NESCAUM Permit Modeling Committee Quarterly Call
December 1, 2005

NESCAUM's Permit Modeling Committee (PMC) held a conference call on December 1, 2005 at 10:00 AM. These notes provide a summary of the key issues discussed and recommendations from the group.

Call Participants – *The following PMC members were in attendance on the call:*
Kevin Ostrowski (ME), Tom Downs (ME), Jim Black (NH), Jenny Bryan(VT), Beth Eliason (VT), Dan Riley (VT), Richard Fields (MA), Jude Catalano (CT), Leon Sedefian (NY), Phil Galvin (NY), Margaret Valis (NY), Alan Dresser (NJ), Ian Cohen (EPA R1), Brian Hennessey (EPA R1), Anna Maria Coulter (EPA R2), Lisa Rector (NESCAUM) and Gary Kleiman (NESCAUM).

Agenda – *The following items were on the agenda for discussion*:

(1) NESCAUM comments on NSR provisions in the NSR3 rule and the PM implementation rule – Lisa Rector and Gary Kleiman
(2) Letter on potential changes to 2005 emission inventory collection - Dan Riley
(3) Aeromod issues – Steve Dennis
(4) BART Modeling – Gary Kleiman
(5) Spring Meeting in May: potential visit from Tyler Fox – Gary Kleiman/Ian Cohen

NESCAUM comments on NSR provisions in the NSR3 rule and the PM implementation rule – *Lisa Rector and Gary Kleiman*

Lisa and Gary reviewed NESCAUM efforts to coordinate regional comments on several regulatory proposals which might affect New Source Review. The group decided that two tasks would be taken on by the Permit Modeling Committee to assist in these efforts: (1) Leon Sedefian developed and circulated a list of questions regarding recently proposed NSR provisions (see appendix 1) which have already been submitted to EPA R1 and R2. The hope is that R1 and R2 contacts can provide answers quickly to assist the states in submitting informed comments in a timely manner (comment deadline for PM Implementation Rule is January 31); (2) Leon has also developed a list of issues that we would like to see NESCAUM comment on from the modeling perspective (see appendix 2). This list will be discussed on a series of conference calls to identify regional positions for inclusion in NESCAUM comments. **The first call is scheduled for Tuesday, December 20 (Tomorrow) at 10:00 AM**

Conference Details

Date:	December 20, 2005
Time:	10:00 AM ET
Topic:	PMC comments on PM2.5 rule
Call Leader:	Gary Kleiman

Dial-In Number: (877) 656-1761
International Dial-In Number: (706) 758-0472
Conference Code: 159248

Letter on potential changes to 2005 emission inventory collection – *Dan Riley*

Dan informed the group that EPA has proposed to exclude non-EGU point sources from the inventory requirements that states must adhere to for the 2005 national inventory collection effort. The group was unsure how that was likely to affect future modeling efforts but Dan agreed to follow up for the group to obtain more specific information about what is being proposed and what the groups options are for responding.

Aeromod issues – *Steve Dennis*
Steve listed several AEROMOD questions that his department has received recently and inquired if other states had been receiving similar queries. He volunteered to develop a list of AEROMOD questions or concerns that we would like from the EPA Regional offices in addressing. This list has been circulated and is attached, as currently drafted, as appendix 3.

BART Modeling – *Gary Kleiman*
A question was asked regarding the MANE-VU BART modeling approach with respect to a formal modeling protocol. The MANE-VU approach is described briefly in the following email excerpt that I wrote recently to Tom Downs:

My understanding is that all of the detailed EPA guidance on how BART modeling should be conducted, what methods are acceptable and what level of technical effort needed to be expended, etc. applies to the BART *exemption* process. Once sources have been determined as "subject to BART" and an engineering review is to be conducted, then EPA has relatively little to say regarding how a state considers "the degree of visibility improvement" along with the other statutory factors in deciding what constitutes BART (that is not to say states do not have to consider it, just that I see states having tremendous flexibility in how they consider it). I see a tremendous human resource savings by skipping this initial modeling step and proceeding directly to the BART determinations where a state is able to consider the most stringent, technically feasible system of controls in the context of their cost, other controls in place, remaining useful life, energy and other non-air quality environmental impacts **and** the degree of visibility improvement resulting from the controls. This provides states with lots of flexibility in deciding whether a source merits new controls under BART or not and takes visibility impacts into account without having to conduct an initial round of CALPUFF exemption modeling which would be a tremendous human resource drain.

