

November 4, 2010

Mr. Brendan McCahill
Environmental Engineer
Air Permits, Toxics and Indoor Air Unit
U.S. Environmental Protection Agency – Region 1
5 Post Office Square
Suite 100, Attn: OEP-5-2
Boston, Massachusetts 02109-3912

**Re: *Draft OCS Air Permit Number OCS-R1-01
Cape Wind Energy Project
ESS Project No. E159-504.1***

Dear Mr. McCahill:

The purpose of this letter is to respond to EPA's request that Cape Wind assess the potential impacts of the project on air quality, taking into consideration the recently promulgated 1-hour nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) National Ambient Air Quality Standards (NAAQS). ESS Group, Inc. (ESS) conducted air dispersion modeling which shows that project Outer Continental Shelf (OCS) source emissions will not result in air quality exceeding these NAAQS.

By way of background, an air quality impact analysis was conducted in September of 2008 in support of the general conformity determination for the project. The results of that analysis demonstrated that the ambient air impacts from the project during its construction, when combined with very conservative onshore background concentrations, would not cause or contribute to an exceedance of the NAAQS. The EPA subsequently promulgated a 1-hour NO₂ NAAQS of 100 parts per billion (ppb), which became effective on January 22, 2010. The final rule for a 1-hour SO₂ NAAQS of 75 ppb was signed by the EPA on June 2, 2010. On October 7, 2010, the EPA requested that Cape Wind conduct additional analyses to assess potential air quality impacts relative to these NAAQS.

Even though Cape Wind conducted the requested analysis to demonstrate that project OCS source emissions do not impact air quality, the analysis (1) grossly overestimates the potential impacts on air quality and (2) would not otherwise be required for onshore sources with similar attributes.

The Dispersion Modeling Grossly Overestimates Potential Project Impacts

- Although the EPA has elected to regulate Cape Wind's OCS sources as stationary sources for the purposes of the OCS Permit, unlike stationary sources, OCS sources operate intermittently, at transient loads, and at a widely dispersed array of offshore locations for varying time periods. The EPA recommended Offshore and Coastal Dispersion (OCD) Model assumes that the equipment will operate at full load for the full duration of a 1-hour period at a single location to predict ambient air impacts. Because of their transient operation at an open water location greater than five miles

from the nearest onshore area, the ambient air impacts predicted for these types of equipment and uses, which will be temporary, will be consistently overestimated by the model.

- Potential emissions impacts on NAAQS is demonstrated by combining the predicted impacts from a source with existing background concentrations, typically determined using air monitoring data from locations that are representative of the project area. The EPA AirData database does not include monitoring data from any offshore locations that are representative of the existing ambient air concentrations at the project location on Horseshoe Shoal within Nantucket Sound. Onshore monitoring locations located in urban or suburban settings in Massachusetts or Rhode Island, must therefore be used in the dispersion modeling. However, common sense dictates that the ambient air quality 6 to 13 miles offshore in the middle of Nantucket Sound would be significantly better than ambient air quality in an urban or suburban setting. Thus, the dispersion modeling grossly overestimates the potential impacts of the project on air quality.

Onshore Sources With Similar Attributes Would Not be Required to Conduct the Analysis

- To satisfy the OCS Air Regulations (40 CFR 55), the project is subject to the Massachusetts Plan Approval requirements (310 CMR 7.02). 310 CMR 7.02(3)(j)(2) states that Plan approval will be issued by the Department where the emissions from a facility do not result in air quality exceeding either the Massachusetts or National Ambient Air Quality Standards. 310 CMR 7.02(5)(c)(6) states that to apply for a Comprehensive Plan Approval (CPA), applicants must provide additional information to the Department, upon request, including air dispersion modeling, to support the application. In practice, the MassDEP determines the need for air dispersion modeling to support a CPA application on a case-by-case basis, but it does not commonly require sources that are not subject to the federal Prevention of Significant Deterioration (PSD) requirements to conduct and submit modeling analyses. The emissions from the Cape Wind project do not exceed the PSD thresholds. As such, the project is not subject to the PSD requirements.
- Finally, when air dispersion modeling is conducted for onshore stationary sources, impacts that occur within the fence line of the facility are not considered, as these areas are not open to the public, where exposure to pollutants over sustained time periods could occur. Some state regulations allow higher ambient impacts in industrially zoned areas on the premise that individuals are less likely to be exposed to pollutants in the ambient air for sustained periods in those areas. For Cape Wind, the temporary short term ambient air impacts resulting from operation of its OCS sources during construction will be localized within the area closest to the OCS sources. The location of each OCS source will change on a daily basis as construction activities progress throughout Cape Wind's OCS lease area. It is very unlikely that

