” This regulation requires Cape Wind to:

- Apply the Lowest Achievable Emission Rate (LAER) to all NOx emission sources;

- Obtain emission reductions (i.e., offsets) in actual emissions that equal or exceeds the potential emission increase for phase 1;

- Provide documents to show that all stationary sources owned and operated by the owner of the proposed new source are in compliance with applicable requirements;

- Provide an analysis of alternative sites, sizes, production processes and environmental control technologies that demonstrate the benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of the location and construction of the proposed source; and

- Determine if the EPA Administrator has determined that the Massachusetts SIP is not being adequately implemented for the nonattainment area which the proposed source is to be constructed.

VII.A.1 LAER Analysis

As defined in 310 CMR 7.00 Appendix A, LAER means, for any source, the more stringent rate of emissions based on the following:

> (a) The most stringent emissions limitation which is contained in any state SIP for such class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or
> (b) The most stringent emissions limitation which is achieved in practice by such class or category of stationary source. . . .
> In no event shall LAER allow a proposed new or modified stationary source to emit any pollutant in excess of the amount allowable pursuant to applicable new source standards of performance.

See 310 CMR 7.00 Appendix A, § 2; *see also* CAA § 171(3). The LAER requirement does not consider economic, energy, or other environmental factors. *See In re Three Mountain Power, LLC*, 10 E.A.D. 39, 48 n.9 (2001) (quoting *New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Area Permitting* (draft Oct. 1990) (hereafter "Draft NSR Manual"), at G.4, *available at* www.epa.gov/ttn/nsr/gen/wkshpman.pdf.

For the Cape Wind project, LAER will apply to the diesel construction engines described in section VI.B of this fact sheet.

VII.A.1.i LAER Methodology

As noted above, LAER is the most stringent emission limitation derived from either of the following:

- the most stringent emission limitation contained in the implementation plan of any State for such class or category of source; or
- the most stringent emission limitation achieved in practice by such class or category of source.

The most stringent emissions limitation contained in a SIP for a class or category of source must be considered LAER, unless (1) a more stringent emissions limitation has been achieved in practice, or (2) the SIP limitation is demonstrated by the applicant to be unachievable. By definition LAER cannot be less stringent than any applicable new source performance standard (NSPS)

EPA can also require consideration of technology transfer. There are two types of potentially transferable control technologies: (1) gas stream controls, and (2) process controls and modifications. For the first type of transfer, classes or categories of sources to consider are those producing similar gas streams that could be controlled by the same or similar technology. For the second type of transfer, process similarity governs the decision. *See Draft NSR Manual*, at G.2-G.4.

VII.A.1.ii Cape Wind LAER Analysis

EPA's LAER analysis used the information provided in Cape Wind's December 17, 2008 application, Cape Wind's communications to EPA dated March 12, 2009, February 8, 2010, and April 23, 2010, and EPA's own technical expertise.

The analysis included information from state SIP emission regulations, new source review construction permits, and state and federal emission control technology-based databases such as the federal BACT/RACT/LAER clearinghouse or the California Air Resources Board. EPA also reviewed the applicable federal manufacturer standards of parts 60, 63, 89, 94, 1039, and 1042.

The analysis also considered technologies typically applied to other types of sources such as boilers and gas turbines to determine if they may be applied to diesel engines of a similar type and usage profile of Cape Wind's construction engines. These control technologies included the following:

- NOx absorbers,
- selective catalytic reduction (SCR) systems,
- exhaust gas recirculation (EGR), and
- NOx reducing catalyst (NRC).

The following provides a brief description of each control option.

NOx adsorber: A NOx adsorber contains materials which combine with NOx in the exhaust stream and collect it over time. Eventually the nitrogen must be released to collect more. Typical systems employ a complicated dual bed system and a series of dampers to minimize the fuel penalty.

SCR systems: An SCR system consists of a catalyst bed installed in the tail pipe of the engine and an ammonia handling and injection system installed upstream of the catalyst. Ammonia (NH_3) injected into the exhaust stream reacts with the NOx in the catalyst to form nitrogen gas (N_2) and water (H_2O). In principle, SCR can provide reductions in NOx emissions approaching 100%.

EGR systems: EGR systems reduce NOx by lowering the combustion temperature and the resulting NOx formation in an engine. The system reroutes a portion of the engine exhaust back to the engine intake manifold where it is mixed with the intake air. The carbon dioxide (CO_2) in the rerouted exhaust mixes with the intake air in the cylinder. This CO_2 absorbs heat and reduces combustion temperature and the formation of thermal NOx.

NRC systems: NRC systems use a hydrocarbon reductant (typically the base engine fuel) and a special catalyst to reduce nitrogen oxide to nitrogen. Unburned hydrocarbons and CO can be emitted, so most NRC systems also include a downstream diesel oxidation catalyst (DOC).

Based on Cape Wind's evaluation of the control options summarized in Attachment A of the March 12, 2010 submittal, the February 8, 2010 emission control spreadsheet, and the April 23, 2010 letter, EPA concluded that the four control options have not been achieved in practice, and that the emission reductions from the control options could not be met on a consistent basis, for new or retrofit diesel engines used in construction. The analysis found that these four control options have been used or potentially could be used on diesel engines. However, the analysis did not identify the use or potential use of these controls on diesel engines used for construction. The analysis concluded that diesel engines used for construction are a separate source category from diesel engines used for power generation and have separate control options and emission limitations.

The analysis considered the various federal manufacturing standards that may apply to diesel engines. EPA first eliminated parts 1039 and 1042 from further consideration since they apply only to engine model years beyond 2010, the reference year for this LAER evaluation since it is the year of this draft permit's issuance.[19] (Furthermore, part 1039 only provides standards for steady-state emissions until model year 2014, whereas Cape Wind's construction engines will not be in steady state during their OCS source operations.) EPA then eliminated part 63 subpart ZZZZ as providing a possible

[19] For the LAER analysis, EPA assumed a model year of 2010, and examined part 60 subpart IIII under this assumption. EPA assumed a model year of 2010 because this draft permit is being issued in 2010, and EPA expects to issue the final permit in 2010, even though construction may not start until 2011. As it happens, for many of the engines, the relevant subpart IIII standard, deriving ultimately from § 89.112, applies to engines with model years 2006 or later. *Cf. infra* note 20.

independent source of LAER, since, for stationary engines at non-major (area) sources of HAPs, subpart ZZZZ simply requires compliance with part 60 subpart IIII.

For engines with engine power less than 2,237 kW (3,000 hp), part 60 subpart IIII, in turn, refers to part 89 (specifically, 40 CFR 89.112-89.113), and, in circumstances not relevant here because of the model years, part 1039, for its emissions standards. For engines with engine power greater than 2,237 kW, part 60 contains emissions standards in part 60 table 1. However, Cape Wind is proposing to apply the lower (more stringent) part 89 emission rates for engines greater than 2,237 kW. Therefore, LAER for NOx is based on the NOx emission standards found in part 89 depending on engine size. These standards are identified in Table 4 for engine model year 2010,[20] and displacement between 5 and 10 L/cyl.

