



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 Atlantic Shores offshore wind power project

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INTRODUCTION

Atlantic Shores Offshore Wind, LLC (Atlantic Shores) has proposed the construction of two offshore wind energy generation projects on the Outer Continental Shelf (OCS), off the coast of New Jersey. Atlantic Shores will develop the lease area as two projects – Project 1 and Project 2 – collectively referred to hereafter as the Projects. The Projects will consist of up to 200 wind turbine generators (WTGs) and 10 small offshore substations. Both projects are covered under the OCS Prevention of Significant Deterioration (PSD) permit application and alternative model justification and request for concurrence and approval. The Projects trigger the requirement for PSD review based on significant emissions of nitrogen dioxide (NO₂), carbon monoxide (CO), particulate matter (PM) with diameter 10 microns or less (PM₁₀), PM with diameter 2.5 microns or less (PM_{2.5}), and greenhouse gases (GHGs). Also, the Projects trigger Nonattainment New Source Review (NNSR) for ozone (O₃) precursors, oxides of nitrogen (NO_x), and volatile organic compounds (VOCs).

Atlantic Shores has requested to use an alternative model, as provided in Section 3.2 of the *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W), to conduct its PSD air quality modeling analysis. Specifically, Atlantic Shores has requested to use the Coupled Ocean-Atmosphere Response Experiment (COARE) bulk flux algorithm, as implemented in the AERCOARE meteorological data preprocessor program, to prepare meteorological data for use

in the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) dispersion program over the preferred Offshore and Coastal Dispersion (OCD) model to assess ambient impacts in a marine environment.

REGIONAL OFFICE REVIEW

The U.S. Environmental Protection Agency (EPA) Region 2 seeks concurrence from the EPA's Model Clearinghouse (Model Clearinghouse or MCH) regarding the prospective EPA Region 2 approval of an alternative model for the Atlantic Shores, OCS PSD air permitting effort for the Projects. The AERCOARE meteorological data preprocessor program will be used in conjunction with AERMOD (AERCOARE-AERMOD) to conduct an air quality modeling analysis as part of the OCS air permit application for the proposed Atlantic Shores Projects to be located off the coast of New Jersey. Atlantic Shores is seeking approval to allow the use of the coupled AERCOARE-AERMOD model methodology or approach for their air quality modeling analysis, under the *Guideline*, Section 3.2.2(b), Condition (3), for the project's OCS air permit application.

EPA Region 2 has conducted a thorough review of the request and intends to approve the use of proposed coupled AERCOARE-AERMOD approach as an alternative model to conduct the air quality modeling analysis as part of the Atlantic Shores OCS air permit application. Based on their review, EPA Region 2 has found the proposed application of the model is satisfactory and addresses the requirements of the *Guideline*, Section 3.2.2(b), Condition (3) and the subsequent five elements contained in Section 3.2.2(e). As such, pursuant to Sections 3.0(b) and 3.2.2(a), Region 2 currently intends to approve the use of AERCOARE-AERMOD as an acceptable alternative model for the Projects.

MODEL CLEARINGHOUSE REVIEW

The specifics of the EPA Region 2 review and the basis for their intention to approve the proposed AERCOARE-AERMOD alternative modeling approach for the Atlantic Shores Projects are logically outlined in the EPA Region 2 alternative model concurrence request memorandum submitted to the Model Clearinghouse on July 20, 2022.¹ Given the similarities to several recent Model Clearinghouse actions regarding the use of the coupled AERCOARE-AERMOD approach in EPA Regions 1, 2, and 6, we will not reiterate each aspect of the Regional Office review in this concurrence response memorandum.²

In short, the circumstances surrounding and the alternative model approach sought with the Atlantic Shores Projects closely aligns with that of these other recent alternative model reviews and approvals. The Atlantic Shores alternative model request and justification package follows a

¹ https://gaftp.epa.gov/Air/aqmg/SCRAM/mchisrs/22-II-02_Region2_MCHRequest_AtlanticShores.pdf.

² Please reference the EPA Model Clearinghouse Information Storage and Retrieval System (MCHISRS) database for more information regarding recent AERCOARE-AERMOD alternative model reviews and approvals:

<https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.resultdetails&recnum=22-I-01>

<https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.resultdetails&recnum=22-I-02>

<https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.resultdetails&recnum=22-II-01>

<https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.resultdetails&recnum=19-VI-01>.

nearly identical pathway or flow to these other successful alternative model justifications. The Model Clearinghouse continues to agree with the technical merits of this common themed alternative model justification for the coupled AERCOARE-AERMOD approach as long as there is an appropriate level of consultation with the Regional Office on the manner in which the alternative model will be applied in the air quality modeling analysis for the project's OCS air permit application, including an assessment of potential concerns with platform downwash and shoreline fumigation. The Model Clearinghouse encourages reviewers of this alternative model concurrence to reference the EPA Region 2 alternative model concurrence memorandum for specific details of EPA Region 2's review of the Atlantic Shores alternative model request and justification.

CONCURRENCE SUMMARY

The Model Clearinghouse concurs with EPA Region 2's proposed approval of a coupled AERCOARE-AERMOD alternative modeling approach for the air quality modeling analysis required in the Atlantic Shores Projects based the alternative model justification package provided by Atlantic Shores Offshore Wind, LLC and the review documentation in the alternative model concurrence request memorandum provided by EPA Region 2. The Model Clearinghouse encourages EPA Region 2 to respond to Atlantic Shores Offshore Wind, LLC and to the docket for federal permitting actions related to the Projects with a letter of alternative model approval, as appropriate. The information associated with the EPA Region 2 alternative model approval and the Model Clearinghouse concurrence should be available for comment during the appropriate public comment period(s).

Additionally, the Model Clearinghouse encourages EPA Region 2 to continue regular engagement with Atlantic Shores Offshore Wind, LLC regarding their proposal to use the OCD model to assess any potential shoreline fumigation concerns with the Atlantic Shores Projects. While no issues are anticipated with shoreline fumigation given the distance the project is from the coast, the use of the preferred OCD model may be necessary for the full air quality assessment modeling required for their PSD permit should the shoreline fumigation assessment demonstrate potential concerns.

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 model methodology 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 the *Guideline*, 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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