any members of the public will be located within the project impact area for sustained periods sufficient to sustain any short or long term health effects from the OCS source emissions. It is even less likely that any of the public located in the project area will be within the sensitive populations that the NAAQS have been established to protect (asthmatics, children, and the elderly). If a similar proposed project (i.e., not subject to PSD permitting) were to be proposed in Massachusetts in a similar area onshore, where little to no public exposure was expected, and the impacts were expected to be temporary, it is unlikely that air modeling would be required by the MassDEP.

MODELING ANALYSIS

Air dispersion modeling was conducted to determine the ambient air impacts resulting from the emissions from the project's OCS sources during its construction. The air dispersion modeling analysis was conducted using the same modeling methodology and meteorological data as were used for the 2008 analysis, and as described below:

- The NO_x and SO₂ emission rates from the project OCS sources used for the modeling analysis were from the most recent (July 2009) revision of the project construction emissions estimates. The most up-to-date information on project equipment specifications and usage was also used.
- Sequential construction activities at each activity site were modeled separately to determine 1-hour impacts. For example, the installation of the monopiles, transition pieces, towers, nacelles, and rotors will occur sequentially at each location. The operation of the crane in support of each of these activities was modeled separately from the other sequential operations, to accurately predict short-term impacts. Cumulative impacts were determined only for sources engaged in construction activities that could occur concurrently.
- The 1-hour NO₂ NAAQS is based on the 3-year average of the 98th percentile of the daily maximum 1-hour monitored concentrations. Consistent with EPA guidance, the high eighth high (H8H) of the daily maximum 1-hour modeled concentrations was used for the determination of 1-hour NO₂ NAAQS compliance.
- The 1-hour SO₂ NAAQS is based on the 3-year average of the 99th percentile of the daily maximum 1-hour monitored concentrations. As such, and consistent with EPA guidance, the high fourth high (H4H) of the daily maximum 1-hour modeled concentrations was used for the determination of 1-hour SO₂ NAAQS compliance.
- Existing 1-hour NO₂ background concentrations were conservatively estimated using the most representative ambient monitoring data available, which was collected at the Consentino School in Haverhill, Massachusetts from 2007-2009. Existing 1-hour SO₂ background concentrations were conservatively estimated using ambient monitoring data collected at Long Island in Boston Harbor from 2007-2009. The background data used was the most representative available;

however it is likely that the actual background concentrations within the project area are significantly lower than the background values used.

- Although the 1-hour NO₂ NAAQS is based on the 3-year average of the 98th percentile of the daily maximum 1-hour monitored concentrations, an EPA guidance memo dated June 28, 2010 recommends the use of the daily maximum 1-hour concentrations for the determination of background, to be more protective of the NAAQS. To be conservative, and consistent with the EPA guidance, the daily maximum 1-hour NO₂ concentrations were used for the determination of the background concentration.

The results of the air dispersion analysis are summarized in the following table:

Pollutant & Averaging Period	Modeled Project Impact (µg/m ³)	Background Concentration (µg/m ³)	Total Project Impact (µg/m ³)	NAAQS (µg/m ³)
NO ₂ – 1 hour	83	88	171	188 ¹
SO ₂ – 1 hour	0.9	61	62	196 ²

¹ Based on the 3-year average of the 98th percentile of the daily maximum 1-hour average

² Based on the 3-year average of the 99th percentile of the daily maximum 1-hour average

As shown above, the results of the updated analyses conducted demonstrate that the emissions from the Cape Wind OCS sources during its construction will not cause or contribute to an exceedance of the newly promulgated short-term NAAQS. The pertinent dispersion modeling analysis files from these additional analyses have been included electronically on the enclosed CD-ROM. If you have any questions regarding this analysis, or if you require any additional information, do not hesitate to call me at (781) 489-1149.

Sincerely,

ESS GROUP, INC.



Michael E. Feinblatt
Project Manager

Enclosure (Modeling Files on CD-ROM)

C: Ida McDonnell, U.S. EPA Region 1
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