TABLE 4
NOx LAER for Phase 1 OCS Source Engines

Engine power (kW)	Pollutant controlled	Emission Rate (grams/kW-hr)
Less than or equal to 560	NMHC + NOx	4.0
Greater than 560	NMHC + NOx	6.4

EPA has reviewed Cape Wind's LAER analysis and agrees with the results. EPA notes that the federal standards for combustion engines under 40 C.F.R. part 89 regulate non-methane hydrocarbons (NMHC) and NOx emissions under a single emission rate. EPA believes the use of this standard for LAER is a conservative approach since a portion of the emission rate is used by NMHC, effectively lowering the amount of NOx that Cape Wind can emit. EPA will use the combined NMHC + NOx emission rate for LAER in the permit, and require Cape Wind to use only engines certified to meet the standards in Table 4.[21]

[20] While the LAER analysis assumed a model year of 2010, and examined part 60 subpart IIII under this assumption, *see supra* note 19, it is worth noting that part 60 subpart IIII's owner/operator requirements at 40 C.F.R. § 40.6204 distinguish between pre-2007 model year engines, and 2007 or later model year engines. Insofar as subpart IIII's owner/operator requirements apply directly to Cape Wind through 40 C.F.R. § 55.13, the actual model year of the engines determines this compliance obligation. Thus, it is possible that Cape Wind could comply with this permit's LAER requirements by using a model year 2006 engine, but in that case it would only be subject to the NSPS owner/operator requirements for pre-2007 engines. On the other hand, if Cape Wind chooses to use a model year 2011 engine, it would be subject to the NSPS owner/operator requirements for 2011 or later model year engines. As a practical matter, Cape Wind is required to comply with the most stringent emission limit, but it is worth noting that these are separate, independently enforceable requirements.

[21] The term "certified" in this fact sheet and the draft permit means that Cape Wind must obtain engines that have been certified by their manufacturers to meet the appropriate Tier 2 or Tier 3 standards. The draft permit does not require Cape Wind to independently test the engines to verify that they in fact meet the Tier 2 or Tier 3 standards either in general or during Cape Wind's particular construction operations.

VII.A.2 Other 310 CMR 7.00 Appendix A Requirements

VII.A.2.i Emission Offsets

310 CMR 7.00 Appendix A requires Cape Wind to offset its Phase 1 NOx emission increase with emission reductions achieved from another source or sources so as to provide a positive net air quality benefit within the affected area. EPA proposes to require that Cape Wind obtain and make federally enforceable NOx emission reductions (i.e., offsets) at a ratio of at least 1.26:1 of the potential Phase 1 NOx emissions. This 1.26:1 ratio is derived as follows: 310 CMR 7.00 Appendix A requires offsets to be obtained at a ratio of 1.2 to 1. In addition, the Massachusetts trading bank requires an additional 6 tons for every 100 tons of emission increase.

As noted in Section VI.C, projected NOx emissions for the first year of Phase 1 are 169.8 tons, and projected emissions for second year are 56.2 tons.[22] At the 1.26:1 ratio, this yields 214 tons of discrete NOx emission reductions to offset NOx emissions from the first year, and 71 tons of discrete NOx emission reductions to offset NOx emissions from the remainder of Phase 1. EPA proposes to require Cape Wind to obtain all 285 tons of NOx emissions reductions before beginning construction.

Cape Wind proposes to obtain certified offsets from the Massachusetts trading bank codified under 310 CMR 7.00 Appendix B, "Emissions Banking, Trading and Averaging." At this time, there appear to be adequate offsets available for purchase in Massachusetts, but Cape Wind may also purchase offsets from other states to the extent allowed by Appendix B.

VII.A.2.ii Source Compliance

Cape Wind does not operate any other source in Massachusetts. Neither Cape Wind's parent company (Energy Management, Inc.) nor any subsidiaries of that company currently own or operate CAA "major stationary sources" in Massachusetts.[23]

VII.A.2.iii Alternatives Analysis

Massachusetts's Nonattainment NSR regulation requires that:

> In order for the Department to issue an approval under 310 CMR 7.00: Appendix A, the following conditions shall be met:
> * * *
> By means of an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed new or modified stationary source, the owner or operator of the proposed stationary source

---

[22] As noted in Section VI.E, NOx emissions during Phase 2 will be substantially less than in Phase 1, and, as explained in Section IX, EPA proposes to cap Phase 2 emissions at 49 tons per year.

[23] EPA also adopts this conclusion for purposes of the Massachusetts plan approval regulations at 310 CMR 7.02(5)(c)(8), which requires a similar determination.

> or modification shall demonstrate to the satisfaction of the Department that the benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification.

310 CMR 7.00 App. A, § 8(b); *see also* CAA § 173(a)(5).[24]

On February 11, 2010, the ESS Group, Cape Wind's technical consultant for this project, submitted a letter to EPA Region 1 to address the Massachusetts NSR program alternative siting analysis requirement. The letter states that Cape Wind will use the discussions and conclusions provided in Section 3 of MMS's January 2009 Final Environmental Impact Statement to comply with the Massachusetts NSR program alternative siting analysis requirement.

As noted above in Section IV.C.1, MMS is the lead federal agency for National Environmental Policy Act review of the Cape Wind project. To be sure, MMS's review under NEPA was not designed to answer the precise question posed by this particular Nonattainment NSR requirement, i.e., whether "the benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of the location and construction of the proposed source." However, MMS made extensive findings (and received extensive comments from a broad array of interested parties) regarding the issues required by the alternatives analysis. MMS, on behalf of the United States, ultimately concluded that the project should be approved, and provided a detailed explanation of the rationale for its decision, including a discussion of other alternatives considered but rejected, and environmental effects of its selected alternative. *See* MMS ROD, at 5-25.

In light of the above, EPA concludes that Cape Wind has adequately made the demonstration required by 310 CMR 7.00 App. A, § 8(b), and that the information contained within the FEIS and the ROD are adequate. Specifically, EPA finds that MMS had an adequate basis for its conclusion that the benefits of the proposed project significantly outweigh the environmental and social costs that are likely to result from its construction and operation. To the extent necessary to support this conclusion under 310 CMR 7.00 App. A, § 8(b), EPA incorporates the MMS FEIS and ROD into the permit record. *See In re Campo Landfill Project, Campo Band Indian Reservation*, 6 E.A.D. 505, 520-23 (1996).

VII.A.2.iv SIP Adequacy

EPA has not determined that the Massachusetts SIP is not being adequately implemented for the Eastern Massachusetts ozone nonattainment area.

---

[24] Since EPA is implementing this provision through 40 C.F.R. § 55.14, the demonstration must be made to EPA, rather than MassDEP. *See* 40 C.F.R. § 55.14(c)(1).

