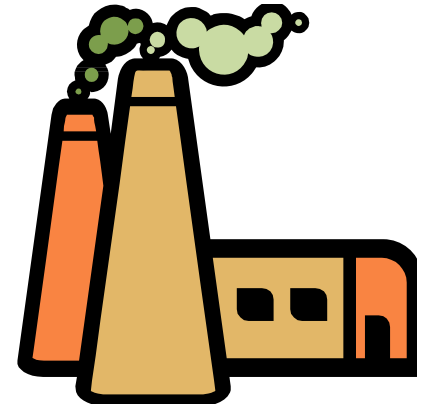




# SO<sub>2</sub> Nonattainment Area SIP Guidance

Air Quality Policy Division  
OAQPS  
May 1, 2014



# Background

- In June 2010, EPA promulgated a revised primary SO<sub>2</sub> NAAQS, designed as a new 1-hour standard at a level of 75 parts per billion (ppb) based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations.
- In Sept 2011, EPA issued draft guidance to help air agencies implement these standards. This final guidance has been developed with your input and participation in the stakeholder meetings we had in the spring of 2012.
- Please work closely with your regional offices and consult with them early in the SIP submittal process as you develop your plans to meet these standards.

## Major Issues Addressed In the Guidance Document

1. Important implementation dates for nonattainment area SIP submittals. (section III, page 5.)
2. Attainment demonstrations and showing attainment for the entire nonattainment area. (section V.C., page 9.)
3. Implementation of control measures in the attainment demonstration to show compliance by the attainment date. (section V.C., page 13.)
4. Taking credit for federal measures in the SIP. (section V.D., page 18.)
5. Setting emission limits and averaging times. (section V.D.2., page 22)
6. Transition from the previous NAAQS to the revised NAAQS. (section VI., page 45.)
7. Attainment determinations for SO<sub>2</sub> nonattainment areas. (section VII., page 47.)
8. Redesignation to attainment for SO<sub>2</sub> nonattainment areas. (section VIII., page 60.)
9. Guidance on “clean data” determination (Guidance document section VI.C., page 51)
10. Changes to the modeling guidance since the September 2011 draft. (Appendix A, page A-1)

## 1. Important Implementation Dates for 1-hr SO<sub>2</sub> Nonattainment Area SIP Submittals

- **Designation of initial SO<sub>2</sub> nonattainment areas:** Initial designation for 1-hr SO<sub>2</sub> nonattainment areas was published in the Federal Register on **August 5, 2013**, with an effective date of **October 4, 2013**.
- **SIP submittal date for initial 1-hr SO<sub>2</sub> nonattainment areas:** States are required to submit SIPs within 18 months of the effective date of designation (in this case, by April 2015).
- **Attainment date:** Pursuant to part D, subpart 5, of the CAA, states are to attain the NAAQS as expeditiously as practicable, which can be up to 5 years following the effective date of designation.
  - Latest approvable attainment date: October **2018** (based on 2015-2017 data)

## 2. SO<sub>2</sub> Attainment Demonstrations and Showing Attainment for the Entire NAA

- States with nonattainment areas are required to submit SIPs with attainment demonstrations, using modeling to demonstrate attainment in the entire area by the attainment date, through the implementation of RACM/RACT control measures.
- The EPA has found that a small number of monitors in SO<sub>2</sub> nonattainment areas is usually not representative of the entire nonattainment area, therefore, air quality dispersion modeling is usually required to show attainment in SO<sub>2</sub> nonattainment areas.
- Implication: The state needs to model the impact of all sources located in the nonattainment area.
  - Given that, the state should address attainment within the entire nonattainment area, the state should also consider modeling sources located outside the nonattainment area which may directly affect attainment within the nonattainment area.
  - The impacts of such sources should be included as either background concentrations in the modeling, or as a part of the attainment demonstration.

### 3. Implementation of Control Measures In the Attainment Demonstration to Show Attainment -by the Attainment Date

- The modeling analysis for the attainment demonstration should show attainment in the area with a projected design value of no greater than 75 ppb throughout the entire nonattainment area.
- The compliance dates for control measures should be as expeditiously as practicable to demonstrate attainment in the area by the attainment date.
- For EPA to propose approval of SO<sub>2</sub> attainment plans, sources must show compliance with the control strategy at least one calendar year prior to the attainment date.
  - For initial SO<sub>2</sub> areas, sources should show compliance by January 1, 2017.
  - A SIP may be approvable, if controls will be operational by the attainment date, even if the state does not anticipate having 3 consecutive calendar years of data by the attainment date.
  - However, if the area has monitoring data which shows a 3-year design value that violates the NAAQS, the EPA will not be able to make a determination that the area attained by the attainment date.