As I have mentioned before, my expectation is that many sources subject to BART in our region either have controls, will be controlled via CAIR (EGUs in CAIR states), may be eligible for a federally enforceable cap that renders them in-eligible for BART or may be controlled through other programs under consideration for O3 and PM2.5 NAAQS SIPs. The result may be (and we will know hopefully in the next month) that there are relatively few BART eligible sources which actually are being considered for new controls under BART. This would greatly reduce the modeling workload and will allow us to do a better job modeling those sources where we actually have to make a decision about whether controls are warranted based on visibility.

As for the modeling itself, we have already published an *interim* contribution assessment report which describes the CALPUFF platforms (two platforms: one developed by ERM for MDE and one by the VT DEC) and REMSAD platform with source specific source tagging. We hope to update that in the next month as well. These will serve as the modeling platform (along with other data analysis methods like Q/d which provide source specific impacts) for assessing the degree of visibility improvement. We plan to use these methods as quickly as practicable to develop **A** set of model results for consideration. I would guess realistically, it will be late spring/early summer. This is not necessarily **THE** set of model results that a state will want to use to base its decision on. As with all MANE-VU products, we are providing them to the states and they are then free to use the results, develop their own results, or require sources to conduct their own modeling.

Spring Meeting in May: potential visit from Tyler Fox – *Gary Kleiman/Ian Cohen*
We discussed the fact that Tyler Fox had expressed interest in visiting with regional modelers over the course of the coming year. We agreed to set our Annual meeting sometime the week of May 29, 2006 and see if there were dates that Tyler would be able to join us.

See attached Appendices.

Appendix 1.

Questions on Section III.M (NSR Program) of the Proposed Rule to Implement the Fine Particulate NAAQS, Federal Register, Vol.70, No. 210, November 1, 2005.

These questions are posed by the NESCAUM Modeling Committee members to EPA to assist us in understanding the proposal and in formulating our comments. Reference are to specific numerical subsections to III.M.

Questions:

1) Section 11 identifies the required air quality impact analysis for PSD purposes, but notes that PM2.5 NAAQS compliance should be performed at monitoring locations, in addition to other locations appropriate for such a demonstration. Section 16.b, Option 1 noted the same demonstration of compliance with PM2.5 NAAQS without reference to any specific locations.

Is the demonstration to be made at all ambient air receptors for the specific source, per the requirements of 165(a)(3), and not just at selected receptors such as monitor sites?

Also, does a source in an attainment area have to demonstrate insignificant impacts on a nonattainment area per 40 CFR 51.165(b) requirements?

2) Sections 13 and 17 provide requirements in nonattainment areas, but do not mention any required air impact analysis which are currently applicable for nonattainment pollutants (except for NOx and VOC as O_3 precursors). 40 CFR Appendix S, Section IV.A requires an explicit demonstration of net air quality benefit by simulation modeling, except for VOC and NOx.

What is EPA's proposal for the required net benefit analysis for PM2.5?

Is there still going to be a requirement of demonstrating no significant impacts from a source in a non-attainment area on any receptor in that area?

3) Section 13.d asks whether EPA should allow inter-precursor trading for offset purposes, but the text in the section notes that EPA is proposing to allow the offsetting of a source's direct PM2.5 emissions by precursor offsets. The envisioned example of a State specific trading rule, to be based on a modeling demonstration, only mentions precursors.

Is the intent of the proposal to allow offsetting of direct emissions with precursors or only to inter-precursors trading?

