



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

MAR 14 2019

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Model Clearinghouse Review of the Proposed Region 5 Approval for the Application of the BLP/AERMOD Hybrid Alternative Model Approach in the Ohio Environmental Protection Agency's 2010 1-hour SO₂ National Ambient Air Quality Standard State Implementation Plan for the Steubenville Ohio-West Virginia Multi-State Nonattainment Area

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INTRODUCTION

In October 2018, EPA Region 3 sought and subsequently gained Model Clearinghouse concurrence for approving the application of an alternative modeling approach that used a combination of the Buoyant Line and Point Source model (BLP) and the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) to represent fugitive emissions from four coke oven batteries at the AK Steel – Mountain State Carbon facility located in Follansbee, Brooke County, West Virginia. This “BLP/AERMOD Hybrid Alternative Modeling Approach” was included in the West Virginia Department of Environmental Protection’s 2010 1-hour SO₂ National Ambient Air Quality Standard (NAAQS) Nonattainment Area State Implementation Plan (SIP) for the Steubenville, Ohio-West Virginia multi-state nonattainment area. In preparing their state’s 2010 1-hour SO₂ NAAQS SIP for this multi-state nonattainment area, the Ohio Environmental Protection Agency proposes to model all the sources within the nonattainment area identically to that of the modeling included in the West Virginia SIP with the exception of making targeted changes to the stack characterization and modeled emissions limits at one facility, Cardinal Power Plant, and an updated background concentration. This would include modeling the Mountain State Carbon facility with the BLP/AERMOD Hybrid Alternative Model Approach exactly as West Virginia based on the same

alternative model justification as presented to and approved by EPA Region 3. Considering that the alternative modeling is identical to an already EPA Regional Office approved case-specific approach and that the changes that the Ohio Environmental Protection Agency has made to the modeling assessment do not influence the basis of the BLP/AERMOD Hybrid Alternative Modeling Approach for estimating the fugitive emissions impacts of Mountain State Carbon, EPA Region 5 is seeking concurrence from the Model Clearinghouse on extending the approval for modeling the Mountain State Carbon facility with the BLP/AERMOD Hybrid Alternative Modeling Approach to Ohio's 2010 sulfur dioxide attainment plan for the Steubenville Ohio-West Virginia Multi-State Nonattainment Area.

BACKGROUND

As presented in the March 11, 2019, EPA Region 5 Model Clearinghouse Concurrence Request Memorandum, the original foundation for the BLP/AERMOD Hybrid Alternative Modeling Approach applied in West Virginia's 2010 1-hour SO₂ NAAQS SIP was an August 2018, alternative model justification and case-specific approval by EPA Region 3. In this August 2018, alternative model approval, a technical justification and model performance evaluation of the BLP/AERMOD Hybrid Alternative Modeling Approach was conducted. The Allegheny County Health Department applied the Cox-Tikvart Protocol using a network of facility representative ambient monitors and sufficiently demonstrated, per Section 3.2.2(b)(2) of the *Guideline on Air Quality Models* (Appendix W to 40 CFR Part 51, *Guideline*), that the BLP/AERMOD Hybrid Alternative Model Approach performed better than the EPA's preferred model approach and other approaches tested for characterizing the fugitive emissions from coke oven batteries at the U.S. Steel Mon Valley Works – Clairton Plant located in Allegheny County, Pennsylvania. The alternative model approval was appropriately concurred by the Model Clearinghouse and the alternative model justification and concurrence can be referenced by the Model Clearinghouse record number, 18-III-01¹.

Specific to West Virginia's 2010 1-hour SO₂ NAAQS SIP and relevant for the subsequent consideration for the application of the BLP/AERMOD Hybrid Alternative Modeling Approach in Ohio's 2010 1-hour SO₂ NAAQS SIP is the October 2018, alternative model justification and case-specific approval by EPA Region 3. In this October 2018, alternative model approval, a justifiable basis was provided for the application of BLP/AERMOD Hybrid Alternative Modeling Approach, as approved at the aforementioned Clairton Plant, at the Mountain State Carbon facility given the unique similarities between the emissions sources at the Mountain State Carbon and Clairton Plant, the similarities in complex topographical and meteorological settings surrounding these two facilities, and the similarities in alternative modeling approach for assessing the fugitive emissions from the coke oven batteries at these two facilities. The October 2018, alternative model approval was also appropriately concurred by the Model Clearinghouse and the alternative model justification and concurrence can be referenced by the Model Clearinghouse record number, 18-III-02².

