UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

September 11, 2023

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 US Wind Maryland Offshore Wind Project

FROM: George Bridgers, Model Clearinghouse Director
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THROUGH: Alice Chow, Branch Chief
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INTRODUCTION

US Wind, Inc. (US Wind) is developing the Maryland Offshore Wind Project, an offshore wind energy project in a federal lease area on the Outer Continental Shelf (OCS) approximately 18.5 km (10 nautical miles) off the coast of Maryland. The Maryland Offshore Wind Project will include up to 121 wind turbine generators, 4 offshore substations, and 1 meteorological tower and have an approximate production capacity of 2 gigawatts (GW). The project will be interconnected to the onshore electric grid by up to 4 export cables into onshore substations in Delaware.

The Maryland Offshore Wind Project is subject to Prevention of Significant Deterioration (PSD) permitting and is required to submit an OCS Air Permit application that includes a dispersion modeling demonstration that air emissions from the Project will not cause or contribute to an exceedance of the National Ambient Air Quality Standards (NAAQS) or PSD increments. US Wind expects that emissions of one or more criteria air pollutants would exceed the pollutant specific PSD significant emission rates (SER) and, consequently, an air quality assessment, including air quality modeling, to determine the potential impact of the project emissions on the NAAQS and all applicable PSD increment levels will be required.

US Wind 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 of the Maryland Offshore Wind Project's construction and operation and maintenance (O&M) activities. This alternative model request has been routed through the Maryland Department of the Environment (MDE), which, as a permit reviewing authority, subsequently submitted the request to the U.S. Environmental Protection Agency (EPA) Region 3.[1] Specifically, US Wind 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 in lieu of the preferred Offshore and Coastal Dispersion (OCD) model to assess ambient impacts in a marine environment.[2]

REGIONAL OFFICE REVIEW

EPA Region 3 seeks concurrence from the EPA's Model Clearinghouse (Model Clearinghouse or MCH) regarding the prospective EPA Region 3 approval of an alternative model for the compliance demonstration requirements of US Wind's Maryland Offshore Wind Project. As noted above, the AERCOARE meteorological data preprocessor program will be used in conjunction with AERMOD (AERCOARE-AERMOD) to conduct the air quality modeling analysis as part of this OCS air permit application. US Wind is seeking approval to allow the use of the coupled AERCOARE-AERMOD alternative model methodology or approach for their required air quality modeling analysis, under the *Guideline*, Section 3.2.2(b), Condition (3).

EPA Region 3 has conducted a thorough review of US Wind's request and has found the proposed application of the alternative model to be satisfactory and addresses the requirements of the *Guideline*, Section 3.2.2(b), Condition (3), including the subsequent five elements contained in Section 3.2.2(e). As such, pursuant to the *Guideline*, Sections 3.0(b) and 3.2.2(a), Region 3 currently intends to approve the use of proposed coupled AERCOARE-AERMOD alternative model approach for the Maryland Offshore Wind Project air permit application.

MODEL CLEARINGHOUSE REVIEW

The specifics of the EPA Region 3 review and the basis for their intention to approve the proposed AERCOARE-AERMOD alternative modeling approach for the Maryland Offshore Wind Project are presented in detail in the EPA Region 3 alternative model concurrence request memorandum and MDE alternative model request package submitted to the Model Clearinghouse on August 17, 2023.[3] Given the similarities in scope and almost identical points

[1] https://gaftp.epa.gov/Air/aqmg/SCRAM/mchisrs/23-III-01_USWindMDRequestApprovalLetter-MDEFinalSigned_Stamped.pdf.

[2] The OCD dispersion model is listed in Section 4.2.2.3 of the *Guideline* as the Environmental Protection Agency's preferred model for over-water modeling.

[3] https://gaftp.epa.gov/Air/aqmg/SCRAM/mchisrs/23-III-01_Region3_MCHRequest_USWind.pdf and https://gaftp.epa.gov/Air/aqmg/SCRAM/mchisrs/23-III-01_USWindMDRequestApprovalLetter-MDEFinalSigned_Stamped.pdf.

of justification made by US Wind to several other Model Clearinghouse actions over the past several years regarding the use of the coupled AERCOARE-AERMOD alternative model approach, we will not reiterate each aspect of the Regional Office review in this concurrence response memorandum.[4] The Model Clearinghouse affirms the Region 3 conclusion that circumstances surrounding and the alternative model request package submitted for the Maryland Offshore Wind Project follows a nearly identical pathway to these previously EPA approved alternative models.

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 PSD 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 3 alternative model concurrence request memorandum and MDE alternative model request package for specific details of EPA Region 3's review of US Wind's alternative model request and justification.

CONCURRENCE SUMMARY

The Model Clearinghouse concurs with EPA Region 3's proposed approval of a coupled AERCOARE-AERMOD alternative modeling approach for the air quality modeling analysis required in the Maryland Offshore Wind Project based on the alternative model request package provided by US Wind and MDE and the review documentation in the alternative model concurrence request memorandum provided by EPA Region 3. The Model Clearinghouse encourages EPA Region 3 to respond to US Wind, MDE, and to the docket for federal permitting actions related to the Maryland Offshore Wind Project with a letter of alternative model approval, as appropriate. The information associated with the EPA Region 3 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 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

[4] 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 (http://cfpub.epa.gov/oarweb/MCHISRS/, text Search term "AERCOARE").

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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