VIII. PLAN APPROVAL UNDER 310 CMR 7.02

VIII.A Plan Approval Requirements

Cape Wind's emissions calculations show that the potential emissions for VOC, Particulate Matter with diameter equal or less than 2.5 microns ($PM_{2.5}$), Particulate Matter with diameter equal or less than 10 microns (PM_{10}), Carbon Monoxide (CO), and Sulfur Dioxide (SO_2) will equal or exceed the 310 CMR 7.02 Plan Approval applicability threshold level of 1 tpy for Phase 1 and Phase 2 of the project. Therefore, these pollutants are subject to plan approval requirements. In addition, nitrogen dioxide (NO_2) emissions expressed as the criteria pollutant NO_2 also exceeds the 7.02 Plan Approval applicability threshold level for Phase 1 and Phase 2 of the project and is subject to the plan approval requirements. It is worth noting, to avoid confusion, that, EPA actually reviews NO_2 emissions under two separate regulatory programs and therefore two separate regulatory standards: (1) Nonattainment New Source Review for the ozone precursor NOx emissions emitted during Phase 1, and (2) the Massachusetts 310 CMR 7.02 Plan Approval regulations for the criteria pollutant NO_2 emissions emitted during Phase 1 and Phase 2.

The Plan Approval regulations include two types of approvals: "Limited Plan Approval" that applies to potential emissions increase between 1 tpy to 5 tpy, and "Comprehensive Plan Approval" that applies to potential emission increases greater than 5 tpy. While the two plan approvals require different levels of review, the substantive requirements are similar and require the applicant to:

- apply BACT on all new sources with potential emissions of 1 tpy or more of any regulated pollutant, and

- upon request, demonstrate that the emissions increase does not result in or contribute to a violation of any state and federal air quality standard.

As stated in section VI.E of the fact sheet, Cape Wind intends to use similar equipment for Phase 1 and Phase 2 of the project. Therefore, EPA's BACT analysis described below applies to both phases of the project.[25] Also, EPA used the worst case emission rates from Phase 1 in all evaluations required for the BACT analysis.

VIII.B Massachusetts BACT Methodology

Under the Massachusetts 310 CMR 7.00 regulations, BACT means "an emission limitation based on the maximum degree of reduction of any regulated air contaminant

[25] As noted in Section VI.D, EPA is analyzing Phase 2 under the artificial (but conservative) assumption that there is an OCS source at all times during Phase 2, constituting the entire project site, thus aggregating all OCS source activities and counting all vessel emissions within the 25 mile radius as potential emissions of that source. BACT, however, only applies to engines that are part of a regulated OCS source. In other words, only those vessels that attach to the seafloor as described in Sections VI.B.1 and VI.B.2.b are subject to BACT requirements.

emitted from or which results from any regulated facility which the Department, on a case-by-case basis taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems and techniques for control of each such contaminant. The best available control technology determination shall not allow emissions in excess of any emission standard established under the New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants or under any other applicable section of 310 CMR 7.00, and may include a design feature, equipment specification, work practice, operating standard, or combination thereof." *See also* CAA § 169(3).

In general, when applying BACT pursuant to 310 CMR 7.02, the Massachusetts Department of Environmental Protection (DEP) follows the policies and procedures used by EPA in making its BACT determinations, namely:

1. **Identify all control technologies.** Identify all possible control options, including inherently lower emitting processes and practices, add-on control equipment, or combination of inherently lower emitting processes and practices and add-on control equipment.
2. **Eliminate technically infeasible options**. Eliminate technically infeasible options based on physical, chemical, and engineering principles.
3. **Rank remaining control technologies by control effectiveness**. Rank the remaining control options by control effectiveness and expected emission reductions.
4. **Evaluate most effective controls and document results**. Case-by-case evaluation of the economic, energy, and environmental impacts of the control technology and potential elimination of options.
5. **Select the BACT**. Select the most effective option not rejected as the BACT and derive an emissions limitation based on that option.

VIII.C Cape Wind BACT Analysis

EPA's BACT analysis begins with the information provided in Cape Wind's December 17, 2008 application, and Cape Wind's communications to EPA dated March 12, 2009, February 8, 2010, and April 23, 2010. Cape Wind's analysis identified all possible add-on control options, fuel types and inherently lower polluting emission sources for each pollutant. In addition, Cape Wind researched other permitting agencies, air control technical databases and similar construction projects to reach its proposed BACT. EPA relied on Cape Wind's submissions and EPA's own technical expertise in reaching EPA's BACT determination.

VIII.C.1 Nitrogen Dioxides (NO_2) BACT Determination

Step 1. Identify all control technologies.

Cape Wind identified the following add-on NO_2 control technologies with potential applications to the Cape Wind project:

- NO_X adsorbers,
- SCR,
- EGR,
- NRC systems, and
- Low-NOx engine designs that meet the federal manufacturer standards under parts 60, 63, 89, 94, 1039, and 1042.

These technologies were described in Section VII.A.1.ii of this fact sheet.

Step 2. Eliminate technically infeasible options

As discussed in Section VII.A.1.ii of the fact sheet, the NOx adsorbers, SCR, EGR and NRC control options are not achieved in practice or technically feasible for this project and thus are excluded from further review for BACT purposes.

Step 3. Rank remaining control technologies by control effectiveness

The only remaining control technology is low-NOx engines designed to meet the emission standards in 40 CFR part 60 subpart IIII.

Step 4. Evaluate most effective controls and document results. Since there is only one option remaining, it is not necessary to develop cost and other detailed information at this step. EPA has not identified any significant or unusual environmental impacts that would affect the selection of the remaining control option.

Step 5. Select BACT

Cape Wind proposed that BACT for NO_2 emissions is the use of low-NOx diesel engines that have been certified to meet the following emission rates identified in Table 5:

TABLE 5
NO_2 BACT for Phase 1 and Phase 2 OCS Source Engines

Engine size (kW)	Pollutant controlled	Emission Rate (grams/kW-hr)
Less than or equal to 560	NMHC + NOx	4.0
Greater than 560	NMHC + NOx	6.4

These emission rates are at least as stringent as those required by part 60 (which, in turn, derives the applicable emission rates from part 89). EPA has reviewed Cape Wind's BACT analysis and agrees that BACT consists of low-NOx engines meeting the Table 5 emission rates. In addition, EPA notes that the NO_2 BACT emission limits are expressed as NOx emission limits. NOx emissions include NO_2 emissions and are therefore an adequate surrogate for NO_2 emissions. EPA also notes that the 40 C.F.R. part 89 standard regulates engines using NOx emissions. Since NOx emissions are an acceptable

surrogate for NO_2 and are consistent with federal standards for the control of CI engines, EPA believes that expressing the NO_2 BACT emission limit in terms of NOx emissions for Phase 1 and Phase 2 emissions is acceptable for this permit.

In addition, EPA notes that the NO_2 BACT emission limit for Phase 1 is as stringent as the NOx LAER limit for Phase 1. Since the NO_2 BACT emission limit for Phase 2 is identical to the Phase 1 limit, the limit would meet the NOx LAER requirements for Phase 2 if LAER were to be applied during Phase 2. Put another way, application of LAER to Phase 2 NOx emissions, rather than application of BACT to Phase 2 NO_2 emissions, would yield the same emissions limits.