Is EPA expecting source specific modeling at the time of permit application or at time of SIP submission to demonstrate the required overall reduction in concentrations to be approved by the

Administrator, as noted?

Is EPA requiring the direct emissions of PM2.5 from the proposed source to be modeled against the offsetting precursors in the same modeling exercise, and if so, what model(s) will EPA accept?

4) In sections 10, EPA notes that they are developing an approach to PSD for PM2.5 which may include PM2.5 increments. This process has been put on a separate track, however, and EPA is not soliciting comments on PSD increments in this proposal (unlike SILs, as noted below).

Will this proposal will be released for public comment?

What is the timing for such a proposal and will EPA entertain any comments on PM2.5 increments at this time?

5) In Section 11, EPA solicits comments and ideas on SILs for PM2.5 and precursors which will be used to develop SILs on a separate track.

Why isn't EPA proposing the same approach to SILs versus increments?

Since the EPA "default" precursors for PM2.5 are SO2 and NOx, there currently exist SILs (and increments) for these pollutants, thus it is unclear what other precursors EPA is soliciting comments on for developing SILs?

6) Table 1 notes that interprecursor offsetting is allowed with modeling demonstration, which is also noted to be "no change" in requirements, and references Section IV.M.14.c.

Section III.14.c talks about the offset ratio and notes that only creditable reductions of the same precursor is allowed. Is the reference to 14.d?

Appendix S limits the offsets to intra-precursor trading only. What specific regulation is EPA referencing in noting "no change" in the approach?

7) In Section 18, EPA asks whether the requirements on presumed precursors should apply during the transition period between the final rule and SIP development due to the challenges faced the states in state specific SIP demonstrations.

The proposal does not mention whether EPA will grant the same "leniency" to those states with delegated programs and , if not, how it will make the playing field fair?

Does EPA propose this transition period "exemption" even for SO_2 which is a national presumed precursor?

8) Sections 15 to 18 outline the proposals for the implementation of the PSD and nonattainment provisions during the period from the time of the final rule and the incorporation of the NSR provisions in SIP approved programs (for delegated States, the requirements will go into effect as of the final promulgation). Some of the discussions in the proposals have raised questions on specifics of the implementation of the PM2.5 NAAQS requirements which were in the April 5, 2005 implementation of NSR memorandum from Steven Page and which are assumed to apply since the nonattainment classifications were finalized. The states or the EPA regions are to follow approved PM10 programs or 40 CFR 51, Appendix S (revised 11/29/05 to incorporate the PM10 significance emission rate) as a surrogate for the PM2.5 program. Thus, these questions relate to the implementation of NSR for any permits submitted between 4/5/05 and the final rule.

Is it correct that any major source locating in a PM2.5 nonattainment area must rely on PM10 emission and corresponding thresholds to determine applicability?

Is the major source to apply LAER for PM10 in this cases?

Is the source to obtain at least 1:1 offsets for PM10 in accord with the approved program or Appendix S?

Is the source required to show a net air quality benefit and insignificant impacts for PM10?

Is a source which is PSD applicable (using the PM10 emissions thresholds) required to model compliance with PM10 standards only or PM2.5 NAAQS?

Is the requirement of 40 CFR 51.165(b) for source in attainment areas impacting nonattainment areas to be based on PM10 impacts and corresponding significance levels and the PM2.5 nonattainment areas?

Appendix 2.

Topics for Comment of the NESCAUM Modeling Committee on the NSR Program of the Proposed Rule to Implement the Fine Particulate NAAQS.
(Federal Register, Vol.70, No. 210, November 1, 2005)

This set of topics includes items on which EPA has specifically requested comments, but also in areas which are not clearly explained or addressed in the proposal. Reference is made to the numerical sections of the proposed rule, where appropriate.

