



UNITED STATES ENVIRONMENTAL PROTECTION  
AGENCY  
REGION 1  
5 Post Office Square, Suite 100  
Boston, MA 02109

**MEMORANDUM**

**SUBJECT:** Concurrence Request for Approval of Alternative Model AERCOARE in Conjunction with AERMOD, in Support of Outer Continental Shelf PSD air permitting of the Mayflower Wind Project

**FROM:** Patrick Bird, Manager  
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**THRU:** Lynne Hamjian, Director  
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**TO:** George Bridgers, Director of Model Clearinghouse  
Air Quality Modeling Group, Office of Air Quality Planning and Standards

The U.S. Environmental Protection Agency (EPA) Region 1 seeks concurrence from the Model Clearinghouse regarding the prospective EPA Region 1 approval of an alternative model for an Outer Continental Shelf (OCS) Prevention of Significant Deterioration (PSD) permitting action. Specifically, EPA Region 1 seeks concurrence on the use of the AERCOARE meteorological data preprocessor program to be used in conjunction with AERMOD (AERCOARE/AERMOD) in conducting an air quality modeling analysis for the proposed Mayflower Wind, LLC (Mayflower Wind) PSD permit application. Mayflower Wind is located off the coast of Massachusetts, south of Nantucket Island.

EPA Region 1 approved the use of the AERCOARE/AERMOD modeling method on January 28, 2022 and July 5, 2022, for the Phase I (Park City Wind) and Phase II (Commonwealth Wind) PSD projects associated with New England Wind, respectively.<sup>1,2</sup> Both of these approvals provided for use of the model using WRF-MMIF meteorological data from the EPA 12-km CONUS WRF 2018-2020 datasets.

Mayflower Wind has sought approval to allow the use of the AERCOARE/AERMOD model for the air quality modeling analysis of their OCS wind farm project. Mayflower Wind's alternative model request justifies this based on recent approvals of AERCOARE/AERMOD in the same general geographic area and lists a number of technical advantages, options, and features available in AERCOARE/AERMOD which EPA's preferred Ocean and Coastal Dispersion model does not have the capability to do. The request also details its appropriateness for approval under 40 CFR Part 51, Appendix W §3.2.2(b), Condition (3). Under Condition (3), an alternative model may be used if the Regional Office finds the conditions specified in Appendix W §3.2.2(e) are satisfied. In the request, Mayflower Wind outlines

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<sup>1</sup> 2022 Park City Wind AERCOARE/AERMOD approval; refer to the EPA Model Clearinghouse Record No. 22-I-01 located at: <https://cfpub.epa.gov/oarweb/mchisrs/index.cfm?fuseaction=main.resultdetails&recnum=22-I-01>

<sup>2</sup> 2022 New England Wind Phase II AERCOARE/AERMOD approval; refer to the EPA Model Clearinghouse Record No. 22-I-02 located at: <https://cfpub.epa.gov/oarweb/mchisrs/index.cfm?fuseaction=main.resultdetails&recnum=22-I-02>

how its request meets all the sub-elements of Condition (3), many of which track closely or cite directly to rationales used to support the approval of alternative models for OCS wind farm projects by EPA Region 1 in the same general geographic area.

EPA Region 1 has conducted a thorough review of the request and intends to approve the use of AERCOARE/AERMOD as an alternative model to conduct the air quality modeling analysis as part of the Mayflower Wind project. The EPA agrees with the conclusions of Mayflower Wind, notably that the project occurs in the same general geographic area as projects which have received recent approval of alternative modeling requests and is therefore exposed to the same general climatic conditions. Mayflower Wind proposes to build out their entire lease area, which differs from past project-by-project requests, but total project emissions and the cumulative area of past approvals for Park City Wind and Commonwealth Wind are relatively similar, and any differences in emissions or geographic extent do not impact the rationale for approval. The EPA has also confirmed the key model settings, methodology, and conditions-of-use by Mayflower Wind match those specified in the recent past regional approvals (as disclosed in the Technical Support Document for the January 2022 Park City Wind AERCOARE/AERMOD approval). Namely, Mayflower Wind will use the 2018-2020 EPA CONUS WRF-MMIF dataset, will use AERCOARE default settings, will impose a 25-meter minimum mixing height in MMIF, and impose a minimum Monin-Obukhov length of 5 meters in MMIF.

Based on our professional judgment, no additional model evaluation is necessary given the similarities in proximity, emissions units and scenarios being modeled, and general timeframe for development between Mayflower Wind and previously approved alternative model requests by EPA Region 1. Additionally, the Mayflower Wind technical justification sufficiently addresses any concerns or considerations of modeling technique that is being proposed for use on this project. The EPA finds the technical analysis provided by Mayflower Wind, and its citations to past EPA Region 1 approvals, is fully applicable to the Mayflower Wind project, except only in the description of the project. We request your concurrence on our finding to approve the alternative model AERCOARE in conjunction with AERMOD in support of OCS PSD air permitting of Mayflower Wind.

Please feel free to contact Jay McAlpine of my staff at (206) 553-0094 if you have any questions regarding the request.