¹ <https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.resultdetails&recnum=18-III-01>

² <https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.resultdetails&recnum=18-III-02>

MODEL CLEARINGHOUSE REVIEW

In this Model Clearinghouse review, the Model Clearinghouse is not reconsidering the technical justification or basis for the application of the BLP/AERMOD Hybrid Alternative Model Approach for fugitive emissions from coke oven batteries at the U.S. Steel Mon Valley Works – Clairton Plant or the AK Steel – Mountain State Carbon facility. The Model Clearinghouse review and discussion on both of these applications can be found at the previously referenced EPA Region 3 alternative model approvals. The focus of the Model Clearinghouse review here is solely on whether or not there are substantive changes to Ohio’s 2010 1-hour SO₂ NAAQS SIP modeling assessment that alters the portability of the BLP/AERMOD Hybrid Alternative Model Approach from the Clairton Plant case-specific approval to case-specific approval that West Virginia received from EPA Region 3 for Mountain State Carbon.

The Ohio Environmental Protection Agency proposes to model almost all of the sources within the nonattainment area identically to that of the modeling included in West Virginia’s 2010 1-hour SO₂ NAAQS SIP, including modeling the fugitive coke oven battery emissions at Mountain State Carbon exactly as previously EPA Region 3 approved with the BLP/AERMOD Hybrid Alternative Modeling Approach. The lone exception is targeted changes to the stack characterization and modeled emissions limits at the Cardinal Power Plant in the Wells Township, Jefferson County, Ohio. The Ohio Environmental Protection Agency also proposes to update background concentration to be more reflective of recent air quality levels (2016-2018).

The importance and impact of the BLP/AERMOD Hybrid Alternative Modeling Approach is most prevalent in the complex terrain immediately surrounding and downwind of the Mountain State Carbon facility. It is not an alternative modeling approach that results in significant domain-wide concentration impact differences. The characteristics of the terrain surrounding and the configuration of the fugitive sources at Mountain State Carbon remain identical to what was previously presented to EPA Region 3 when the case-specific justification and approval was being made in October 2018. Although the changes in Cardinal emissions alter the plant’s contribution to concentrations throughout the modeling domain, these changes do not influence the basis of the BLP/AERMOD Hybrid Alternative Modeling Approach for estimating the fugitive emissions impacts of Mountain State Carbon. Thus, the previous alternative model basis would remain unchanged and there is not any question about the portability of the previous BLP/AERMOD Hybrid Alternative Modeling Approach approval to modeling assessment in the proposed Ohio Environmental Protection Agency’s 2010 1-hour SO₂ NAAQS SIP.

MODEL CLEARINGHOUSE CONCURRENCE SUMMARY

In summary, the Model Clearinghouse fully concurs with EPA Region 5 that the BLP/AERMOD Hybrid Alternative Modeling Approach that is being considered as a part of the Ohio Environmental Protection Agency’s 2010 1-hour SO₂ NAAQS SIP for the Steubenville Ohio-West Virginia Multi-State Nonattainment Area to represent fugitive emissions from four coke oven batteries at the AK Steel – Mountain State Carbon facility located in Follansbee, Brooke County, West Virginia has already been appropriately vetted and approved by EPA Region 3 and that the targeted changes to the stack characterization and modeled emissions limit at the

Cardinal Power Plant in the Wells Township, Jefferson County, Ohio and updates to background concentrations do not influence that alternative model basis. The Model Clearinghouse encourages EPA Region 5 to respond to the Ohio Environmental Protection Agency with a letter of alternative model approval for inclusion in their SIP record. The Ohio Environmental Protection Agency should then include in the SIP record and make available for comment during the appropriate public comment period that letter of alternative model approval along with the memoranda included in this action, Model Clearinghouse record number 19-V-01³, and the previous action related to the West Virginia 2010 1-hour SO₂ NAAQS SIP, Model Clearinghouse record number 18-III-02⁴.

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³ <https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.resultdetails&recnum=19-V-01>

⁴ <https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.resultdetails&recnum=18-III-02>