1) **Section 3, Treatment of precursors of PM2.5**. EPA believes it can treat various precursors for the same pollutant differently and seeks comments on:

a) whether there are circumstances where a pollutant should not be treated as a precursor for NSR purposes, even if science shows it is one and it is treated as such in other programs.

b) EPA proposes SO_2 and NOx as "default" precursors which would require all the components of PSD and nonattainment programs associated with these (BACT/LAER/Offsets/NAAQS demonstration), but is allowing a case by case exemption for NOx to be demonstrated to Administrator (very unlikely for NE and Mid-west).

c) EPA is proposing not to include VOC and NH3 are precursors, except if States want to do so by demonstrating to the Administrator that controls will help attainment of NAAQS. However, VOC emissions of high molecular weight are said to be controlled as direct PM2.5 emissions by requiring the inclusion of condensible emissions in the calculations of applicability, etc. NH3 as a precursor is said to be not well understood and could lead to increased acidity levels of particulates if controlled improperly.

2) **Section 4, Major Source Thresholds**. EPA is proposing to keep the major source definitions for PSD and nonattainment based on their interpretation of various subparts of the CAA. In nonattainment areas, a classification system is not being proposed, thus limiting the ability to define a lower threshold. States can impose other requirements through case specific SIPs.

3) **Sections 5 and 6, Significant Emissions for direct PM2.5 and precursors for major modifications.** EPA is proposing to retain the deminimis emission rates for SO2, NOx and VOCs currently in effect and is proposing a 10ton/year value for direct PM2.5 emissions based on modeling to achieve a "significant" increase in impacts, backed up by NAAQS scaling. No value is being proposed for NH3. EPA is requesting comments on the range from 5 to 15 tons/year for direct emissions and the use of 10 tons/year for precursors.

4) **Section 7, Condensible emissions.** EPA is proposing to "clarify" that condensible

emissions must be accounted in the determination of PM2.5 emissions, as has been done for PM10 in the past. EPA is proposing new test methods for stack testing to assure proper determination of condensibles.

5) **Section 10, PSD for PM2.5.** EPA is working on a separate track to develop a PSD program for PM2.5 which may include increments. No comments are solicited at this time.

6) **Section 11, Air Quality analysis requirements for PSD (Section 165(a)(3) of the Act)**. EPA is proposing to require the demonstration of NAAQS compliance, but notes that this would be done at monitor locations and other receptors which are appropriate for comparison of impacts to NAAQS.

7) **Section 11, Significant Impact Levels (SILs).** EPA is soliciting comments and ideas on how to establish SILs for direct emissions of PM2.5 to be used for a separate proposal. There is also vague mention of precursor SILs.

8) **Section 12, PSD pre-construction requirements**. EPA has proposed one preferred option and four alternatives. The proposal notes that EPA is retaining it's current approach in their preferred option, but that is not entirely correct.

Preferred Option 1: Require monitoring, but allow case by case waiver if adequate PM2.5 monitoring data exists.
Option 2: Exempt all sources and just use existing PM2.5 monitoring data.
Option 3: Develop and use significant monitoring concentrations (SCM) for PM2.5 to exempt sources. It is noted that this can be used with other options.
Option 4: Use the combination of PM10 and PM2.5 data to make inferences.
Option 5: Exempt preconstruction monitoring since SCMs specific for PM2.5 are not in the regulation currently.

9) **Section 14, Offset requirements for non-attainment areas.** EPA is proposing schemes and asking for comments for the offset ratios for direct emissions, precursors, and interprecursor trading.

Subsection 14.a: Propose at least a 1:1 offset ratio for direct emissions

Subsection 14.b and c: If precursors are included in NSR as regulated pollutants, then offsets will be required. If offsets required, then at least a 1:1 offsets for precursors is proposed and the reductions have to be creditable and with the same precursor. Seek comments on whether this ratio should apply to state specific precursors as well.