Also, as stated in the NOx LAER analysis at Section VII.A.1.ii, the federal standards for combustion engines at 40 C.F.R. part 89 regulate non-methane hydrocarbons (NMHC) and NOx emissions under a single emission rate. EPA believes the use of this standard for BACT is a conservative approach since a portion of the emission rate is used by NMHC effectively lowering the amount of NOx that Cape Wind can emit. EPA will use the combined NMHC + NOx emission rate for BACT in the permit.

VIII.C.2 PM, $PM_{2.5}$, PM_{10}, CO, and VOC BACT Determination

Cape Wind's analysis found that PM, $PM_{2.5}$, PM_{10}, CO, and VOCs are controlled by the same emission control options.[26] EPA is combining the BACT determination for these pollutants to simplify the fact sheet. In addition, EPA is assuming that Cape Wind will burn only ultra-low sulfur diesel (ULSD) fuel with a sulfur content no greater than 15 part per million.[27]

Step 1. Identify all control technologies. Cape Wind identified the following add-on control technologies with potential applications to the Cape Wind project:

- Active Diesel Particulate Filter (DPF),
- Catalyzed Diesel Particulate Filters (CDPF),
- Flow-through Filter (FTF), and
- Diesel Oxidation Catalyst (DOC).

The following is a brief description of each control option.

DPF systems: An active DPF system contains a porous ceramic filter that incorporates an active heating system to raise the temperature inside the filter to approximately 600 degrees Celsius. At this temperature, the carbon in any PM, VOC, or CO that is captured in the filter will be oxidized into CO_2 and water.

[26] As a collateral benefit, HAPs are also controlled by the same emission options, although, as noted above, HAPs are not subject to BACT.
[27] The SO_2 BACT analysis in Section VIII.B.3 discusses the use of ULSD in further detail.

CDPF systems: A CDPF contains a filter and catalyst. Similar to the DPF system, the filter captures and oxidized the PM emissions. VOC and CO emissions are also oxidized into CO_2 and water. The catalyst promotes the oxidation of the trapped PM emissions and the VOC and CO emissions.

FTF systems: An FTF system contains a wire mesh, wire fleece, or sintered metal core coated with a precious metal catalyst. The catalyst promotes the oxidation of unburned PM, VOC, and CO in the exhaust passing through it, producing CO_2 and water.

DOC systems: A DOC contains a flow-through metal or ceramic core with a precious metal catalyst such as platinum. The device sits in the exhaust stream, and as exhaust passes through it, the catalyst promotes the oxidation of unburned PM, VOC, and CO, producing CO_2 and water.

Step 2. Eliminate technically infeasible options.

Cape Wind's initial analysis concluded that the first three control options (DPF, CDPF and FTF) were not technically feasible for the project. The analysis noted that these three options are proven emissions control technologies for stationary diesel engines that operate consistently at high, stable loads. However, the analysis concluded that the options were not technically feasible technologies for sources with highly variable operating characteristics. It specifically noted that the control options require the source to maintain a minimum exhaust temperature at all times for efficient operation. Cape Wind stated that the engines used in the construction of the project will operate under highly transient and variable conditions. These operating conditions would not maintain sufficient exhaust temperature to make these control options technically feasible for Cape Wind.

However, at EPA's request, Cape Wind investigated the World Trade Center (WTC) Emission Reduction project in EPA Region 2 to further determine the technical feasibility of these controls. The project included the retrofit of several engines with PM controls including a DPF system. The "Cleaner Diesel Handbook" (April 2005) provides details of efforts in New York City to reduce pollution from diesel engines. EPA believes this information indicates that the technologies, while expensive and complex, are technically feasible for the project.

Step 3. Rank remaining control technologies by control effectiveness

EPA divided the control effectiveness ranking into two tables: Table 6 includes the pollutants PM, PM_{10}, and $PM_{2.5}$; Table 7 includes the pollutants CO and VOC.[28] The tables reflect how the technology options control the pollutants. All the PM emissions are controlled through a combination of filter collection and oxidation. The CO and VOC pollutants are controlled through oxidation only.

[28] As a collateral benefit, HAPs are also controlled to approximately the same percentages, although, as noted above, HAPs are not subject to BACT. *See* note 26 above.

TABLE 6
Ranking of Control Effectiveness for PM, PM_{10}, $PM_{2.5}$ Emissions

Control Technology	Percent Emission Reduction
DPF	60 – 90%
CDPF	60 – 90 %
FTF	50%
DOC	20 – 33%

TABLE 7
Ranking of Control Effectiveness for CO and VOC Emissions

Control Technology	Percent Emission Reduction
DPF	60 – 90%
CDPF	60 – 90 %
FTF	50 – 89%
DOC	20 – 75%

Step 4. Evaluate most effective controls and document results. This step requires EPA to evaluate the economic, energy, and environmental impacts of the highest ranking control option. In the event that the top candidate is shown to be inappropriate due to energy, environmental, or economic impacts, then the next most stringent alternative in the listing becomes the new control candidate and is similarly evaluated. EPA continues this process until the technology under consideration cannot be eliminated by any source-specific environmental, energy, or economic impacts.

Cape Wind provided information regarding the economic and energy impacts for all pollutants for each control option. In addition, Cape Wind provided the economic evaluation for the control of PM emissions in a March 3, 2010 letter from ESS, Inc. to Brendan McCahill, EPA Region 1.

In addition, EPA has applied the results from the PM emissions evaluation to the CO and VOC emission evaluation. EPA believes this is appropriate for the following reasons:

1) the effectiveness of the control options on each type of pollutant is similar;
2) the PM emissions rates are similar or higher than the emission rates for VOC;
3) the control options apply to all pollutants.

PM, PM_{10}, $PM_{2.5}$ Emissions Evaluation

A. DPF Control Option

Energy Impacts: DPF can significantly increase the back pressure of the engine resulting in increased fuel usage.

Environmental Impacts: DPF can significantly reduce HAP emissions.

Economic Impacts: Cape Wind provided an annualized cost of the DPF per ton of PM emissions removed over 2, 5 and 10 year periods. Cape Wind assumed a 5% interest rate for the evaluation. Over a 10 year period, the evaluation concluded that the cost effectiveness of DPF in dollars per ton of emissions removed is over $217,000/ton. This value is well above the cost of controls considered to be cost effective for PM emissions control in previous BACT determinations. While Cape Wind provided different periods up to 10 years to annualize the cost information for the controls, the company asserts in its April 23, 2010 letter that the control costs should only be annualized over 2 years. The retrofitted equipment will only operate under Cape Wind's control for the 1-2 year construction period, during which the emission reductions will take place. Following the construction period, there are no means to determine the additional useful life or emission reductions to be achieved for any of this equipment.

EPA is not taking a position on whether the control equipment cost should be annualized over 2 years. However, it is worth noting that the engines will be operating as part of a regulated OCS source for only a small percentage (certainly less than 50%) of the project's total life cycle. For this reason, EPA concludes that it is sufficiently conservative (i.e., does not overestimate the costs) to annualize the costs over a 10 year period. Based on cost analysis annualized over a 10 year period, EPA finds that DPF is not cost effective and it is therefore eliminated from further review.

