ESS Group, Inc.

Engineers
Scientists
Consultants

888 Worcester Street
Suite 240
Wellesley
Massachusetts
02482
p 781.431.0500

June 4, 2010

David B. Conroy
Manager, Air Programs Branch
United States Environmental Protection Agency
Region 1 Headquarters
One Congress Street, Suite 1100
Boston, MA 02114-2023

Re: Permit Application Revision
Outer Continental Shelf Air Regulations Permit
Cape Wind Energy Project

Dear Mr. Conroy:

A Permit Application for the proposed Cape Wind Offshore Renewable Energy Project (the Project) was submitted by ESS Group, Inc. (ESS) on December 17, 2008 to fulfill the regulatory requirements of the United States Environmental Protection Agency's (EPA) Outer Continental Shelf (OCS) Air Regulations, codified under Title 40 Code of Federal Regulations, Part 55 (40 CFR § 55). The Project, as proposed by Cape Wind Associates, LLC (Cape Wind), will be located at Horseshoe Shoal, Nantucket Sound, Massachusetts, and will utilize offshore wind energy as its renewable fuel to generate electricity for sale.

Cape Wind submitted revised emissions estimates for the equipment associated with the construction and operation of the Project to the EPA on September 23, 2009. The emission estimates were revised at the direction of the EPA and the Minerals Management Service (MMS). The revised emissions estimates included an estimate of emissions during the preconstruction geophysical and geotechnical (G&G) surveys of the Project area, including the electrical interconnection cable routes.

The MMS released its Record of Decision (ROD) for the Project on April 28, 2010. The ROD contained expanded mitigation and monitoring requirements for the Project's preconstruction activities. Please refer to the ROD[1] for more detail on these expanded mitigation and monitoring requirements for the Project. The expanded requirements included in the MMS ROD will result in an increase in vessel transit activities during the Project's preconstruction G&G surveys.

Accordingly, Cape Wind has revised its emissions estimates for preconstruction activities to account for the expanded G&G and monitoring requirements included in the ROD. Cape Wind expects that the actual equipment used during preconstruction activities will remain unchanged. However, the number of operating hours for each piece of equipment will increase, resulting in an increase in overall emissions during preconstruction activities.

Attached is a spreadsheet summarizing the revised emissions estimates for the Project during preconstruction activities. These revised emissions have been estimated using the same emissions factors and calculation methodologies outlined in the September 23, 2009 letter.

[1] A complete version of the MMS ROD can be found at:
http://www.mms.gov/offshore/renewableenergy/PDFs/CapeWindROD.pdf

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Also attached is a revised summary of Project emissions subject to OCS Permitting. The overall NO_X emissions from the project during Phase 1 (preconstruction and construction) will increase by approximately 32.8 tons due to the increase in preconstruction equipment usage.

The revised estimate of the total NO_X emissions from the Project during Phase 1 will be 226 tons. Cape Wind is required to offset its NO_X emissions during Phase 1 at a minimum ratio of 1.26:1 to satisfy the requirements of Massachusetts Nonattainment Review. Cape Wind will acquire a minimum of 285 tons of offsets for its Phase 1 NO_X emissions.

In addition, Cape Wind requests that the Phase 1 End Date in the OCS Permit be defined as the last day of the calendar month that is 36 months after the Phase 1 Start Date. While Cape Wind anticipates that construction will be complete within 24 months, the additional preconstruction survey requirements contained in the ROD could extend the construction period if there are unanticipated seasonal delays in preconstruction and construction activities. Cape Wind's estimates of equipment usage and emissions during Phase 1 are unchanged as a result of this request. An extension of the Phase 1 End Date will give Cape Wind more flexibility to manage seasonal delays in preconstruction and construction activities within the effective dates of the OCS Permit.

This letter, and the accompanying emissions summaries, should serve as a revision to the Cape Wind OCS Air Permit Application. If you have any questions regarding this submittal, do not hesitate to call me at (781) 489-1149.

Sincerely,

ESS GROUP, INC.

