



## REGION 6

DALLAS, TX 75270

July 11, 2024

### **MEMORANDUM**

**SUBJECT:** Concurrence Request for Approval of Alternative Model AERMOD-HBP, in Support of Clean Air Act (CAA) SO<sub>2</sub> Nonattainment SIP Attainment Demonstration Modeling

**FROM:** Erik Snyder, Lead Regional Air Quality Modeler  
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EPA Region 6, Dallas, Texas

**THRU:** Guy Donaldson, Branch Manager  
State Planning & Implementation Branch, Air and Radiation Division  
EPA Region 6, Dallas, Texas

**TO:** George Bridgers, Model Clearinghouse Director  
Air Quality Modeling Group, Air Quality Assessment Division  
Office of Air Quality Planning and Standards

The U.S. Environmental Protection Agency (EPA) Region 6 seeks concurrence from the Model Clearinghouse regarding the prospective EPA Region 6 approval of an alternative model for a CAA State Implementation Plan (SIP) 1-Hour sulfur dioxide (SO<sub>2</sub>) Attainment Demonstration. The Texas Commission on Environmental Quality (TCEQ) has submitted a 1-Hour SO<sub>2</sub> Attainment Demonstration SIP for the Rusk-Panola nonattainment area that includes modeling that uses an alternative model that TCEQ previously requested be approved. The alternative model is a formulation of AERMOD v21112 with code changes to modify the way highly buoyant plumes that penetrate the boundary layer are treated in AERMOD.

The major source of SO<sub>2</sub> in the Rusk-Panola 1-Hour SO<sub>2</sub> Nonattainment Area is Martin Lake Electrical Generating Facility that is owned by Luminant, a subsidiary of Vistra. Vistra and their contractor, AECOM, contacted TCEQ and EPA in the fall of 2020 about the prospect of requesting an alternate model approval for the required modeling demonstration. TCEQ

submitted a letter dated May 24, 2021 from Ms. Tonya Baer (TCEQ Director of the Office of Air) to Mr. David Garcia (Air and Radiation Division Director) of EPA Region 6 requesting approval of an alternative model request for the use of AERMOD with Highly Buoyant Plume (AERMOD-HBP) code modifications in the Rusk-Panola 2010 1-Hour SO<sub>2</sub> NAAQS attainment demonstration. The EPA and TCEQ continued to have discussions as TCEQ submitted the different informational components to support their alternative model request from May through early August 2021, with EPA providing some clarifications on the different submittal components in support of the alternative model request. TCEQ sought approval to allow the use of the alternative model AERMOD-HBP for their air quality modeling analysis under 40 CFR Part 51, Appendix W (hereafter, App. W), Section 3.2.2(b)(2). Under Condition (2) of that section, an alternative model may be used if the Regional Office finds the conditions specified in App. W, Section 3.2.2(d) are satisfied. While not specifically cross-referenced, App. W Section 3.2.2(e) sets forth five conditions that should be considered as part of the protocol for alternative model approval under Condition 2 of Section 3.2.2(b)(2) by providing some of the framework for how to address the requirements of App. W Section 3.2.2 and for how to perform an analysis from both a theoretical and performance perspective.

EPA Region 6 has conducted a thorough review of the request and proposes to approve the use of AERMOD-HBP as an alternative model to conduct the air quality modeling analysis as part of TCEQ's attainment demonstration SIP for the 1-Hour SO<sub>2</sub> Rusk-Panola nonattainment area. We have found the proposed application of the model is satisfactory under the requirements of Sections 3.2.2(b)(2) and 3.2.2(e). Attached to this memo for your consideration are a technical support document summarizing our review, the May 24, 2021 alternative model request and non-copywrited supporting documents submitted by TCEQ (modeling and analysis files have been previously shared separately), and clarifying documentation provided by Vistra's contractor AECOM (to EPA on May 1<sup>st</sup> 2024. The analysis concludes that AERMOD-HBP performs better than the regulatory version of AERMOD in this case-specific situation.

EPA Region 6's review and proposed approval recognizes that the analysis of the alternative model AERMOD-HBP had relatively limited ambient monitoring data to use in this review with only 3 years of SO<sub>2</sub> data from a nearby monitor that is 2 km from the Martin Lake EGU facility (main source of SO<sub>2</sub> in the Rusk-Panola nonattainment area) and one monitor with 5 years of data that is 19km from the Martin Lake EGU facility. This is a proposed, case-specific Alternative Model approval which is based on the data available at the time TCEQ developed their SIP. Approval of the use of the alternative model AERMOD-HBP is limited to this specific SIP action and a new alternative model request and approval would be needed to use AERMOD-HBP in future regulatory modeling and regulatory actions related to the Martin Lake facility. This Alternative Model AERMOD-HBP approval does not convey that this model could be used in another situation without an independent alternative model request, evaluation, and approval.

Please feel free to contact Erik Snyder of my staff at (214) 665-7305 if you have any questions regarding the alternative model AERMOD-HBP approval concurrence request.

Attachment: Alt Model HBP Evaluation TSD.pdf  
Other Supporting Materials.pdf