B. CDPF Control Option

Energy Impact: CDPF can significantly increase the back pressure of the engine resulting in increased fuel usage.

Environmental Impacts: CDPF can significantly reduce HAP emissions.

Economic Impacts: Over a 10 year period, Cape Wind's evaluation concluded that the cost effectiveness of CDPF is over $118,000/ton. This value is well above the cost of controls considered to be cost effective for PM emissions control in previous BACT determinations. EPA concludes that DPF is not cost effective and it is eliminated from further review.

C. FTF Control Option

Energy Impact: EPA is not aware of any adverse energy impact from the use of FTF.

Environmental Impacts: FTF can significantly reduce HAP emissions.

Economic Impacts: Over a 10 year period, Cape Wind's evaluation concluded that the cost effectiveness of DPF is over $84,000/ton. This value is well above the cost of controls considered to be cost effective for PM emissions control in previous BACT

determinations. EPA concludes that DPF is not cost effective and it is eliminated from further review.

D. DOC Control Option

The DOC option is the remaining control option. Cape Wind agrees that that the control has been used on engines in projects similar to the Cape Wind project. EPA is not aware of any energy or environmental impacts from the use of DOC. Cape Wind and EPA agree that the DOC control option is cost effective.

Step 5. Select BACT

Cape Wind proposes that BACT for PM, $PM_{2.5}$, PM_{10}, CO, and VOC emissions is the use of engines retrofitted with DOC technology and burning only ULSD that meet emission rates derived from 40 C.F.R. § 89.112's Tier 2 and Tier 3 standards

For engines with maximum engine power $\leq$ 560 kW, Cape Wind will use engines certified to meet the following emission rates derived from 40 C.F.R. § 89.112's standards for Tier 3 engines:

PM:	0.2	g/KW-hr
CO:	3.5	g/KW-hr
NMHC + NOx:	4.0	g/KW-hr

For engines with maximum engine power > 560 kW, Cape Wind will use engines certified to meet the following emission rates derived from 40 C.F.R. § 89.112's standards for Tier 2 engines:

PM:	0.2	g/KW-hr
CO:	3.5	g/KW-hr
NMHC + NOx:	6.4	g/KW-hr

The above emission rates, taken from the federal standards for combustion engines under 40 C.F.R. part 89, regulate PM, $PM_{2.5}$, PM_{10} emissions under a single PM emission rate and NMHC (VOC) emissions and NOx emissions under a single combined NMHC and NOx emission rate. EPA believes the single PM emission rate meets BACT for $PM_{2.5}$ and PM_{10} emissions. The emission rate is based on engines retrofitted with DOC technology and burning ULSD and is consistent with emission rates for similar engines under variable operations. Cape Wind's air impact analysis also shows that the single PM emission rate is protective of both the $PM_{2.5}$ and PM_{10} air quality standards. EPA also believes the combined NMHC and NO_x emission rate meets BACT for VOC. As with BACT for PM emissions, the VOC emission rate is based on engines retrofitted with DOC technology and is consistent with VOC BACT for similar engines. Also, as discussed in the NOx LAER and BACT analyses in Sections VII.A.1.ii and VIII.B.1, a portion of the combined BACT emission rate for NOx is used by NMHC emissions. In the case of VOC BACT, a portion of the combined emission rate is used by NO_X emissions. This effectively lowers the amount of VOCs Cape Wind can emit under the emission rate.

VIII.C.3 SO_2 BACT Determination

Step 1. Identify all control technologies.
Cape Wind's analysis concluded that the use of low-sulfur fuels is the only possible control option for the control of SO_2 in diesel engines used in construction. The analysis noted that EPA's RBLC found that low-sulfur fuel is the only option to control SO_2 from engines of a similar size. EPA agrees that low-sulfur fuel is the only available control option.

Step 2. Eliminate technically infeasible options.
The use of low sulfur fuel is technically feasible for this project.

Step 3. Rank remaining control technologies by control effectiveness.
Since EPA agrees that ultra-low sulfur diesel (ULSD) fuel with a sulfur content no greater than 15 part per million is the only available control option, it is by definition the most effective.

Step 4. Evaluate most effective controls and document results.
Since EPA agrees there is only one available option, it is not necessary to develop cost and other detailed information at this step. EPA has not identified any significant or unusual environmental impacts that affect the selection of this control option.

Step 5. Select BACT
Cape Wind determined that BACT for SO_2 is the use of ULSD with a sulfur content no greater than 15 ppm.[29] EPA has reviewed Cape Wind's BACT analysis and agrees with the results. The BACT is the fuel itself (enforceable through a measurable limit on the sulfur content of the fuel), rather than an emission rate achieved through use of such fuel. Therefore, the draft permit does not include an SO_2 emission rate.

VIII.C.4 Opacity Limits

40 C.F.R. § 89.113 requires the following exhaust opacity standards for Tier 2 and 3 certified engines:

- 20 percent during the acceleration mode
- 15 percent during the lugging mode;
- 50 percent during the peaks in either the acceleration or lugging modes

---

[29] As Sections VI.C and VI.E show, projected SO_2 levels will be below the 1.0 tpy threshold level for the second year of Phase 1, and for all of Phase 2. However, Cape Wind is clearly subject to BACT requirements for SO_2 during the first year of Phase 1, and for BACT purposes, EPA views Phase 2 as a continuation of the same source as Phase 1. Moreover, the ultimately selected control technology is simply ULSD, which is cost-effective over any time period. EPA is therefore proposing the same BACT limits for SO_2 for the remainder of Phase 1 and for Phase 2 as well.

The Massachusetts visibility regulations at 310 CMR 7.06 are, for some operations, more stringent than § 89.113. Section 7.06 regulates both emissions of smoke (defined by 310 CMR 7.00 as visible aerosol resulting from combustion of materials but not including condensed water vapor) and other visible emissions (defined as emissions that are detectable without the aid of instruments, excluding both smoke and condensed uncombined water vapor). Regarding smoke, section 7.06(1)(a) prohibits emissions of smoke equal to or greater than the No. 1 standard on the Ringelmann Scale for more than six minutes per hour, and further restricts that even during that six minute exception period, the smoke may not equal to or greater than No. 2 on the Ringelmann Scale. Regarding other visible emissions, section 7.06(1)(b) prohibits visible emissions that could be reasonably controlled through modern control technology and good standard operating procedure, and specifically prohibits visible emissions that exceed 20% opacity over more than a 2 minutes period in any hour or 40% opacity at any time during the 2 minute period. *See also* 310 CMR 7.06(3) (specifically applying these requirements to marine vessels in the Southeastern Massachusetts Air Pollution Control District).

The draft permit requires Cape Wind to use engines that are certified to meet the part 89 opacity standards. The draft permit proposes that Cape Wind's engines meet the Massachusetts visible emissions standards as directly enforceable permit requirements.