## 4. Taking Credit for Federal Measures In the SO<sub>2</sub> SIP

- MATS (Mercury and Air Toxics Standards, for EGUs):
  - Source may comply with either HCl limit or SO<sub>2</sub> limit.
  - If a source chooses to comply with the MATS SO<sub>2</sub> limit, the Title V permit would need to include that limit as the federally applicable requirement. If that limit is included in a SIP revision and approved by EPA, the limit would be permanent and creditable as part of the state's plan to attain/maintain the SO<sub>2</sub> NAAQS.
    - If the limit is incorporated into the SIP as a stand-alone limit, the Title V permit would reference the SIP provision as the federally applicable requirement.
- Incinerator NSPS/EG:
  - Section 129 standards for MWC, HMIWI, CISWI, OSWI and SSI have permanent numeric SO<sub>2</sub> emissions limits, which are creditable.
- Industrial Boiler MACT
  - No specific SO<sub>2</sub> emission limit applies, and reductions are creditable only if a source-specific SO<sub>2</sub> emission limit is adopted.
- CAIR etc.
  - Emission reductions are creditable only if a source-specific SO<sub>2</sub> limit is adopted in the SO<sub>2</sub> SIP for the area.

## 5. Emission Limits and Averaging Times to Meet the 1-hr SO<sub>2</sub> Standard

- The new SO<sub>2</sub> guidance supports use of averaging times from 1 hr up to 30 days.
- Averaging times generally influence the stringency of a limit. Generally, a 30-day average limit is less stringent than a 1-hr limit at the same level.
- Once the appropriate 1-hr limit is identified, the guidance advises states wishing to apply a longer term average limit to apply a downward adjustment of the limit, to establish a limit with comparable stringency to the corresponding 1-hr limit that would provide for attainment.
- With this downward adjustment of the limit, EPA believes that elevated emissions will be sufficiently rare that violations are very unlikely to occur.
- The guidance provides example calculations and discussion of how comparably stringent limits may be determined.
- Especially for sources that will use emission control equipment, the guidance advises adopting supplemental limits to constrain the periods of elevated emissions that can occur with a longer term limit (e.g., requirements for scrubber operation or limits on time and/or magnitude of “emission spikes”)



## 5. Example Methodology for Setting Emission Limits with Comparable Stringency with 1-hr Averaging Time Limit

- This methodology starts with a traditionally derived 1-hr emission rate (i.e., “critical emissions value”) that, if emitted continuously, would provide for attainment. The methodology provides a mechanism to convert that 1-hr emission rate into a longer term limit with comparable stringency.
- Example of method
  - Select an appropriate emissions distribution for the plant, reflecting attainment plan controls (i.e., those controls necessary to meet the 1-hr emissions rate)
  - Determine the distributions of 1-hr averages and 30-day averages, and compare for example the 99<sup>th</sup> percentile levels of these two distributions.
  - Suppose the 99<sup>th</sup> percentile 30-day average is 20% lower than the 99<sup>th</sup> percentile 1-hr average.
  - This suggests that, most of the time, the degree of control needed to meet a given 1-hr limit is also needed to achieve a 20% lower 30-day average.
  - For example, if a 1-hr limit of 600 pounds/hour would provide for attainment, the source in this example could be subject to a 30-day average limit that is 20% lower, i.e. 480 pounds/hour.
- This methodology allows emission spikes that are not allowed with a 1-hr limit, but the methodology compensates by adopting a lower average emission rate than that for a 1-hr limit, such that the theoretical control requirement is stricter and the practical control requirement almost all the time is the same.

## 5. Analyses of Whether Long Term Average Limits Assure Attainment

- Appendix B of the guidance describes analyses conducted to assess air quality impacts of use of long term average limits
  - EPA analyzed an example facility with two example control strategies
  - One emission data set reflected use of FGD; Other data set reflected low S coal
  - Modeling yielded a critical emission value, then an adjusted 30-day limit was determined using each emission data set
  - Each emission data set was scaled to just show compliance with the 30-day limit
- The FGD run estimated a design value of 46 ppb. The low S coal run estimated a design value of 52 ppb.
- Additional analyses, 1) using 100 randomly reassigned emissions data, and 2) using single years of emissions data to characterize emission variability over a 5-year period of meteorology, yielded similar results (50 to 58 ppb in analysis 1, and 39 to 52 ppb in analysis 2)
- Appendix C shows sample calculations of adjusted long term limits, and Appendix D show typical adjustment factors

## 6. Transition from the previous SO<sub>2</sub> NAAQS to the revised SO<sub>2</sub> NAAQS

- In the 2010 final SO<sub>2</sub> NAAQS rulemaking, EPA provided a regulation stating that the prior 24-hr and annual primary NAAQS will remain in effect for at least one year following the effective date of designation for the revised standard before the prior standard is revoked. See 40 CFR 50.4(e).
- Thus for the areas designated in the Federal Register on August 5, 2013, with an effective date of October 4, 2013, the revocation date will be October 4, 2014.
- However, for areas that were still designated as nonattainment under the prior NAAQS as of the effective date of the revised SO<sub>2</sub> NAAQS (August 23, 2010), or had not met the requirements of a SIP call under the prior NAAQS, the prior standard will remain in effect until the state submits and EPA approves a SIP showing attainment of the 2010 1-hr SO<sub>2</sub> NAAQS.