Michael E. Feinblatt
Project Manager

Attachments

C: Ida McDonnell, EPA Region 1
Brendan McCahill, EPA Region 1
Craig Olmsted, Cape Wind Associates
Rachel Pachter, Cape Wind Associates
Chris Rein, ESS
Terry Orr, ESS

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Revised May 2010 as directed by MMS

Cape Wind Energy Project
Preconstruction Emissions Inside of 25 miles

Emission Factors from EPA's "Current Methodologies and Best Practices in Preparing Port Emission Inventories", April 2009

Emission Factors - Ocean Going Vessel Main Engines, Medium-Speed Diesel, Marine Diesel Oil, g/kWh (Table 2-9)

Engine	NOx	VOC (HC)	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPs
MSD & MDO	13.2	0.50	0.20	1.10	0.47	0.43	646.08	0.00635

Diesel Fuel Sulfur Content: 500 ppm

Emission Factors - Harbor Craft, Tier 0, g/kWh (Table 3-8)

Engine Power	NOx	VOC (HC)	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPs
225 - 449 kW (Cat. 1)	10.0	0.27	0.043	1.50	0.30	0.29	690.00	0.0161
450 - 559 kW (Cat. 1)	10.0	0.27	0.043	1.50	0.30	0.29	690.00	0.0161
560 - 999 kW (Cat. 1)	10.0	0.27	0.043	1.50	0.30	0.29	690.00	0.00635
1,000 kW (Cat. 1)	13.0	0.27	0.043	2.50	0.30	0.29	690.00	0.00635
1,000 - 3,000 kW (Cat. 2)	13.2	0.50	0.043	1.10	0.72	0.70	690.00	0.00635

Category 1 vessels are defined by EPA as small harbor craft and recreational propulsion (<1,000 kW)
Category 2 vessels are defined by EPA as OGV auxiliary engines, harbor craft, and smaller OGV propulsion (1,000-3,000 kW)
Category 3 vessels are defined by EPA as OGV propulsion engines (>3,000 kW)
HAP emission factors are from AP-42 (Sections 3.3 & 3.4)
Load Factors are from Table 3-4 of the EPA Port Emissions Guidance Document
Emissions (tons) = Engine Power Rating (kW) x Load Factor (%) x Activity (hrs) x Emission Factor (g/KWh) x (1 lb/454 g) x (1 ton/2000 lb) x (# of sources)

Diesel Fuel Sulfur Content: 15 ppm

Emission Factors (g/hp-hr) Diesel Recip. <600 hp Based on AP-42 Vol.1 , Tables 3.3-1 - 3.3-2

NOx	TOC	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPs
	1.14	0.01				521.63	0.012

EPA Nonroad Diesel Engine Emission Standard (Tier 2 or Tier 3 if available), g/KW-hr

Engine Size	NOx *	VOC	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPs
225≤kW<450	4.0			3.5	0.20	0.20		

* EPA emission standard is for NOx+NMHC. It has been assumed that all emissions are NOx to be conservative.

Emission Factors (lb/MMBtu) Natural Gas 4-Stroke Based on AP-42 Vol.1 ,Table 3.2-2

NOx	VOC	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPs
0.85	0.12	0.00059	0.56	0.000077	0.000077	110.00	0.072

Emission Factors (g/bhp-hr) for 50-100HP 4-stroke, outboard marine engines. Based on Exhaust Emission Factors for Nonroad Engine Modeling: Spark-Ignition. EPA420-R-05-019, Table 10. Worst case emissions factors were selected from carbureted, indirect injection and direct injection engine types. When calculating emissions, HC and PM were equated with VOC and PM10, respectively.

NOx	HC	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPs
5.82	5.82		152.25	0.06			