The draft permit requires Cape Wind to test visibility using the 40 C.F.R. part 60, Appendix A, Method 9 opacity test upon request by EPA.

VIII.C.5 Crankcase Emissions

40 C.F.R. § 89.112(e) requires that any naturally aspirated engine used in the equipment listed in Section VI.B.1 does not discharge crankcase emissions into the ambient atmosphere, unless such crankcase emissions are permanently routed into the exhaust and included in all exhaust emission measurements. This provision does not apply to engines using turbochargers, pumps, blowers, or superchargers for air induction.

To ensure compliance with this requirement, the draft permit requires Cape Wind to use Tier 2 certified or later model engines and to maintain the engine and control device(s) according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer.

IX. PHASE 2 FACILITY-WIDE NOx EMISSION LIMIT

As noted in Section VI.E, Cape Wind's expected Phase 2 annual emission rate for NOx emissions is well below the major source threshold level in 310 CMR 7.00 Appendix A of 50 tpy. Cape Wind based annual Phase 2 emissions on projected emergency repairs and maintenance activities that could occur in any given year. Cape Wind acknowledges that the project may exceed the predicted annual emission rate in a particular year if Cape Wind experiences a higher than expected number of repairs for the project.

Moreover, it is entirely possible that there will be no OCS source, and hence no stationary source requiring a permit, for much (or even all) of Phase 2. Since the

permanent operational equipment (wind turbine generators, electrical service platform, and associated cabling) used during Phase 2 does not have potential air emissions, and the construction equipment used in Phase 1 will be removed from the site after completion of construction, there is no expected OCS source during Phase 2. It is, however, possible that Cape Wind might need to conduct a repair using a vessel (e.g., a jackup unit) that could constitute an OCS source. To provide Cape Wind the ability to conduct additional repair activities without the need to obtain a revised permit, EPA is proposing to limit the project's annual Phase 2 NOx emissions rate to 49 tpy.

EPA notes that NOx is the limiting pollutant for this project. If the project's activity level resulted in the NOx emission rate increasing to 49 tpy, the emission rates for the other regulated pollutants would still remain well below the applicable PSD and nonattainment NSR threshold levels. Therefore, Cape Wind does not require a facility-wide limit for these pollutants.

EPA is also proposing to include a start point for Phase 2. EPA proposes that Phase 2 shall begin on the first day of the calendar month following the Phase 1 end date.[30] Starting on this date ("Phase 2 start date"), Cape Wind must comply with the Phase 2 NOx facility-wide emission limit.

EPA is not proposing an end date for Phase 2. Although Cape Wind's MMS review was based on an operational duration of 20 years, it is not necessary for air pollution control purposes to limit the duration of the OCS air permit, particularly since Phase 2 emissions will meet all applicable requirements, be controlled by Best Available Control Technology, and be capped to remain below major source levels. Moreover, it may be premature to attempt to define Phase 3 (decommissioning) air pollution control requirements at this point. It is likely that lower-emission technologies will be available at the time of project decommissioning than are available now, and/or that technologies that are now prohibitively expensive may be cost-effective at that time. It is also likely that the regulatory environment may change. At the same time, it is also entirely possible that Cape Wind may be able to conduct decommissioning consistent with the permit limits applicable to Phase 2, and no permit revisions may be needed. Therefore, EPA is not now proposing permit requirements applicable for Phase 3. Rather, EPA proposes to require that Cape Wind notify EPA at least 24 months before initiating any decommissioning activities, and to seek an applicability determination or revised permit for Phase 3 activities at that time.

X. PERMIT COMPLIANCE

EPA has developed proposed monitoring, recordkeeping, and reporting requirements based on the standard emissions testing, recordkeeping and reporting procedures of 40 C.F.R. §§ 60.4211-60.4214, as modified by case-specific adjustments to meet the needs of this permit. These requirements are summarized below.

---

[30] The Phase 1 end date is discussed in Section VI.B.2 above.

X.A Monitoring

The draft permit requires Cape Wind to monitor hours of operation for each construction engine and each vessel in transit within the project area. The draft permit also requires Cape Wind to track, for vessels in transit, the portion of total hours of operation that are within the 25-mile radius of the project site. In addition, the draft permit requires Cape Wind to monitor the sulfur content of the fuel used by each engine and vessel within the project area.

In addition, the draft permit assumes (conservatively) that the NOx emission rate equals the certified NOx + NMHC emission rate for each engine when determining compliance with the Phase 2 facility-wide NOx emission limit and the total OCS source emissions used to determine the Phase 1 NOx offsets.

Because the permit's emission limits are based on manufacturer or vendor certification pursuant to 40 C.F.R. parts 60 and 89, rather than direct measurement, the draft permit does not require Cape Wind to use a continuous emissions monitoring system or conduct stack tests.[31] Instead, the draft permit's monitoring requirements focus on hours of operation, fuel sulfur content, and certified emission rates to monitor compliance of the Phase 1 and 2 NOx emission limits. EPA believes monitoring hours of operation is a conservative approach for calculating the total NOx emissions. The approach assumes that Cape Wind is operating its engines at full load during all operations and that the engines are emitting at their maximum certified emission rate.

X.B Recordkeeping

EPA is proposing that Cape Wind maintain records of certain engine, emissions, and operational information, including details about each regulated engine (and how the engine complies with the emission standards required by the permit), and operational details regarding OCS attachments and detachments. Cape Wind must maintain these records for five years.

X.C Reporting

The draft permit's principal reporting requirements pertain to: details regarding engines with maximum power of more than 2,237 kW; semi-annual reports including any emission limit and or other permit condition violations; and a monthly report of the project's 12-month rolling average for NOx emissions.

XI. SOURCE IMPACT ANALYSIS

EPA has examined whether emissions from the project would result in air quality exceeding ambient air quality standards for NO_2, CO, SO_2, PM_{10}, or $PM_{2.5}$. In particular, EPA reviewed modeling information that Cape Wind submitted to MMS as part of

[31] EPA reserves the right under CAA § 114 or any other applicable authorities to require Cape Wind to install monitoring equipment, conduct emissions testing, or provide other compliance-related information.

MMS's general conformity and NEPA analyses. Based on that review, EPA is satisfied that the project emissions will not result in air quality exceeding ambient air quality standards for NO_2, CO, SO_2, PM_{10}, or $PM_{2.5}$, and is not requiring further modeling. Please refer to Attachment I, memo from Brian Hennessey to Brendan McCahill dated June 3, 2010.

XII. ENDANGERED SPECIES ACT

Pursuant to Section 7 of the Endangered Species Act (ESA), 16 U.S.C. § 1536, and its implementing regulations at 50 C.F.R. part 402, EPA is required to ensure that any action authorized, funded, or carried out by the Agency is not likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of such species' designated critical habitat. Section 9 of the ESA prohibits the taking of endangered species. This project involves several federal agencies whose actions are subject to the ESA.

