



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

RESEARCH TRIANGLE PARK, NC 27711

SEP - 5 2019

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Area Designations for the 2010 Primary Sulfur Dioxide National Ambient Air Quality Standard – Round 4

FROM: Peter Tsirigotis
Director

A handwritten signature in blue ink that reads "P. Tsirigotis".

TO: Regional Air Division Directors, Regions 1 – 10

This memorandum provides information on the schedule and process for the area designations for the 2010 primary sulfur dioxide (SO₂) national ambient air quality standard (NAAQS) that the Environmental Protection Agency (EPA) must complete by a court-ordered deadline of December 31, 2020 (“Round 4”). In Round 4, EPA will be designating all remaining areas that have not yet been designated for the 2010 SO₂ NAAQS. The designations will be based primarily on ambient monitoring data, including data from new EPA-approved monitors that were installed and began operating by January 2017 pursuant to the Data Requirements Rule (DRR). *See*, 80 FR 51052 (August 21, 2015), codified at 40 CFR part 51 subpart BB. This memorandum supplements, where necessary, our prior designations guidance on area designations for the 2010 primary SO₂ NAAQS to better reflect the Round 4 designations process. Please share this information with the state and tribal air agencies in your Region.

While we believe this memorandum provides helpful guidance on how air quality status and boundaries would be determined for SO₂ designations, the guidance contained herein is not binding on states, tribes, the public, or EPA. The final basis for determining area air quality status and boundaries will be addressed in EPA’s regulatory action to designate areas under the 2010 SO₂ NAAQS. When EPA promulgates designations, those determinations will be final and binding on states, tribes, the public, and EPA.

Background

On June 2, 2010, EPA established a revised SO₂ primary NAAQS at 75 parts per billion (ppb), which is met at a monitoring site when the 3-year average of the annual 99th percentile of daily maximum 1-hour average concentrations does not exceed 75 ppb. *See*, 75 FR 35520 (June 22, 2010), codified at 40 CFR 50.17. On August 5, 2013, EPA published a notice announcing designations of 29 areas in 16 states as nonattainment for the 2010 primary SO₂ standard (“Round

1”), based on certified ambient air quality monitoring data (78 FR 47191). However, at that time, EPA was not yet prepared to issue designations for the remaining areas of the country. Subsequently, three lawsuits were filed against EPA in different United States (U.S.) District Courts alleging that the Agency had failed to perform a nondiscretionary duty under the Clean Air Act (CAA) by not designating all portions of the country by the June 3, 2013, deadline.¹ Under a consent decree entered by the Court on March 2, 2015, in one of those cases, EPA is required to complete the remaining area designations according to a specific schedule with the following deadlines: July 2, 2016 (“Round 2”), December 31, 2017 (“Round 3”), and December 31, 2020 (“Round 4”). The schedule for completing the Round 3 and Round 4 designations overlaps with submission of SO₂ air quality information by states to EPA under the SO₂ DRR.² This information may be used by EPA in evaluating areas’ air quality in relation to the 2010 primary SO₂ NAAQS, including designations and redesignations.

On June 30, 2016, and November 29, 2016, EPA signed *Federal Register* notices completing the designations for the Round 2 areas subject to the July 2, 2016, deadline, designating 7 areas nonattainment, 17 areas unclassifiable and 41 areas unclassifiable/attainment. *See*, 81 FR 45039 (July 12, 2016) and 81 FR 89870 (December 13, 2016). On December 21, 2017, and March 28, 2018, EPA signed *Federal Register* notices completing the designations for the Round 3 areas subject to the December 31, 2017, deadline, designating 6 areas nonattainment, 22 areas unclassifiable, and the remaining areas of the U.S. attainment/unclassifiable that were not, pursuant to the DRR, operating a new EPA-approved monitoring network. *See*, 83 FR 1098 (January 9, 2018) and 83 FR 14597 (April 5, 2018).