Activity Type	Vessel Type/ Emission Source	Number of Sources	Equipment Size (HP)	Equipment Size (kW)	Activity	Count	Duration	Operating Hours (per unit)	Assumptions	Load Factor	Auxiliary Engine Power Adjustment	Emissions (tons)							
												NOx	VOC	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPs
Preconstruction Period - Activities within 25 Miles of the Project																			
Geophysical - WTG's	42' Diesel Lobster Boat	1	1,000	746	-Travel b/w Falmouth and WP	100 days	12 hrs/day	1200	- 2 hrs. @ 15 knots then 8 hrs. @ 3 knots	0.43	1.100	4.7	0.1	0.0	0.7	0.1	0.1	321.6	0.0
Geophysical - 33 kV Inner Array Cable	42' Diesel Lobster Boat	1	1,000	746	-Travel b/w Falmouth and WP	20 days	12 hrs/day	240	- 2 hrs. @ 15 knots then 8 hrs. @ 3 knots	0.43	1.100	0.9	0.0	0.0	0.1	0.0	0.0	64.3	0.0
Geophysical - 115 kV Interconnect Cable	42' Diesel Lobster Boat	1	1,000	746	-Travel b/w Falmouth and WP	7 days	12 hrs/day	84	- 2 hrs. @ 15 knots then 8 hrs. @ 3 knots	0.43	1.100	0.3	0.0	0.0	0.0	0.0	0.0	22.5	0.0
Electrical Generator	Gas Fired	1	8.7	6.5		195 days	12 hrs/day	2340				0.060	0.008	0.000	0.040	0.000	0.000	7.853	0.005
Borings	Tug Boat	1	1,500	1,119	Travel b/w Falmouth and	195 days	24 hrs/day	4680	Full Load @ 1hr/day	0.31	1.100	26.0	1.0	0.1	2.2	1.4	1.4	1356.5	0.0
Boring Drill Rig	Truck mtd Rig	1	350	261	1.5 borings/day	195 days	12 hrs/day	2340	Rig Stays on HSS till done			2.7	1.0	0.0	2.4	0.1	0.1	470.5	0.0
Vibracore Boat		1	1,000	746	Final Cable Design and Constructability survey	17 days	12 hrs/day	204	- 33 kV: 1 core/3 miles of cable, total 22 - 115 kV: 2 /mile of cable, total 26 - 5 /day	0.43	1.100	0.8	0.0	0.0	0.1	0.0	0.0	54.7	0.0
Multibeam Survey	26' Boat	1	300	224	Shallow area multibeam survey	130 days	12 hrs/day	1560		0.43	1.100	1.8	0.0	0.0	0.3	0.1	0.1	125.4	0.0
Electrical Generator	Gas Fired	1	4	3		130 days	12 hrs/day	1560				0.019	0.003	0.000	0.012	0.000	0.000	2.416	0.002
Crew Movement	Zodiac Boat	1	100	75	1 boring/day	195 days	12 hrs/day	2340	Zodiac only needed for boring program			1.5	1.5		39.2	0.015			
Preconstruction Emissions - Stationary Sources												**2.8**	**1.0**	**0.0**	**2.4**	**0.1**	**0.1**	**481**	**0.0**
Preconstruction Emissions - Transit												**36.0**	**2.7**	**0.1**	**42.7**	**1.7**	**1.6**	**1945**	**0.0**
Total Preconstruction Emissions												**38.8**	**3.8**	**0.1**	**45.1**	**1.8**	**1.8**	**2426**	**0.0**

All operating hours will be metered to track actual emissions.

Table 1-1
Cape Wind Energy Project
Project Emissions Subject to OCS Permitting - Revised May 2010

PHASE 1 - PRECONSTRUCTION & CONSTRUCTION								
Potential Emissions	Total Emissions (Tons)							
	NO_X	VOC	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPS
Preconstruction Potential Emissions - Total	38.8	3.8	0.1	45.1	1.8	1.8	2,426	0.0
Inside 25 Miles - Transit	36.0	2.7	0.1	42.7	1.7	1.6	1,945	0.0
Inside 25 Miles - Stationary Sources	2.8	1.0	0.0	2.4	0.1	0.1	481	0.0
Construction Potential Emissions - Total	187.2	7.9	2.1	24.6	7.0	6.5	10,510	0.1
Inside 25 Miles - Transit	172.6	6.3	2.1	16.0	6.5	6.0	8,778	0.1
Inside 25 Miles - Stationary Sources	14.6	1.6	0.0	8.6	0.5	0.5	1,732	0.0
Potential Emissions - Total	226.0	11.7	2.2	69.7	8.8	8.3	12,936	0.1
Inside 25 Miles - Transit	208.6	9.0	2.2	58.7	8.2	7.6	10,723	0.1
Inside 25 Miles - Stationary Sources	17.4	2.6	0.0	11.0	0.6	0.6	2,213	0.0
Estimated Annual Emissions	Annual Emissions (Tons Per Year)							
	NO_X	VOC	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPS
Phase 1 - Year 1 (Preconstruction + 70% Construction)	169.84	9.31	1.57	62.32	6.70	6.33	9,783	0.07
Phase 1 - Year 2 (30% Construction)	56.16	2.37	0.63	7.38	2.10	1.95	3,153	0.03
Emissions Offsets	Total ERCs (Tons Per Year)							
	NO_X	VOC	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPS
Phase 1 - Year 1 Emissions Offsets (1.26:1 Offset Ratio)	214	0	0	0	0	0	0	0
Phase 1 - Year 2 Emissions Offsets (1.26:1 Offset Ratio)	71	0	0	0	0	0	0	0

