

Single-source and Cumulative Impact Analyses

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Proposed Revisions to the *Guideline*

- Throughout the previous presentations of this morning, the various proposed revisions to the *Guideline on Air Quality Models* (the *Guideline* or Appendix W) across Sections 1 through 7 and the meteorological input portions of Section 8 have been explained and discussed in more detail.
- The culmination of the proposed *Guideline* revisions and the application of the preferred or alternative models and/or techniques in a regulatory context are presented in Sections 8 and 9.
 - Sections 8 and 10 of the current 1995 version of Appendix W.



Proposed Revisions to the *Guideline* (Cont.)

- Despite numerous public presentations over the past 3 to 5 years in which the EPA has cautioned against the literal and uncritical application of very prescriptive procedures for conducting NAAQS and PSD modeling compliance demonstrations as described in Chapter C of the Draft New Source Review Workshop Manual, there are continual and ongoing practices in the regulatory modeling community that are overly conservative and unnecessarily complicated.
 - Past practices may have “worked” given previous NAAQS standards (form and level of the standard), but that does not mean that many of the past practices were technically correct.



Proposed Revisions to the *Guideline* (Cont.)

- The proposed changes to Section 8 are intended to modify these past practices and provide more appropriate basis for selection and use of modeling inputs through the *Guideline* itself and supporting guidance.
- The proposed revisions to Section 9 more clearly summarize the general concepts presented in earlier sections of the *Guideline* and set the stage for appropriate regulatory application of models and/or, in rare circumstances, air quality monitoring data.



Proposed Revisions to Section 8

- The proposed Appendix W, Section 8 provides more definitive definition of the appropriate modeling domain and how to best characterize the various contributions to air quality concentrations in that domain.
- Modeling Domain (Section 8.1):
 - Specific requirements for NAAQS or PSD increment assessments.
 - A radius extending from the new/modifying source to (1) the most distant point that a significant ambient impact will occur or (2) the nominal 50km distance considered applicable for Gaussian dispersion models, whichever is less.
 - Specific requirements for SIP attainment demonstrations.
 - Determined by the nature of the problem, including all major upwind source areas and all monitor locations current or recently violating the NAAQS in the nonattainment area.



Proposed Revisions to Section 8 (Cont.)

- Source Input Data (Section 8.2):
 - New language regarding how to characterize direct and precursor emissions from modeled sources for SIP attainment demonstrations for ozone, PM_{2.5}, and regional haze.
 - Section 8.2.2(a).
 - Revised requirements on how to characterize emissions from nearby sources to be explicitly modeled for purposes of a cumulative impact analysis.
 - Section 8.2.2(b)-(d).
 - Revised language on how to characterize emissions from mobile sources.
 - Section 8.2.2(e).



Proposed Revisions to Section 8 (*Cont.*)

- Source Input Data (Section 8.2) (*cont.*):
 - Most notable revision in Section 8 is with respect to the characterization of emissions from nearby sources to be explicitly modeled.
 - Tables 8-1 and 8-2 supported by Section 8.2.2(b)-(c).
 - Nearby sources are proposed to be characterized by “actual” emissions rather than “allowable” emissions.
 - Emissions are based on the Emissions Limit, Operating Level, and Operating Factor.
 - “Actual” emissions should be determined based on the most recent 2 years of actual nominal operation.
 - The new/modifying source would still be characterized by the proposed “allowable” or permit limited emissions.



Proposed Revisions to Section 8 (Cont.)

- Background Concentrations (Section 8.3) :
 - Revised recommendations on how to determine background concentrations in constructing the design concentration as part of a cumulative impact analysis for NAAQS and PSD increment.
 - Discussion on the importance of understanding what ambient monitoring data are available and what these data represent.
 - Isolated single-source(s) in Section 8.3.2.
 - Multi-source areas in Section 8.3.3.
 - Emphasis on how to determine which “nearby sources” to explicitly model based on the concept of significant concentration gradients.
 - Use of monitored background to adequately represent “other sources.”



Proposed Revisions to Section 8 (Cont.)

- Meteorological Input Data (Section 8.4) :
 - Incorporation of prognostic meteorology data as an option where there is no representative National Weather Service (NWS) station, and it is prohibitive or not feasible to collect adequately representative site-specific data. (*Already presented earlier this morning.*)
 - Introduction into Appendix W of the AERMINUTE NWS meteorological data preprocessor. (*Already presented earlier this morning.*)



Proposed Revisions to Section 9

- The importance of developing and vetting a modeling protocol is more prominently presented in Section 9.2.1.
- Information related to the design concentrations has been updated and unified in Section 9.2.2.
 - Previously scattered between Sections 7 and 10.
 - Previously worded such that it was not dynamic with any NAAQS revisions.
- Expanded and revised discussion on receptor sites also in Section 9.2.2.
 - New considerations given past practices of model users tending to define an excessively large and inappropriate number of receptors.



Proposed Revisions to Section 9 (Cont.)

- In Section 9.2.3, a complete overhaul of the recommendations provided in Appendix W for NAAQS and PSD increment compliance demonstrations to more clearly and accurately reflect long-standing EPA recommendations.
 - First stage: Perform a single-source impact analysis.
 - Second stage: As necessary, conduct a more comprehensive cumulative impact analysis.
 - Revised the considerations in developing emissions limits as the existing recommendations were well out of date and not reflective of newer percentile (often referred to as probabilistic) based NAAQS



Proposed Revisions to Section 9 (*Cont.*)

- Finally, the discussion on the Use of Measured Data in Lieu of Model Estimates in Section 9.2.4 is proposed to be revised with more details on the process for determining the rare circumstances in which air quality monitoring data may be considered for determining the most appropriate emissions limit for a modification to an existing source.
 - Previously found in Section 10.2.2.