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Secretary

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Attention Docket No. EPA-HQ-OAR-2015-0310
Environmental Protection Agency
Mail code 28221T
1200 Pennsylvania Ave. NW.
Washington, DC 20460.

RE: Comments on Revision to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches To Address Ozone and Fine Particulate Matter

The Kentucky Division for Air Quality (Division) respectfully submits the following comments in response to the July 29, 2015 Federal Register that proposes to revise the Guideline on Air Quality Models as well as make enhancements to the AERMOD Dispersion Modeling System and incorporate approaches to address ozone and fine particulate matter. The proposed revisions are necessary; however, the Division is providing the following comments relating to technical aspects of the proposal:

Transition Period for Applicability
In section IV.11. *Transition Period for Applicability of Revisions to the Guideline,* the proposal suggests a 1 year transition period be provided for the implementation of new models and allow for permit modeling and protocols that were submitted under the current *Guideline* to continue while any new modeling or protocols be initiated under the new *Guideline* once it has been approved.

The Division agrees with the proposed transition period and finds that the transition period will prevent personnel from returning to models that have essentially been completed and will ultimately save time and resources.

Removal of CALPUFF from Appendix A
Concerning the removal of CALPUFF as mentioned in section IV.A.2.7 *Status of CALPUFF,* the Division requests the U.S. Environmental Protection Agency consider maintaining the approved model status of the CALPUFF modeling system until such time the Federal Land Managers (FLMs) are in agreement with the status change.

PRIME Algorithm Update
In section V.4.2.2.1.c *AERMOD* the Plume Rise Model Enhancements (PRIME) algorithm is introduced. The Division requests the U.S. Environmental Protection Agency consider updates and enhancements to the PRIME building downwash algorithm. The Division supports the incorporation of the best available

science, including the treatment of stacks above GEP, multiple stack plume rise enhancement, implementation of additional structure types, additional tracer studies, wind tunnel studies and plume behavior studies (entrainment) that will improve the accuracy/performance of the algorithm.

Use of Multiple Processors

The Division requests the U.S. Environmental Protection Agency allow the use of multiple processors (parallel version executable) functionality within the AERMOD modeling system. This approach will increase productivity by reducing model run times and alleviate the alternative model equivalency demonstration as detailed in 3.2.2 requirements of this draft document.

Modeled Emissions Rates for Precursors (MERP)

Section IV.6. *Addressing Single-Source Impacts on Ozone and Secondary PM 2.5* paragraph nine states that "the EPA intends to pursue a separate rulemaking to establish a technical basis and new values for PM2.5 Significant Impact Levels (SILs) and to introduce a new demonstration tool for ozone and PM2.5 precursors referred to as Model Emissions Rates for Precursors (MERP)." It is also noted that the MERP would replace the existing Significant Emissions Rates (SERs) and would "serve as the basis for applicability of PSD requirements." It is not debated that precursors need to be clearly addressed and evaluated in the process of tier modeling demonstrations; however, the concern lies with what the MERP will be for each precursor. Part of addressing these revisions would require a proposed figure which comments can be made concerning whether the number is appropriate or not. The delay in rulemaking makes this portion of the revision difficult to assess.

The idea of using MERPs to rule out insignificant sources of PM2.5 and Ozone is a welcomed approach; however, the Division finds that actual numbers should have been presented at this time. The Division recommends the EPA fully consider the reality of burdens that state and local air pollution control agencies bear in implementing these practices and allow the MERPs to provide meaningful representations.

Terrain Data

Newer terrain data from the USGS has been made available and should be implemented into the AERMOD Dispersion Modeling System. With the expansion of urban areas as well as natural changes, an update in terrain data can only create a more accurate representation of the current state of terrain being included in the model.

Section 2.1.1 Model Accuracy and Uncertainty states "'Reducible' uncertainties are caused by: (1) Uncertainties in the 'known' input conditions (e.g., emission characteristics and meteorological data); (2) errors in the measured concentrations; and (3) inadequate model physics and formulation. b. Evaluations of model accuracy should focus on the reducible uncertainty associated with physics and the formulation of the model."

The accuracy of mathematical models is highly sensitive to initial conditions. The more accurate the initial conditions, the more accurate the outcome. Appendix W 2.1.1 states that limiting reducible

uncertainties provides a more accurate model outcome. By updating the NLCD terrain data reducible uncertainties would be limited and thus would return a more accurate output.

Section 4.2.1.2 CTSCREEN states "CTSCREEN accounts for the three-dimensional nature of plume and terrain interaction and requires detailed terrain data representative of the modeling domain. The terrain data must be digitized in the same manner as for CTDMPLUS and a terrain processor is available."

The CTSCREEN screening model requires detailed terrain data representative of the modeling domain. With more representative data a more accurate outcome from the model would be produced. USGS The National Land Cover Database Report states "Results of land cover product accuracy assessments have indicated that NLCD 1992 has an overall Anderson Level I (Anderson and others, 1976) class accuracy of 80.4 percent and an Anderson Level II class accuracy of 55.7 percent (Stehman and others, 2003; Wickham and others, 2004). For the conterminous United States, NLCD 2001 has an improved Anderson Level I class accuracy of 85.3 percent and an Anderson Level II class accuracy of 78.7 percent (Wickham and others, 2010). For the NLCD 2001 Alaska land cover classification, the overall thematic accuracy was 83.9 percent at Anderson Level I and 76.2 percent at Anderson Level II (Selkowitz and Stehman, 2011)."

Due to the conclusive studies performed by the USGS, the Division recommends that the newer terrain data be implemented into the AERMOD Dispersion Modeling System to more accurately reflect current topography.

Model Overprediction

Section IV.A.1. *Proposed Actions* states "A proposed option incorporated in AERMET to adjust the surface friction velocity (u*) to address issues with AERMOD model over prediction under stable, low wind speed conditions." Section IV.A.2. *Proposed Actions* states, "A proposed low wind option in AERMOD to address issues with model overprediction under low wind speed conditions."

The Division appreciates U.S. Environmental Protection Agency's inclusion of these enhancement options that should result in more accurate AERMOD predictions and believes the ADJ-u* and LOWWIND3 options in v. 15181 of AERMOD should be made regulatory default options. The Division urges U.S. Environmental Protection Agency to continue to address concerns regarding model over predictions during stable/low-wind conditions since that over prediction will continue to be an issue thus reducing model output accuracy.

Again, thank you for the opportunity to provide meaningful comments on the proposed rulemaking. If you have questions regarding the comments above, please contact Mr. Ben Cordes, Air Dispersion Modeling Section Supervisor of the Permit Review Branch.

Sincerely,

Sean Alteri

Sean Alteri,
Director