PHASE 2 - OPERATION								
Potential Emissions	Annual Emissions (Tons Per Year)							
	NO_X	VOC	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPS
Potential Emissions - Total	13.0	0.8	0.0	9.6	0.7	0.6	688	0.0
Inside 25 Miles - Transit	13.0	0.8	0.0	9.6	0.7	0.6	688	0.0
Inside 25 Miles - Stationary Sources	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
Proposed Annual Emission Limits (Note 7)	Annual Emissions (Tons Per Year)							
	NO_X	VOC	SO_2	CO	PM_{10}	$PM_{2.5}$	CO_2	HAPS
Phase 2 - 12-month rolling total	49.9	3.1	0.0	36.8	2.7	2.3	2,641	0.0

Notes

1) Project emissions have been estimated using conservative equipment usage assumptions and EPA approved emission factors. The operating hours of all equipment used will be metered to track actual emissions.

2) The NO_x, VOC, SO_2, PM_{10}, $PM_{2.5}$ and CO_2 emissions from all vessels equipped with diesel engines have been estimated at the direction of the EPA and MMS using the appropriate emission factors and load factors from EPA's "Current Methodologies and Best Practices in Preparing Port Emission Inventories, Final Report", April 2009. The HAP emissions from these vessels have been estimated using AP-42 emission factors for diesel engines. The total engine power output estimated for each vessel has been increased by 10% to account for emissions from auxiliary engines.

3) The NO_X, CO, PM_{10}, and $PM_{2.5}$ emissions from all of the stationary nonroad diesel-fired engines to be used for the project have been estimated using the Tier 2 (or Tier 3 if available) emission standards from 40 CFR 89.112, Table 1 for each engine size. Additional CO and PM emissions control will be achieved through the use of diesel oxidation catalysts (DOC) on all project stationary source diesel engines.

4) The VOC, SO_2, CO_2, and HAP emissions from all of the stationary nonroad diesel-fired engines to be used for the project have been estimated using the appropriate emission factors from EPA's AP-42, "Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources". Additional VOC and HAP emissions control will be achieved through the use of DOC on all project stationary source diesel engines.

5) The SO_2 emissions from all of the diesel-fired non-road engines to be used for the project have been estimated assuming a diesel fuel sulfur content of 15 ppm, which will be the fuel sulfur content standard for all nonroad diesel fuel beginning June 1, 2010. The SO_2 emissions from all diesel-fired marine engines used for preconstruction and construction activities have been estimated assuming a diesel fuel sulfur content of 500 ppm, which is the current marine diesel fuel sulfur content standard. The SO_2 emissions from all diesel-fired marine engines used during operation have been estimated assuming a diesel fuel sulfur content of 15 ppm, which will be the marine diesel fuel sulfur content standard beginning June 1, 2012. The EPA's non-road and marine diesel sulfur content standards can be found at 40 CFR 80.510.

6) The emissions from the zodiac boats to be used for the project have been estimated using worst-case emission factors from the EPA document: "Exhaust Emission Factors for Nonroad Engine Modeling: Spark-Ignition", EPA420-R-05-019, Table 10.

7) The Project will be permitted for up to 49.9 tons per year of NOx emissions during Phase 2, to include a contingency for unexpected equipment maintenance and/or repair activities, while remaining a minor source of emissions. The proposed permit limits of the other pollutants have been determined by scaling their individual potential emissions by the ratio of the permitted versus potential NOx emissions.