In a May 19, 2008 letter from the Minerals Management Service (MMS) to the National Marine Fisheries Services (NMFS) and the United States Fish and Wildlife Service (FWS), MMS requested formal consultation under Section 7 of the ESA on behalf of itself and, as lead federal agency, of EPA. MMS provided a Biological Assessment, and NMFS and FWS each prepared Biological Opinions.[32] FWS's Biological Opinion included an Incidental Take Statement (focused on roseate terns and piping plovers) and provided reasonable and prudent measures (RPMs) as well as terms and conditions necessary for exemption from the prohibitions of ESA § 9. *See* FWS Biological Opinion, at 75-76. Similarly, NMFS provided an Incidental Take Statement (focused on loggerhead, Kemp's ridley, green, and leatherback sea turtles), RPMs, and terms and conditions for exemption from the prohibitions of ESA § 9. *See* NMFS Biological Opinion, at 102-104.

EPA has relied on MMS's ESA consultations to fulfill EPA's obligations under the ESA for this project. Based on the results of these consultations, and after review of the terms, conditions, and RPMs in the FWS and NMFS BOs, EPA proposes to include a condition within the OCS air permit requiring that, if at any time during the life of the project, either FWS or NMFS requests that ESA consultation be re-initiated, withdraws an Incidental Take Statement, or determines that the requirements of the ESA are not being satisfied, Cape Wind must notify EPA.

---

[32] *See* Cape Wind Energy Project, Nantucket Sound: Biological Assessment (MMS, May 2008), *available at* http://www.mms.gov/offshore/PDFs/May2008CapeWindFinalBA.pdf; Biological Opinion for the Cape Wind Energy Project, Nantucket Sound, Massachusetts (USFWS, Nov. 21, 2008), included in Cape Wind FEIS Appendix J, *available at* http://www.mms.gov/offshore/RenewableEnergy/PDFs/FEIS/Appendix%20J%20-%20WFS%20and%20NOAA%20BOs.pdf; National Marine Fisheries Service, Endangered Species Act Section 7 Consultation Biological Opinion (NMFS, Nov. 13, 2008), also appended to Cape Wind FEIS in Appendix J.

XIII. ENVIRONMENTAL JUSTICE

EPA has concluded that Cape Wind's emissions would not have a disproportionately high and adverse human health or environmental effects on minority or low-income populations. *See* Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, Executive Order 12,898, 59 Fed. Reg. 7,629 (Feb. 16, 1994).

First, the project's emissions have a minimal air impact on all populations. Since the project is located several miles out in the ocean, the vast majority of the emissions during construction and operations will remain well away from any away populated area. Moreover, Cape Wind's highest emission rates are short lived and occur only during the first year of construction. The emissions and associated air impacts during the second year of construction and during commercial operations are far less. Furthermore, Cape Wind's emissions impact analysis shows that the project's peak emissions will (1) not result in exceedance of any currently attained NAAQS, and (2) not adversely impact ozone levels because ozone precursor (NOx) emissions will be offset at a 1.26:1 ratio.

Second, EPA is not aware of any minority and/or low-income population that is disproportionately affected by the project's emissions. Since the project is well away from any land, the project's emission impact are dispersed over a wide area with no elevated concentration levels affecting any given populated area. In addition, EPA is not aware of any minority or low-income population that may frequently use the area for recreational or commercial reasons.

Finally, EPA is aware that the project could have other impacts not associated with the project's air emissions subject to the OCS air permit, e.g., impacts of the staging activities in Quonset, Rhode Island. To the extent (if any) that any such issues have environmental justice dimensions, and to the extent (if any) that EPA is required to address such environmental justice issues in its OCS air permit decision, EPA relies upon the analyses performed by MMS to address those issues.

XIV. NATIONAL HISTORIC PRESERVATION ACT

As noted above, in a December 15, 2009 letter from MMS to EPA Region 1, MMS informed EPA that it is the lead agency reviewing the Cape Wind project under Section 106 of National Historic Preservation Act (NHPA). To the extent that activities regulated by EPA as part of this project need to be addressed under these authorities, EPA has relied on the results of the MMS lead agency consultations to address any NHPA requirements for this project.[33]

---

[33] Notwithstanding EPA's reliance on MMS's NHPA consultation, EPA also notes the following:

1. Construction and maintenance emissions will be controlled to LAER or BACT levels.
2. The construction vessels themselves are temporary and construction activities are expected to be completed within two years.
3. Even when present, the vessels are likely to present less visual impact than the turbines.
4. Nantucket Sound is a working waterscape that already experiences commercial boat traffic.

On January 13, 2010, MMS held an NHPA Section 106 consultation meeting with all consulting parties. During this meeting, the Secretary of the Interior, Kenneth Salazar, announced his intention to finalize a decision on the Proposed Project application in the month of April. MMS's process included: provision of a public comment period on the revised Finding of Adverse Effect document (public comment closed February 12, 2010); consideration of public comments; and announcement by March 1, 2010, whether further consultation would be productive, or whether the Department of the Interior, acting through MMS, would terminate the consultation.

MMS's Revised Section 106 Finding of Adverse Effect found that:

> The proposed project will have an indirect adverse visual effect for the 25-year life of the project on twenty-eight above-ground historic properties, and will impact the culture and the traditional religious and ceremonial practices of the Wampanoag Tribe of Gay Head (Aquinnah) and Mashpee Wampanoag Tribe (collectively, the Wampanoag Tribes). This includes visual intrusion into six specific Traditional Cultural Properties (TCPs) and physical intrusion into one TCP identified to the MMS by the Wampanoag Tribes.

On April 28, 2010, the Secretary of the Interior, on behalf of all consulting federal agencies including EPA, informed the Advisory Council on Historic Preservation that "the balance of considerations weighs in favor of approving the Cape Wind Project" and executed a Record of Decision (ROD) that approved the Project. This decision completed EPA's NHPA § 106 obligations.

XV. TRIBAL CONSULTATION

EPA consults with affected Indian tribes under two related but distinct frameworks. First, in certain cases, an Indian tribe may, through its Tribal Historic Preservation Officer or otherwise, be an appropriate party with which NHPA § 106 consultations should be conducted. As discussed above, EPA has been granted consulting party status in MMS's Section 106 consultation, and has relied on MMS's NHPA process, including MMS's consultation with affected Indian tribes, for purposes of NHPA compliance.

However, separate from the NHPA, EPA, as part of the federal government, also has a government-to-government relationship with federally-recognized Indian tribes, consistent with the federal trust responsibility to such tribes.[34] In keeping with this

---

[34] The United States's trust responsibility derives from fundamental principles of federal Indian law, and has also been given additional expression through various Presidential and EPA policies. *See generally* Consultation and Coordination With Indian Tribal Governments, Executive Order 13,175, 65 Fed. Reg. 67,249 (Nov. 6, 2000); President Barack Obama, "Tribal Consultation" (Nov. 5, 2009), *available at* http://www.epa.gov/indian/pdf/tribal-consultation-memorandum-09.pdf; EPA Administrator William D. Ruckelshaus, "EPA Policy for the Administration of Environmental Programs on Indian Reservations" (Nov. 8, 1984) ("1984 EPA Indian Policy"), *available at* http://www.epa.gov/indian/pdf/indian-policy-84.pdf; EPA Administrator Lisa P. Jackson, "EPA Indian Policy" (July 22, 2009), *available at*

responsibility, before issuing this proposed OCS air permit, EPA contacted nearby Indian tribes to ensure that their concerns and interests were considered before EPA made any decision that could affect the tribal environment.

