

# 2010 R/S/L Workshop: Summary and Followups

May 13, 2010

# Overview

- Workshop highlights
  - Focusing on NO<sub>2</sub> and PM<sub>2.5</sub> modeling
- Soon to be provided information
- Areas of focus to improve communication/coordination
  - Model Clearinghouse
  - Training for AERMOD
  - Working with NACAA
  - AERMOD Implementation Workgroup
  - Regional Offices
  - Collaboration through Workgroups
- 2011/12 Annual Workshops
- 10<sup>th</sup> Modeling Conference

# Modeling Under PSD

- Air quality models (screening and refined) are used in various ways under the PSD program.
- Step 1: Significant Impact Analysis
  - Use of either screening or refined model to determine if emissions from PSD project alone are significant through use of Significant Impact Levels (SILs)
- Step 2: Cumulative Impact Analysis
  - Use of refined models to determine cumulative impacts from PSD project in conjunction with nearby sources does not cause or contribute to violations of applicable NAAQS and increments.

# Modeling Guidance for 1-Hour NO<sub>2</sub> NAAQS Under PSD

- PSD regulations require that modeling be conducted in accordance the “Guideline on Air Quality Models”
- AERMOD is the EPA ‘Preferred’ Model for PSD modeling for all criteria pollutants (except O<sub>3</sub>).
- Appendix W outlines 3-tiered screening level procedures to address conversion of NO<sub>2</sub> from NO<sub>x</sub> emissions.
  - We believe that sources will benefit significantly from use of the conversion guidance (Tier 3 options) rather than conservative assumptions that all or most NO<sub>x</sub> is NO<sub>2</sub> (Tier 1 & 2 options)
  - Fully expect more “Tier 3” uses of AERMOD with detailed screening methods (Ozone Limiting Method and Plume Volume Molar Ratio Method) that will need to be approved by Regional Offices and may need to be vetted through Model Clearinghouse

# Upcoming Modeling Guidance for NO<sub>2</sub> NAAQS

- EPA's current regulatory permit model, AERMOD will be used for modeling compliance with the NO<sub>2</sub> 1-hr NAAQS, with additional guidance and tools to be provided to facilitate its use
- Provide clarification memo on how Appendix W's 3-tiered screening level procedures, involving the conversion of NO<sub>x</sub> to NO<sub>2</sub>, apply to new hourly standard
  - Tier 1 = 100% conversion
  - Tier 2 = 75% conversion based on ambient ratio method
  - Tier 3 = Case-by-case methods requiring more detailed inputs (stack ratios, background O<sub>3</sub>, etc).
  - Also will provide background on inventory development methods to generate hourly emissions for purposes of modeling NO<sub>2</sub>
- Provide post-processing capability within AERMOD to generate appropriate modeling results for comparison to new hourly standard
- Date for issuing guidance and providing processing tool: May 28, 2010
- Once nonattainment designations are completed for NO<sub>2</sub>, modeling and technical guidance needed to S/L/T to support nonattainment SIP demonstrations

# PM<sub>2.5</sub> Permit Modeling Guidance: Background

- August 2009 Administrative Order on LG&E essentially established two paths forward in addressing PM<sub>2.5</sub> for permits
  - Demonstrate adequacy of PM<sub>10</sub> surrogacy policy for PM<sub>2.5</sub>
  - Conduct PM<sub>2.5</sub> permit modeling
- March 23, 2010 Page Memorandum provides:
  - Clarifications on demonstrating the appropriateness of PM<sub>10</sub> surrogacy policy to comply with PM<sub>2.5</sub> NAAQS
  - Provides recommended modeling procedures for two main stages in PSD ambient impact analysis, i.e., Significant Impact Analysis and Cumulative Impact Analysis
- Differences in nature of PM<sub>2.5</sub> from other criteria pollutants and the form of the daily NAAQS standard means that standard modeling practices may not be appropriate
- Recognizing this and associated technical difficulties, PSD modeling for PM<sub>2.5</sub> should be viewed as screening-level analysis similar to Appendix W approach for NO<sub>2</sub> (Section 5.2.4)

# Technical Elements of PM<sub>2.5</sub> Permit Modeling

- Modeling Inventory
  - Develop an emissions inventory of background sources to be included in modeling analysis using traditional guidance
- Dispersion Modeling
  - Use AERMOD as the EPA 'Preferred' Model for permit modeling to account for primary emissions from project sources & nearby sources, as appropriate
- Background Concentrations
  - Determine "representative" background concentration and use DV metrics for annual and daily PM<sub>2.5</sub> stds
  - Accounts for majority of secondarily formed PM<sub>2.5</sub> (to be determined extent to which account for project's contribution by its precursor emissions)

# Comparison to PM<sub>2.5</sub> SIL and NAAQS

- Significant Impact Analysis
  - For 5 years of NWS met data, use highest average of modeled annual averages and average of first highest 24-hr average
- Cumulative Impact Analysis
  - NAAQS 1<sup>st</sup> Tier: Combine background as DV metric with modeled result (based on same modeling metric for SIL comparison)
  - NAAQS 2<sup>nd</sup> Tier (for daily): where modeled PM<sub>2.5</sub> emissions are not temporally correlated with background PM<sub>2.5</sub> levels then combine on a seasonal or quarterly basis
  - NAAQS 3<sup>rd</sup> Tier (for daily): consider more temporal and spatial pairing to determine better basis

