

Class I Area Workgroup - Needs For The Regional Domain

- Regulatory Purposes Satisfied
 - PSD Increment Consumption
 - Plume Visibility Impacts
 - Regional Haze Analysis
 - Deposition Impacts
 - Other AQRV's

Questions to Answer that will dictate our procedure:

- The meaning of "cumulative modeling exercise" in the FLAG document?

Answer: In general, the intent of the visibility/haze analysis and other AQRV determinations is that they may be performed in the same analysis as that for increment consumption. Consequently "cumulative modeling exercise" utilizes a subset of sources similar to that for increment consumption.

- Modeling versus Monitoring for assessment of existing pollutant species contribution to regional haze or available PSD increment prior to NSR?

Answer: Multi-source analysis is necessary to evaluate atmospheric chemistry affecting proposed source emissions. Therefore modeling of at least a significant subset of sources is necessary. If necessary, monitoring may allow determination of increment consumed since minor source baseline date.

- Eventual Reliance on MARAMA/NESCAUM/OTC Regional Haze Analysis for SIP Purposes?

Answer: This effort will not allow PSD tracking, nor target other AQRV's but may, similar to use of suitable monitored data, allow determination of increment consumed since minor source baseline date.

A Possible General Procedure:

- 1) If necessary, that is, if it is believed that available increment has decreased for a pollutant since baseline date, make this determination with monitored data, or an entirely cumulative modeling exercise.
- 2) Perform Calpuff runs with an emissions inventory determined to be sufficient for multi-source sensitive functions in Calpuff to calculate impacts at sensitive receptor locations.

3) During New Source Review process, rerun Calpuff using the inventory used in number 2 and also including the proposed new source emissions. Subtract impacts at sensitive receptor locations from number 2) to calculate increment consumption from new source.

Common Needs for Regional Modeling -

- 1) - Meteorological Fields for Long Range Transport (*Calmet Runs*)
- 2) - Geographical Effects, meteorology local to Class I area receptors (*Calmet domain, Calpuff terrain effects*)
- 3) - Meteorological Fields for gas-particle phase conversion, atmospheric chemistry (*Calmet derived and/or other inputs to Calpuff*)
- 4) - Other input files necessary for Calpuff runs (*eg. Ozone concentrations*).
- 5) - Emission Inventories - Comprehensive Inventories for cumulative modeling exercises to occur at specified intervals to accurately simulate atmospheric chemistry, phase conversion, etc. in Calpuff (*SAMI or NET inventory for point, area, mobile sources*).
- 6) - Monitored Data - A data set with proper characteristics to rely on, if necessary, to determine whether available increment has decreased (*Improve Data if temporal resolution sufficient*).

Steps to Meet These Needs.

- 1) Agreement on goals of modeling exercise proposed by workgroup
 - *Can PSD, regional haze, deposition and other AQRV's be handled in a common modeling effort?*
 - *If so, will we need separate runs with separate emission sources or handling of chemistry?*
- 2) emissions inventory (supporting a completely cumulative analysis or a subset of emissions).
 - *Based on trial runs or expertise determine the completeness of inventory necessary for multi-source sensitive calculations in Calpuff*
 - *List parameters necessary to cumulative analysis*
 - *Research best choice of inventory*

3) Construct the common domain for Calmet runs that will result in best grid-wide model accuracy and be sufficient to accommodate all emissions significantly affecting the Class I Areas in the Calpuff domain. When these meteorological fields are used for a new source review Calpuff run perform an examination of their accuracy at sensitive receptor (case by case judgement).

- *Perform analysis of run times to make Calmet reruns feasible.*
- *Perform analysis of model accuracy running in different modes and to ensure geographical setup is accurate.*
 - *incorporating diagnostic model windfields*
 - *at what step to incorporate these fields*
 - *setting other parameters*

4) Establish the inputs to Calpuff necessary to its best simulation of atmospheric chemistry/phase conversion for a refined analysis.

5) **End Goal** - After these steps have been achieved through close interaction with FLAG, IWAQM recommendations revise the previously drafted mesopuff system modeling protocol written for the Class I areas in NESCAUM region to accommodate the calpuff system and all regulatory requirements for regional modeling.