The following is a summary of EPA Region 1's tribal collaboration and outreach and consultation activities regarding this proposed permit:

> April 28-29, 2009: EPA staff contacted environmental program staff of the three potentially affected tribes (Mashpee Wampanoag Tribe, Wampanoag Tribe of Gay Head (Aquinnah), and Narragansett Indian Tribe) via email, informing them of the pending air permit application for Cape Wind and offering to initiate discussions. EPA staff held a preliminary telephone conversation with George "Chuckie" Green of the Mashpee Wampanoag Tribe.
>
> April 21-22 and 30, 2010: Stephen Perkins (Director, Office of Ecosystem Protection, EPA Region 1) telephoned the environmental directors of the three tribes, requesting to initiate a consultation regarding a proposed air permit for construction and maintenance activities for Cape Wind, and offering a technical background discussion in early to mid-May.
>
> May 4, 2010: H. Curtis Spalding (Regional Administrator, EPA Region 1) sent letters to the leaders of the three tribes, requesting formal consultation and proposing to meet with tribal leadership for a government-to-government consultation.
>
> May 11, 2010: Mr. Perkins e-mailed technical information to the environmental directors of the three tribes, and followed up by telephone.
>
> May 21, 2010: Mr. Perkins advised the tribal environmental directors that EPA would shortly send an unofficial draft of the permit and fact sheet, and invited them to a technical background conference call on May 27, 2010.
>
> May 25, 2010: Mr. Perkins sent the tribal environmental directors an unofficial draft of the permit and fact sheet.
>
> May 27, 2010: Mr. Perkins and EPA staff opened a technical background conference call by phone.
>
> June 9, 2010: At the request of the Mashpee Wampanoag Tribe, Mr. Spalding and Mr. Perkins met in person with Mashpee Wampanoag tribal leaders in Mashpee, Massachusetts, to hear their concerns.

---

http://www.epa.gov/indian/pdf/reaffirmation-memo-epa-indian-policy-7-22-09.pdf; EPA Office of Air Quality Planning & Standards, "Consulting With Indian Tribal Governments" (Apr. 10, 2009), *available at* http://www.epa.gov/oar/tribal/pdfs/OAQPSConsultationPolicy%20april%202009.pdf.

XVI. COMMENT PERIOD, HEARINGS, AND PROCEDURES FOR FINAL DECISIONS

EPA is accepting written public comments during the public comment period specified in the attached public notice. Please see the public notice regarding the date and location of the public hearing(s).

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period (including the public hearing). Any supporting materials which are submitted shall be included in full and may not be incorporated by reference, unless they are already part of the administrative record in the same proceeding, or consist of State or Federal statutes and regulations, EPA documents of general applicability, or other generally available reference materials. Oral statements will only be accepted at the public hearing. All written comments must be submitted by the close of the public comment period, to the address listed under "EPA Contacts" in Section XVII below.

Following the close of the public comment period, and after the public hearing, EPA will issue a Final Permit decision and respond in writing to all significant comments. The final permit decision (including the response to comments) will be forwarded to the applicant and each person who has submitted written comments or requested notice, and will be posted on EPA's web site and also made available to the public at EPA's Boston office. Within 30 days following the notice of the final permit decision, any person who filed comments on the draft permit or participated in the public hearing may submit a petition for review of the final permit decision to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

XVII. EPA CONTACTS

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, from:

Brendan McCahill
Office of Ecosystem Protection
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (OEP05-02)
Boston MA 02109-3912
Telephone: (617) 918-1652
Mccahill.brendan@epa.gov

XVIII. PERMIT RECORDS

The following is a list of the main documents in the administrative record for this permit. To review the permit file, contact Brendan McCahill as described in Section XVII. The list is provided for the reader's convenience, and is not intended to be exhaustive. EPA may add additional documents to the record before issuing a final permit decision.

- Outer Continental Shelf Air Regulations Notice of Intent, December 7, 2007
- Meeting notes from a meeting held at EPA Boston office with Alliance to Protect Nantucket Sound, March 17, 2008
- Letter from Robert Varney, EPA, to Glenn Wattley, Alliance to Protect Nantucket Sound, Re: Need for a Preconstruction General Conformity Determination and a Preconstruction Outer Continental Shelf (OCS) Air Permit for Cape Wind; Request for Public Review, May 28, 2008
- Letter from NOAA Fisheries to MMS. Re: Final Biological Opinion, November 13, 2008
- Letter from Thomas Chapman, FWS to James Kendall, MMS. Re: Final Biological Opinion, November 21, 2008
- Outer Continental Shelf Air Regulations Permit Application, December 17, 2008
- Letter from Glenn G. Wattley, Save Our Sound/Alliance to Protect Nantucket Sound, to Robert Varney, EPA, Re: Cape Wind Application for OCS Permit, January 5, 2009
- Letter from ESS Group, Inc. to David Conroy, EPA, Re: Outer Continental Shelf Air regulation Permit Application Cape Wind Energy Project, March 12, 2009
- Letter from ESS Group, Inc. to David Conroy, EPA, Re Mitigation Commitment and Revised Vessel Emissions Estimates General Conformity Determination Cape Wind Energy Project, June 25, 2009
- Letter from ESS Group, Inc. to David Conroy, EPA, Re: Revised Emissions Estimates, Outer Continental Shelf Air regulation Permit Application Cape Wind Energy Project, September 23, 2009
- Letter from Stephen Perkins, EPA, to Andrew Krueger, MMS, Re: Section 106 Consultation for Cape Wind Energy Project, December 1, 2009
- Letter from Andrew Krueger, MMS, to Stephen Perkins, EPA, Re: Section 106 Consultation for Cape Wind Energy Project, December 15, 2009
- Letter from ESS Group, Inc. to Brendan McCahill, EPA, Re: OCS Permit Application Cape Wind Energy Project, March 2, 2010
- Letter from ESS Group, Inc. to Ida McDonnell, EPA, Re: OCS Permit Application Cape Wind Energy Project, April 23, 2010
- Letters from H. Curtis Spalding, EPA, to tribal leaders of Mashpee Wampanoag Tribal Council, Wampanoag Tribe of Gay Head (Aquinnah), and Narragansett Indian Tribe, May 4, 2010
- Letter from ESS Group, Inc. to Ida McDonnell, EPA, Re: Draft OCS Air Permit, Cape Wind Energy Project, May 28, 2010
- Attachment I, Memo from Brian Hennessey, EPA, to Brendan McCahill, EPA, June 3, 2010
- Letter from ESS Group, Inc. to David Conroy, EPA, Re: OCS Permit Application Cape Wind Energy Project, June 4, 2010