



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 VNE 1 project.

**FROM:** Patrick Bird, Manager  
Air Permits, Toxics, and Indoor Programs Branch, Air and Radiation Division,  
EPA Region 1

**THRU:** Lynne Hamjian, Director  
Air and Radiation Division, EPA Region 1

**TO:** George Bridgers, Model Clearinghouse Director  
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 Vineyard Northeast, LLC's proposed VNE 1 PSD permit application. The VNE 1 project 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> Approval was also provided by EPA Region 1 on November 18, 2022 for the Mayflower Wind OCS project (Southcoast Wind) and on December 14, 2022 for the Beacon Wind project. EPA's Model Clearinghouse concurred with EPA Region 1 on all of these approvals. All of these approvals also provided for use of the AERMOD-AERCOARE modeling system applying WRF-MMIF meteorological data from the EPA 12-km CONUS WRF 2018-2020 datasets.

Vineyard Northeast has sought approval to allow the use of the AERCOARE/AERMOD model for the air quality modeling analysis of their OCS wind farm project. Vineyard Northeast's alternative model request justifies this based on these 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 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 that all sub-elements of Condition (3), specified in Appendix W §3.2.2(e), are

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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>

satisfied. It is noted a final modeling protocol has not yet been submitted, but critical modeling elements that will be summarized in the final protocol have been discussed and documented with Vineyard Northeast. Modeling approaches proposed will not deviate significantly than the approaches used for the other previous OCS wind projects in the area. All elements specific to the development and application of meteorological data using MMIF and AERCOARE have been agreed upon and will be summarized in the final model protocol.

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 VNE 1 project. The EPA agrees with the conclusions of Vineyard Northeast, 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. Total project emissions and the cumulative area of past approvals for the prior OCS wind projects in the region are similar. The EPA has also confirmed the key model settings, methodology, and conditions-of-use for VNE 1 match those specified in the recent past regional approvals. Namely, Vineyard Northeast 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 Vineyard Northeast and previously approved alternative model requests by EPA Region 1. Additionally, Vineyard Northeast's 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 Vineyard Northeast, and its citations to past EPA Region 1 approvals, is fully applicable to the VNE 1 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 VNE 1.

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