

# 1-hour SO<sub>2</sub> NAAQS Modeling

## New Source Review, Designation, and Infrastructure SIP Issues

Minnesota Conference on the Environment  
November 9, 2011

Jeffry D. Bennett, PE  
Barr Engineering

resourceful. naturally.  
engineering and environmental consultants



# Topics

- History of new 1-hour NAAQS
  - Regulation
  - Guidance
- New Source Review
- Designation and Nonattainment
- Infrastructure SIPs

# Recent SO<sub>2</sub> NAAQS Regulation

- USEPA published a new primary SO<sub>2</sub> National Ambient Air Quality Standard on June 22, 2010
  - 75 parts per billion (ppb) with a 1-hour averaging time
  - Average of the 4<sup>th</sup> highest daily maximum 1-hour concentrations to calculate the design value
  - Revoked the 24-hour and annual primary NAAQS
- As part of this rulemaking, EPA described their recommended approach to implementation
  - Air quality monitoring AND modeling, together

# WHAT???!??!

- Many regulators and industrial groups were surprised that EPA decided to diverge from the “normal” planning paradigm and utilize modeling as the primary tool for determining compliance with the NAAQS
- The issues with this modeling approach have been widely discussed and will be the focus of on-going dialogue and litigation for the foreseeable future

# Recent SO<sub>2</sub> NAAQS Guidance

- In order to support modeling requirements under the revised SO<sub>2</sub> and NO<sub>2</sub> NAAQS for new source review (e.g. permitting) and State Implementation Plan development, EPA has issued several recent guidance documents:
  - August 23, 2010
  - March 1, 2011
  - March 24, 2011
  - September 22, 2011

# New Source Review

- Beginning in August 2010, the new SO<sub>2</sub> standard is a requirement for new source review permitting
- Basic requirements under the new standard:
  - Permitted emission limits will need to be developed in terms of the standard (e.g. pounds per hour);
  - Sources are only required to consider “emission scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly...” (e.g. no emergency generators or startup/shutdown operations);

# New Source Review (cont.)

- BIG PICTURE

- The new standard is significantly more stringent than the previous short-term NAAQS and will likely be a large problem depending on the specifics of each source's situation (i.e. coal, residual oil, petroleum coke-fired processes; high raw material sulfur)
- This means that existing sources with permit limits designed to meet the "old" NAAQS for normal operations will not comply with the new NAAQS and could face significant changes to comply

# Designation/Nonattainment Issues

- The official designation process will not complete until June 2012, but it appears that only areas with violating monitors will be designated nonattainment
- Nearly all other areas will be designated unclassifiable because states did not provide EPA with modeling to support designations
- No monitored SO<sub>2</sub> nonattainment areas in Minnesota

# Good news, ...

- No requirements for reasonably available control technology (control evaluation for all major sources)
- No nonattainment permitting requirements (LAER, alternative site evaluations, offsets, etc.)
- No immediate Federal Implementation Plan (FIP) if state does not demonstrate attainment
- Timing for physical changes is consistent – February 2017

## ...Bad news

- Timing for submission of plans to ensure attainment of areas in violation is shortened (June 2013 vs. February 2014)
- No active mechanism to ensure good neighbor policies in airsheds (e.g. RACT)
- No fixed mechanism to determine culpability/control

# Infrastructure SIPs

- These SIPs required under Clean Air Act Section 110(a) provide for implementation and maintenance of all NAAQS
- These SIPs have historically been a place holder used prior to the submission of traditional SIPs under Section 191 (and 192 for SO<sub>2</sub>)
- Under the new SO<sub>2</sub> paradigm, the Section 110 SIPs will be used as a “nonattainment lite” SIP

# Nonattainment Lite

- Each source that contributes to a modeled violation of the NAAQS will be required to evaluate mitigation of the contribution
- Each state will be required to ensure that all mitigation will be federally enforceable
  - Construction permit
  - Consent agreement
  - Regulation
- Those mitigation techniques could include emission limits, stack changes (with some prohibitions), or a combination of both.

# Process/Implementation

- What is the process for ensuring that all sources that contribute to violations are addressed equitably?
  - Example: Two sources contribute to a modeled violation, Source A has 80% of the maximum impact and Source B has 10% of the maximum impact and background is 10%. How much of the impact (or cost) must be addressed by Source B?
  - The correct answer will be dependent on your “rooting” interest because there is no one-size-fits-all solution.

# Process/Implementation

- What are the implementation steps for the remainder of this SO<sub>2</sub> NAAQS process?
  - Determine if your area models compliance or not
  - If non-compliant, State agency will determine your source's and your neighbor source's impacts
  - State agency will negotiate with each entity to mitigate those impacts
  - Model compliant strategies
  - Develop federally enforceable plan by June 2013
  - Implement plan by February 2017

# Questions

Jeffry D. Bennett, PE  
Barr Engineering

[jbennett@barr.com](mailto:jbennett@barr.com)  
(573) 638-5033

resourceful. naturally.  
engineering and environmental consultants

