

# Initial Feedback on Proposed Revisions to Appendix W Guideline on Air Quality Models

**EPA 11<sup>th</sup> Conference on Air Quality Modeling**  
**August 12-13, 2015**  
**Research Triangle Park, NC**



Chris Rabideau on behalf of the API Air Modeling Group  
Contact: [kaliszc@api.org](mailto:kaliszc@api.org)

# Initial Review

- We appreciate the efforts thus far by EPA and the IWAQM3 team in developing the proposal package.
- We also appreciate EPA's review and consideration of API-sponsored research regarding improvements to air quality models.
- Our comments today are based on our initial review and understanding of the proposal. We plan to submit updated and more detailed comments once we have had time to fully assess the proposed revisions to AERMOD and the Guideline and to review other documents and guidance included in the proposal package.

# Future Updates to Models

- As we undertake the process to revise Appendix W (last revised in November 2005), we should consider a structure for more timely incorporation of model updates. Model updates for technical advances should not be delayed for several years.
- In the next year, new more robust NO<sub>2</sub> evaluation databases will become available. The new datasets will allow more rigorous evaluation of available models.
- Current assessment of best performing models and approaches may change when evaluated against more robust datasets. Further model refinements may be possible with use of additional data.
- The ability to timely incorporate model technical advances could be accomplished under a tiered structure.

# AERMOD Revisions

## LACK OF CLARITY REGARDING REGULATORY STATUS

- The status of several AERMET/AERMOD updates, as outlined in section 2 of the proposed rule preamble, is unclear. EPA suggests that they are recommending these updates as regulatory defaults, but the model users and implementation guides classify them as non-default beta options.

## LOW WIND IMPROVEMENTS

- We support the adoption of the AERMET  $u^*$  option as a preferred regulatory option. [*still indicated as a beta option in the AERMET Users Guide*].
- We have not yet evaluated LOWWIND3 as a replacement for LOWWIND1 and LOWWIND2 , but plan to do so for our written comments.

# AERMOD Revisions

## **NO<sub>2</sub> IMPROVEMENTS**

- We support the adoption of a more refined Tier 2 approach (ARM2). It is unclear, however, as to what steps would be required to allow use of a lower ISR / minimum ambient ratio. If an applicant has site-specific ISR data, adjustments should be allowed without the need for additional approval.
- We support the classification of ARM2, OLM, and PVMRM2 as refined screening techniques, but do not understand why use of these methods would still require approval of the reviewing authority.
- We have not had time to evaluate PVMRM2, but plan to do so for our written comments.

# AERMOD Revisions – Outstanding Needs

## **BUILDING DOWNWASH**

- BPIP distortion of building dimensions for long and narrow buildings.
- Extension of the PRIME model to stacks above GEP height
  - Testing has been limited, and it's not clear that the building wake should extend to heights well above the building roof

## **BACKGROUND**

- When modeling nearby sources, actual emissions should be modeled, not allowable.
- Appendix W needs to provide more flexibility in use of monitoring data to characterize the contribution from nearby sources.
- Background data should exclude monitoring data impacted by exceptional events.

# CALPUFF and Long Range Transport (LRT) Models

- EPA may be underestimating the times when an LRT will be required. There is still a need for an LRT model.
- Concern that with no consensus on an acceptable LRT, significant delays in permitting may result.
- In the absence of a preferred LRT, then models such as CALPUFF Version 6.4.2 or higher with advanced chemistry should be allowed as refined screening models. Given EPA's prior concerns with CALMET, WRF/MMIF meteorological inputs could be used as direct inputs to CALPUFF.

# Assessing Ozone and Secondary PM<sub>2.5</sub> Impacts

## COMMENTS/QUESTIONS ON 2-TIER APPROACH

### Model Emission Rates for Precursors (MERPs)

New or modified sources with projected emission levels below MERPs would not need to model for ozone and secondary PM impacts.

- In principle, use of MERPs is a reasonable approach to screen out sources likely to have no significant impact on air quality due to ozone or secondary PM<sub>2.5</sub> formation.
- Since MERPs are to be established under separate future rulemakings, difficult to assess appropriateness of proposed two tier approach.

# Assessing Ozone and Secondary PM<sub>2.5</sub> Impacts

## COMMENTS/QUESTIONS ON 2-TIER APPROACH

### First Tier

To be used for where existing technical information is available (e.g., results from existing photochemical grid modeling, published empirical estimates of source specific impacts, or reduced form models).

- EPA's draft guidance<sup>1</sup> provides minimal guidance on application of the first tier.
- Additional tools and reference approaches are needed for First Tier assessments. Does EPA plan to provide more detailed guidance for permittees and reviewing authorities?

<sup>1</sup>Guidance on the use of models for assessing the impacts of emissions from single sources on the secondarily formed pollutants ozone and PM<sub>2.5</sub> (draft). July 2015

# Assessing Ozone and Secondary PM<sub>2.5</sub> Impacts

## COMMENTS/QUESTIONS ON 2-TIER APPROACH

### Second Tier

To be used only in “special situations”. Application of more sophisticated case-specific chemical transport models (e.g., photochemical grid models)

- Second Tier may be used more frequently than EPA presumes
- Developing PGM databases from scratch is costly and time consuming and there are many different options that could lead to inconsistencies
  - Need consistencies in regulatory modeling
  - For far-field modeling, development of common databases that have been pre-evaluated and tested could alleviate some of these issues
  - There may be a role for Lagrangian photochemical models using a range of realistic background concentration to identify potential worst case ozone and secondary PM<sub>2.5</sub> impacts for a particular source.

# Role of the Model Clearinghouse

- EPA is proposing that the Model Clearinghouse be consulted regarding use of any alternative model, and that the Regional Administrator issue approval of an alternative model only after the Clearinghouse has formally documented approval through a concurrence memorandum.
- What constitutes an alternative model is not clear. For example, is an alternative model:
  - A preferred model used with non-preferred options?
  - Any modeling approach used when there is no preferred model, such as a model or approach used to assess LRT or any first or second tier assessment of ozone or secondary PM<sub>2.5</sub> impacts?
- Great concern that the proposed approval process will slow or halt permitting, especially if there are no timelines for Region consultation with the Clearinghouse and for Clearinghouse issuance of a memorandum.

# Need for Scientific Advisory Panel

- A standing external scientific advisory panel could strengthen and expedite model improvements.
  - The panel could review proposed methodologies to enhance models and also review any specific model revisions made by EPA staff and/or contractors.
  - The panel's review of model beta options before EPA release could help avoid multiple updates to beta releases to address bug fixes. External experts have experience with a broad range of model applications that could test the beta options.
  - The panel could provide input on draft EPA modeling guidance prior to issuance.

# Future Updates to Models

- Model updates for technical advances should not have to wait for several years (Appendix W update)
- Possible tiered approach to degree of review
  - Tier 1: Changes to models in Appendix W – major change
  - Tier 2: Formulation updates to existing Appendix W models
  - Tier 3: Bug fixes or procedure clarifications to existing Appendix W models

For all tiers: 90-day comment period and ability to adopt immediately if reviewing agency approves

For tiers 1 and 2: 1-year testing and debugging period (concurrent with EPA assessment of proposed change or update)