Subsection 14.d: EPA proposing to allow inter-precursor trading, trading for direct PM2.5 for

precursors and visa versa. It seems to be proposed on a state specific basis where the state demonstrates that trading is beneficial in reducing overall concentrations of PM2.5. EPA, however, also mentions either: i) *a priori* modeled demonstration, presumably at the time of SIP submission, or ii) in the case specific NSR permitting process. There is also a passing mention of possibly allowing such trading for netting purposes.

10) **Sections 15 to 17, Transition issues during the SIP development period**. EPA reaffirms that prior to the final rule, the PM10 surrogate approach can be used for both PSD and non-attainment areas (Steven Page memo of 4/5/05). After the rule is final, states with delegated programs will immediately implement it, while those who will develop SIPs (and concurrently, an NSR program) over a three year period will have to comply with the rule or EPA will implement it during this transition period. Legal basis for the latter requirement is provided and EPA seeks comment on some of the implementation issues during the transition period for SIP approved programs.

Subsection 16.b presents three options for implementing the PSD requirements:

Proposed Option 1: Continue to use the 1997 Seitz memo (PM10 as surrogate), but assure that sources do not cause or contribute to PM2.5 NAAQS violations and include condensibles in applicability and controls.
Option 2: Update the Seitz memo to include the proposed provisions of the rule or change Appendix S to include 40 CFR 52.21 requirements. Note: it is, however, not clear how the latter can be done in an Offset Interpretation Rule (Appendix S), except for provisions of 40 CFR 51.165(b).
Option 3: States would request delegation of the final rule.

Subsection 17.b proposes that, as amended by this rule, Appendix S will allow the majority of states to implement the nonattainment provisions or EPA will have to do so in states where modifications to their NSR programs are necessary and protracted.

11) **Section 18, NSR applicability to precursors during the transition period**. EPA seeks comments whether the presumption of certain precursors as regulated pollutants should be stayed during the SIP developmental process? This is presumably for states which will be able to exclude NOx or include VOCs and NH3 in their programs since there is no such request for states with delegated programs. Also, presumably, this does not apply to SO_2 which is a "default" national precursor.

Appendix 3.

AERMOD/AERSCREEN/AERSURFACE Questions for EPA Region I and II – December 13, 2005

What types of applications will require the use of AERMOD after December 9, 2006? PSD source permits? Major sources of NAAQS to be constructed or modified in attainment and non-attainment areas?

Can modeling applications for minor source permits of NAAQS pollutants continue to use ISC3 and/or SCREEN3 after December 9, 2006? What about minor sources of air toxic pollutants?

What type of terrain data and land use will be recommended for AERMOD applications? Will EPA provide a web page and provide user guidance for downloading terrain elevation data and land use data?

If surface wind data from a representative NWS station is to be employed, should land use data at the NWS station also be used when running AERMET, even if land use is significantly at the location of the source to be modeled?

When will a guideline AERCREEN model be available? Will a user guide also be provided, including recommended 3 hour, 24 hour seasonal and annual scaling factors? How will local terrain data and land use data be obtained and used in AERSCREEN?

Assuming AERSCREEN is available after December 9, 2006, can AERSCREEN be used instead of AERMOD to demonstrate compliance with NAAQS or air toxic pollutants?

What would an acceptable AERSCREEN compliance demonstration consist of?

Will guidance be forthcoming regarding receptor spacing in AERMOD? With near-wake impacts being calculated with the PRIME algorithm, a receptor spacing such as 10m or 20m will be needed near buildings.

Will there be further guidance regarding the extent of the domain in AERMAP?

AERMAP uses a 2-dimensional distance weighted interpolation to determine receptor elevations. Is this acceptable given current EPA guidance on using the highest elevation within a representative area (i.e., maximum elevation in a grid square)?

Can higher resolution land-use data be used in AERSURFACE?

Will AERSURFACE be required for use with AERMOD or can a higher resolution data set be used?

Can data sets other than from USGS be used in AERSCREEN (for example using a data set developed by a university)?

How much flexibility do states have to modify the land use tables contained in the AERMET User's Guide (Tables 4-1 to 4-3)?