General Approach and Schedule for Round 4 Designations

Pursuant to the 2015 court order, EPA must complete the Round 4 designations no later than December 31, 2020. All remaining undesignated areas must be designated in Round 4. The remaining undesignated areas are: 1) those areas which, under the court order, did not meet the criteria that required designation in Round 2 and also were not required to be designated in Round 3 due to installation and operation of a new SO₂ monitoring network by January 2017 in the area meeting EPA’s specifications referenced in EPA’s SO₂ DRR, and 2) those areas which EPA has not otherwise previously designated for the 2010 SO₂ NAAQS. EPA previously issued guidance on how to appropriately and sufficiently monitor ambient air quality in the “SO₂ NAAQS Designations Source-Oriented Monitoring Technical Assistance Document” (SO₂ NAAQS Designations Monitoring TAD).³

¹ On July 27, 2012, EPA extended the deadline for area designations for the 2010 primary SO₂ standard by 1 year due to having insufficient information to make initial area designations in 2 years. With this extension, EPA was required to complete initial designations by June 3, 2013 (77 FR 46295; August 3, 2012).

² By January 15, 2016, each air agency was required to submit to the relevant EPA Regional Administrator a final list identifying the sources in the state around which SO₂ air quality is to be characterized. The final national list, which consists of 379 sources, is available on EPA’s website at: <https://www.epa.gov/sites/production/files/2016-06/documents/drr-source-list-epa.pdf>. By July 1, 2016, each air agency was required to identify whether it will use ambient monitoring or air quality modeling to characterize the air quality for each source area on the list. A DRR pathway notification summary is available on EPA’s website at: https://www.epa.gov/sites/production/files/2017-03/documents/draft_final_-_drr_source_list_with_drr_notification_pathway_and_state_submittal.pdf.

³ <https://www.epa.gov/sites/production/files/2016-04/documents/so2monitoringtad.pdf>.

In 2011, all states submitted designations recommendations based on air quality information that was then available for their areas. For the areas that will be designated in Round 4, information regarding an appropriate designation may have changed since air agencies submitted their original designation recommendations in 2011. Though CAA section 107(d) does not require states to submit updated recommendations, we are inviting states and tribes to submit updated designation recommendations for EPA to consider in Round 4 of designations, just as we did for the recent Round 3 designations.

States and tribes that wish to update their designation recommendations for areas that have yet to be designated should do so no later than May 1, 2020. Attachment 1 to this memorandum shows the anticipated schedule for the fourth round of designations that must be completed by December 31, 2020, under the court order.

When considering boundaries for updated area designation recommendations and area specific analyses, EPA recommends that air agencies consider the designation categories and analysis factors discussed in Attachment 2 of this memorandum. States and tribes that choose to submit updated recommendations should identify the area boundaries and whether they recommend areas be designated as attainment/unclassifiable, nonattainment, or unclassifiable on the basis of currently available information such as the 2017-2019 monitoring data.^{4,5} States or tribes intending to submit exceptional events demonstrations for event-influenced SO₂ monitoring data from 2017 through 2019 should do so by May 1, 2020.

If EPA intends to modify a state's or tribe's designation recommendation (original or updated), we will notify the state or tribe no later than 120 days prior to promulgating the final designations (e.g., no later than August 13, 2020, for designations due to be promulgated by EPA's anticipated December 17, 2020, signature date). States and tribes will then have an opportunity to comment on EPA's intended modifications and provide additional information for EPA to consider with respect to a designation recommendation that EPA intends to modify. EPA does not expect to be able to consider any such information that is submitted after October 16, 2020. Submitting information in advance of this date will help ensure that EPA can fully consider any such information prior to issuing final designations. Also, although not required by statute, in order to consider public input in the designation process, we currently plan to provide a 30-day public comment period immediately following issuance of EPA's 120-day letters responding to the recommendations made by states.

While the language in CAA section 107 specifically addresses states, we intend to follow the same process for tribes, pursuant to section 301(d) of the CAA and the Tribal Authority Rule

⁴ The statutory definitions of attainment, nonattainment, and unclassifiable are described in CAA section 107(d)(1)(A)(i)-(iii). While states have and may continue to submit designations recommendations identifying areas as "attainment," EPA expects to continue its traditional approach of using the category of "attainment/unclassifiable" for these initial designations.

