



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Model Clearinghouse review of an alternative model application of AERCOARE in conjunction with AERMOD in Support of Outer Continental Shelf PSD air permitting of the New England Wind, Phase 2 offshore wind power project

FROM: George Bridgers, Model Clearinghouse Director
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INTRODUCTION

Park City Wind LLC has proposed the construction of a 1232 MW offshore electric generation windfarm on the Outer Continental Shelf (OCS) off the coast of Massachusetts near Martha's Vineyard. This project, also known as New England Wind Phase 2 (Phase 2) or Commonwealth Wind, is the second phase of a proposed windfarm project, Park City Wind (Phase 1), which is a slightly smaller 804 MW offshore electric generation windfarm located practically in the same geographic area of the OCS. For the Phase 1 project, Park City Wind LLC proposed, justified, and received U.S. Environmental Protection Agency (EPA) Region 1 approval for the use of an alternative AERCOARE-AERMOD modeling method over the preferred Offshore and Coastal Dispersion (OCD) model.¹ For the Phase 2 project, the company is requesting a similar compliance demonstration approach using the AERCOARE-AERMOD alternative modeling method using the same justification and basis from the Phase 1 project.

¹ Please reference the EPA Model Clearinghouse Information Storage and Retrieval System (MCHISRS) database for more specific details on the AERCOARE/AERMOD alternative model approval for the Phase 1, Park City Wind, project: <https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.resultdetails&recnum=22-I-01>

REGIONAL OFFICE REVIEW AND DISCUSSION

EPA Region 1 is seeking concurrence from the Model Clearinghouse on their proposal to approve the AERCOARE-AERMOD alternative model method for the New England Wind Phase 2 windfarm project. EPA Region 1 has conducted a thorough review of the Phase 2 modeling protocol and has confirmed that the model settings, methodology, and conditions-of-use are identical between Phase 1 and Phase 2. Given the similarities in project scope and proximity of the two project phases along with the sound technical justification already provided for the alternative model in the Phase 1 project, EPA Region 1 does not see the need for any additional model evaluation for the Phase 2 project.

MODEL CLEARINGHOUSE REVIEW AND CONCURRENCE SUMMARY

Before providing our concurrence, the Model Clearinghouse would like to highlight a few aspects of the previous Phase 1 alternative model approval that we feel are germane to our concurrence with the Phase 2 project:

- 1) Most importantly, the previous Phase 1, Park City Wind project gained approval for the use of the AERCOARE-AERMOD alternative model approach by fully satisfying the five elements of Condition 3 (Appendix W, Section 3.2.2(e)) required for alternative model justification and approval.²
- 2) There was additional information and analysis provided by Park City Wind LLC and EPA Region 1 in the Phase 1 alternative model approach that demonstrated the tracer studies used to develop the COARE algorithm are sufficiently representative of the marine environment off the coast of Massachusetts.³
- 3) Finally, EPA Region 1 provided additional justification in their Phase 1 alternative model technical review and citation of a relevant 2015 EPA peer-reviewed report demonstrating that using meteorological inputs from WRF-MMIF performed similarly to AERCOARE-AERMOD modeling using measured data from buoys, in most scenarios.⁴ This is particularly important because both the Phase 1 and Phase 2 projects are proposing to use WRF-MMIF prognostic data versus buoy observational data as the meteorological input data to the AERCOARE preprocessor. The COARE algorithm was originally developed using offshore buoy data, the use of prognostic data could have introduced unintended and inappropriate biases into its application in a regulatory compliance demonstration. The Model Clearinghouse still agrees with this assessment, notes that it is supported by Agency peer-reviewed research, and finds that it is consistent with Appendix W, Section 8.4.5 (Prognostic Meteorological Data, Discussion and Recommendations).

² Please reference Pages 6 through 15 of the EPA Region 1 technical review document for a complete presentation of each of the Condition 3 elements and the corresponding justification provided for the Phase 1, Park City Wind project: https://gaftp.epa.gov/Air/aqmg/SCRAM/mchisrs/22-I-01-Region1_MCHrequest-ParkCityWind-TSD.pdf.

³ Please reference Pages 11 and 12 of the EPA Region 1 technical review document for this representativeness analysis of the tracer studies used to develop the COARE algorithm:

https://gaftp.epa.gov/Air/aqmg/SCRAM/mchisrs/22-I-01-Region1_MCHrequest-ParkCityWind-TSD.pdf.

⁴ U.S. EPA (2015): Combined WRF/MMIF/AERCOARE/AERMOD Overwater Modeling Approach for Offshore Emission Sources, Vol. 2. EPA 910-R-15-001b, October 2015.

With these aspects in mind, the Model Clearinghouse concurs with EPA Region 1 proposed approval of a coupled AERCOARE-AERMOD approach for the compliance demonstration analysis required in the New England Wind Phase 2 project based on the current Phase 2 modeling protocol and the previous Phase 1 alternative model justification package provided by Park City Wind LLC and the technical review documentation provided by EPA Region 1 for both phases. The Model Clearinghouse encourages EPA Region 1 to respond to Park City Wind LLC and to the docket for federal permitting actions related to the New England Wind Phase 2 project with a letter of alternative model approval, as appropriate. The information associated with the EPA Region 1 alternative model approval and the Model Clearinghouse concurrence should be available for comment during the appropriate public comment period(s).

Given the possible importance of platform downwash and shoreline fumigation, the Model Clearinghouse continues to recommend caution and careful review before additional alternative model considerations of the coupled AERCOARE-AERMOD approach in other projects. This case-specific Model Clearinghouse concurrence does not constitute a generic approval of a coupled AERCOARE-AERMOD approach for other applications elsewhere. However, the scope of the technical assessment submitted here and with similar AERCOARE/AERMOD alternative model requests continue to provide a good basis for such considerations.

For any future projects considering the use of a coupled AERCOARE-AERMOD approach, including differing phases of a project to which those phases were not considered as part of a previous EPA alternative model approval, EPA Regional Office approval with Model Clearinghouse concurrence is required per Appendix W, Section 3.2. Early consultation with the appropriate reviewing authority and EPA Regional Office is always strongly recommended for any alternative model application other than the preferred OCD model approach for overwater or OCS sources.

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