# PM<sub>2.5</sub> Permit Modeling Activities and Plans

- EPA-NACAA PM<sub>2.5</sub> Modeling Workgroup to gain State/local agency input by October 2010 on:
  - Development of emissions inventories
  - Determination of ‘Representative’ background
  - Accounting for secondary formation from project source
- Issue PM<sub>2.5</sub> permit modeling guidance
  - Compile experiences and recommendations into draft guidance by Fall 2010
  - Host workshop to discuss and gain public input on draft guidance
  - Issue “final” PM<sub>2.5</sub> permit modeling guidance by end of year or early 2011

**PLEASE NOTE:** PM<sub>2.5</sub> modeling for permits will continue in interim so seek technical input from Regional Offices and vet technical issues with OAQPS through the Model Clearinghouse

# Soon to be provided . . .

- PM2.5 SILs, SMCs, Increment—June 2010
- Draft OTAQ PM2.5 Hot-spot Modeling Guidance for Conformity—end of May
- Updated version of AERMOD along with post-processing capabilities for NO<sub>2</sub>/SO<sub>2</sub>—end of May/early June
- AERSCREEN—TBD but soon
- SO<sub>2</sub> NAAQS Final Rule—June 2010
- Draft PM2.5 Permit Modeling Guidance—Fall 2010
- PM2.5 NAAQS Proposed Rule—November 2010

# Use of Model Clearinghouse

- Review Model ClearingHouse Information Storage and Retrieval System (MCHISRS)—Will need help here from R/S/L
  - OAQPS going thru effort to update and clean up (e.g., pdf files of old memos, format and structure of informal entries)
  - What improved functionality needed? missing information?
    - Send input to Pete Eckhoff w/ cc to Tyler Fox
  - Consider downloadable “Adobe tool” like R7 policy database?
- “Informal” Clearinghouse
  - OAQPS to provide ROs with template for “informal” requests (background, issue, options, etc)
  - We will consider how to post in MCHSRS
- Other items: FAQs on SCRAM, other tracking information per our models and guidance?

# Training per AERMOD

- Working with Air Pollution Training Institute (APTI) on upcoming materials, i.e.,
  - Pre-requisite Meteorology course
  - Dispersion modeling course reflect AERMOD
- Beta testing of training materials thru AIWG or NACAA?
- Consider giving it at next year's workshop with videotaping for broad distribution?
- Re-release AI's DVDs with digital re-engineering ;)

# Working with NACAA

- OAQPS will ask to provide for a State Representative
  - Planning and input from states for permit modeling
- Continue work with ongoing PM<sub>2.5</sub> Permit modeling workgroup w/ recommendations this fall
- Inquire about need for “Permit Tracking System” and perhaps existing systems to work with or extend?
- Additional workgroups thru NACAA?
  - New NO<sub>2</sub> and SO<sub>2</sub> NAAQS
  - Other issues in need for input/recommendations?

# AERMOD Implementation Workgroup

- Produce and delivery of Annual report/products (guide, tools, etc)
- Re-poll for new and priority implementation issues?
- Ideas on fostering new membership to be inclusive and bring in new perspectives/experiences
- Coordinate Beta testing of APTI training materials on meteorological and dispersion modeling?

# Regional Offices

- Need listing of upcoming and ongoing permit actions and status
- Greater use of State Modelers Workshops
  - Post announcements on SCRAM
  - Links to presentations on SCRAM
  - OAQPS participation/tutorials/training
- Reporting out at Monthly Conference call with summary/notes that can be accessible

# Collaboration thru Workgroups

- Short-term and long-term efforts needed
- New NO<sub>2</sub>/SO<sub>2</sub> NAAQS implementation
  - 1-hr NO<sub>2</sub>—Tom Orth volunteered (OAQPS will follow up to facilitate)
  - Mobile source modeling for NO<sub>2</sub>, PM<sub>2.5</sub>, and air toxics
- Model outputs to support interpretation and decisions (format, content, systems)
- More engaging with emissions data (Inventory, Factors, et al)
- Inclusion of near-by sources as part of cumulative impact analysis
- RO led on specific issues of concern? (Similar to haul roads, LNG)
  - Mountain top mining (R3-Cimorelli)
  - Others?

# 2011/12 Annual Workshops

- Where?
  - San Antonio TX, Madison WI, Minneapolis MN, Chicago IL
- Agenda items of need/focus
  - State rep will help
  - Workgroups—informing per past work and form next steps and new efforts
- Training session(s) prior to workshop for technical or policy benefit to attendees
- Interactive sessions?
  - State discussions to determine specific apps for review and understanding of particular issue
  - Comparative exercises across R/S/L permit experiences
- Use of webinars (upon release of new versions) and Environmental Science Connector (ESC) + other means to more effectively and efficiently communicate across community

# 10<sup>th</sup> Modeling Conference

- Expect to host in Fall 2011 in EPA facility in Research Triangle Park, NC
- Will engage in process to gather input on what items to cover
  - Mechanisms include RSL workshop, workgroups, periodic meetings
- New NAAQS and other regulatory needs will likely require some detailed discussions on modeling capabilities to meet these challenges
- Likely ask for community input on potential revisions to regulatory model(s) and App W updates