## 7. Determination of Attainment for SO<sub>2</sub> Nonattainment Areas

### Determination of attainment:

- Section 192 of the CAA requires that nonattainment areas for SO<sub>2</sub> should attain the standard within 5 years of the effective date of designation.
- The EPA is required to make an attainment determination for nonattainment areas no later than 6 months after the attainment date for the area.

### Information for making attainment determinations:

- The EPA will make attainment determinations based on air quality monitoring data (when available) and/or air quality dispersion modeling data.
- The EPA can base its attainment determination on the modeling (allowables-based) from the attainment demonstration for the nonattainment area SIP. The EPA would need to review the compliance records to ensure that the control strategy has been fully implemented.
  - If the monitoring data for the area shows a violation, the EPA would not be able to make a determination that the area attained by the attainment date.
  - In areas without monitors, if the modeling from the attainment demonstration is inappropriate, new modeling can be used to make the attainment determination using actual emissions.
- Finally, if EPA determines that there is a monitor located at the area of maximum concentration, EPA may use the data from this monitor to make the attainment determination without the use of modeling data.

## 8. Guidance on Redesignation to Attainment

- For areas initially designated as nonattainment, EPA would apply the redesignation criteria as stated under section 107(d)(3)(E) of the CAA.
- EPA has to determine that the affected area has attained the NAAQS:
  - See previous slide.
- EPA determines that the improvement in air quality in the area is due to permanent and enforceable emissions reductions.
  - All SIP-adopted control measures must be fully implemented to satisfy this requirement.
- EPA has fully approved the Part D SO<sub>2</sub> SIP for the affected area.
- The area has met all other applicable requirements of section 110 of the CAA.
- EPA has fully approved a maintenance plan for the area as required under section 175A of the CAA.

## 9. Guidance on “Clean Data” Determination by EPA

- The EPA has issued guidance for other pollutants that provides reduced regulatory requirements for areas that have attained the NAAQS prior to the requirement to submit a SIP revision under Part D of the CAA .
- Criteria for a “clean data determination” :
  - Modeling, using actual emissions data, which shows attainment in the area, with all monitors in the area showing attainment, or
  - The EPA can use monitoring data alone to determine attainment if the monitor(s) in the area is (are) located at the area of maximum concentration.
- Regulatory requirements suspended under the “Clean Data Policy”:
  - RFP
  - An attainment demonstration (using dispersion modeling)
  - Contingency Measures
- Under the “Clean Data Policy”, the state would no longer be required to submit the aforementioned SIP requirements “as long as the affected area continues to attain the standard”.
- The state would need to meet the requirements of section 107(d)(3)(E) before EPA could redesignate the affected area to attainment.

## 10. Changes to the Modeling Guidance Since the September 2011 Draft

- Clarifications on what sources should be modeled:
  - Based on characterization of the nonattainment area during the designations process.
  - In some cases sources outside the nonattainment area which may affect attainment in the area may need to be addressed in the attainment demonstration.
    - Guidance discusses sources to explicitly model and those to represent via monitored background.
- Clarifications on the guidance on receptor modeling strategies:
  - Attainment should be shown throughout nonattainment area; receptor strategy should take that in consideration.
- Clarifications of the use of meteorological data input in model.
  - References March 2013 memo on the use of National Weather Service data.
- Addresses modeling for existing limits if a current SIP includes limits with longer than 1-hr averaging times.

## SO<sub>2</sub> NAA Guidance Contacts

For questions on the presentation or on the guidance, please contact the following people:

- General questions on the guidance: Larry Wallace, OAQPS, [wallace.larry@epa.gov](mailto:wallace.larry@epa.gov), or (919) 541-0906.
- Questions on control measures and emission limits and averaging times: John Summerhays, Region 5, [summerhays.john@epa.gov](mailto:summerhays.john@epa.gov), or (312) 886-6067.
- Questions on the modeling guidance: James Thurman, OAQPS, [thurman.james@epa.gov](mailto:thurman.james@epa.gov), or (919) 541-2703.