⁵ For areas in Round 4 that meet our definition of "attainment/unclassifiable," EPA notes this inversion, from previous rounds, of the order of the words "attainment" and "unclassifiable" in the amended term "attainment/unclassifiable area" has no consequence itself, and that there are no regulatory consequences of this change in, or clarified interpretation of, terminology to the areas in which the terms "attainment/unclassifiable" or "unclassifiable" are applied.

(40 CFR part 49). Therefore, we intend to designate tribal areas, in consultation with the tribes, on the same schedule as state designations.

Nonattainment Areas

Section 107(d)(1)(A)(i) of the CAA defines an area as “nonattainment” if it is violating the NAAQS or if it is contributing to a violation in a nearby area. Thus, the first step in making designation decisions is to identify areas for which appropriate data indicate a violation of the NAAQS.

In assessing whether monitoring data indicate a violation, EPA intends to use the most recent 3 consecutive years (i.e., 2017-2019) of quality-assured, certified ambient air quality data in the EPA Air Quality System (AQS) using data from Federal Reference Method and Federal Equivalent Method monitors that are sited and operated in accordance with 40 CFR parts 50 and 58.⁶ Procedures for using monitored air quality data to determine whether a violation has occurred are given in 40 CFR part 50 Appendix T, as revised in conjunction with the 2010 SO₂ NAAQS. We expect that in providing any updated recommendations to EPA by May 1, 2020 for the areas to be designated by December 31, 2020, states and tribes would review available SO₂ monitoring data from 2017-2019.

Ambient air quality monitoring data affected by exceptional events may be excluded from use in identifying a violation if they meet the criteria for exclusion, as specified in the final rule “Treatment of Data Influenced by Exceptional Events” (81 FR 68216; October 3, 2016) codified in 40 CFR parts 50 and 51. In Section VII.B of the SO₂ NAAQS final rule preamble, we discussed schedules for states and tribes to flag data influenced by exceptional events and submit related documentation specifically for SO₂ data used in the initial designations process. As previously noted, EPA did not designate all areas of the country in August 2013 and, consistent with the court order, is completing designations in multiple rounds by December 31, 2020. This extended designations schedule introduces additional years of monitoring data in which SO₂ concentrations may be influenced by exceptional events. Because the previously promulgated exceptional events data flagging and documentation submittal dates associated with SO₂ data that could be considered in prior rounds of the designations process have already passed, EPA is recommending new submittal dates in this guidance for data that could be used in Round 4 designations. State and tribal air agencies who wish EPA to be able to fully consider excluding exceptional event-affected SO₂ data for purposes of designations are asked to flag exceptional event data and submit an initial description in EPA’s AQS, and submit the associated exceptional event demonstrations no later than May 1, 2020. Additionally, air agencies are asked to notify their reviewing EPA Regional office as soon as possible about their intent to prepare and submit an exceptional event documentation.

EPA might consider, on a case-by-case basis, a designation other than nonattainment for areas where a source-oriented monitor has a design value above the NAAQS in two situations. The first situation is where the source in question has recently become subject to and is complying with federally enforceable SO₂ emission limits and modeling with those limits shows attainment

⁶ SO₂ air quality data are available from EPA's website at <https://www.epa.gov/outdoor-air-quality-data>.

of the 2010 SO₂ NAAQS, but the monitored design value does not yet account for these recent emissions reductions.⁷ The new SO₂ emissions limit should be federally enforceable and in effect before EPA finalizes area designations in December 2020 for it to be considered in determining what available information is representative of the current air quality conditions in the area.⁸ We believe that modeling of the new allowable emissions, which should follow the *Guideline on Air Quality Models* (Appendix W to 40 CFR part 51), provides a more accurate characterization of current conditions at the time of designation than does monitoring of past conditions.

The second situation is where the source in question has permanently and enforceably ceased operations prior to the area designation. In this case, EPA expects that the source would need to have surrendered its SO₂ emissions permit, such that its modeled allowable SO₂ emissions would be zero, before EPA could finalize the area designation in December 2020 as something other than nonattainment. Documentation would be needed from the state demonstrating that the SO₂ emissions permit has been revoked or invalidated.

We recommend that states engage with EPA to discuss any novel scenarios prior to EPA's distribution of 120-day letters in August 2020.

Determining Nonattainment Area Boundaries

Ambient SO₂ is a pollutant that arises from direct emissions, and SO₂ concentrations are generally expected to be highest relatively close to the source(s) and lower at farther distances due to dispersion. Thus, SO₂ concentration patterns resemble those of other directly emitted pollutants like lead and differ from those of photochemically-formed (secondary) pollutants such as ozone. A nonattainment area should contain the area violating the NAAQS (e.g., the area around a violating monitor or encompassing modeled violations), as well as any nearby areas (e.g., counties or portions thereof) that contain emissions sources contributing to the violation. (*See* CAA section 107(d)(1)(A)(i)). Accordingly, although we expect to continue to consider county boundaries as the analytical starting point for determining SO₂ nonattainment areas, an evaluation of five factors for each area may be considered in determining the geographic scope of a nonattainment boundary.

Thus, we recommend that states and tribes base their updated boundary recommendations on an evaluation of five factors: 1) ambient air quality data or dispersion modeling results; 2)

⁷ EPA used a similar approach to designate Cuyahoga County, Ohio, as attainment/unclassifiable in Round 3. Refer to the technical support document "Final Round 3 Area Designations for the 2010 1-hour Primary SO₂ National Ambient Air Quality Standard for Ohio" at <https://www.epa.gov/sites/production/files/2017-12/documents/32-oh-so2-rd3-final.pdf> and the "Responses to Comments on the EPA's Intended Round 3 Designations for the 2010 Sulfur Dioxide Primary National Ambient Air Quality Standard" at https://www.epa.gov/sites/production/files/2017-12/documents/so2_round_3_designations_response_to_comments_final.pdf.

⁸ In general, for the purpose of being used in the Round 4 designations process, one common example to create a federally enforceable SO₂ emissions limit is to establish a limit by using a SIP-approved new source review permit program, under which a permit's limit is federally enforceable upon its issuance. Another less common example could be to establish a limit in a title V permit followed by incorporating that limit into the SIP, provided that establishment of the limit implements an "applicable requirement" as defined under 40 CFR 70.2 that already applies to the source, such as a generally applicable provision in an EPA-approved SIP that prohibits sources from causing violations of NAAQS. The DRR would not be such an applicable requirement as defined by EPA's title V rules and should not serve as the authority for creating a title V permit limit.

emissions-related data; 3) meteorology; 4) geography and topography; and 5) jurisdictional boundaries, as well as other relevant available information. We believe it is appropriate to evaluate each potential nonattainment area on a case-by-case basis through consideration of these factors to determine an appropriate boundary that satisfies the statutory conditions. These factors are discussed in more detail in Attachment 2. Dispersion modeling, as discussed in the “SO₂ NAAQS Designations Modeling Technical Assistance Document” (SO₂ NAAQS Designations Modeling TAD), can be a helpful tool for evaluating the extent of monitored and modeled NAAQS violations, and contribution to such violations, because it allows the model user to simultaneously assess multiple factors.⁹ States and tribes may identify and evaluate other relevant factors or circumstances specific to a particular area.

While EPA generally believes that in the absence of other relevant information it is appropriate to use county boundaries to define nonattainment areas, we recognize that the five-factor analysis and other information may support a nonattainment area consisting of only a portion of a county. For example, a topographical feature may divide a county into two separate air basins or contributing sources may be clustered in only a portion of a county.¹⁰ For defining partial county boundaries, EPA recommends the use of well-defined jurisdictional lines such as township borders or other well-established geopolitical boundaries, and immovable landmarks such as major roadways or other permanent and readily identifiable physical features.

Unclassifiable Areas

In certain cases, there may be insufficient information to support a designation of nonattainment or attainment for an area. For example, there may be monitors that indicate an exceedance of the NAAQS, but the monitoring data may be incomplete, or the monitors may not be operated in accordance with the regulatory requirements of 40 CFR part 58. In recommending boundaries for an unclassifiable area, states should consider which nearby sources contribute to ambient air quality within the impacted area.

Attainment/Unclassifiable Areas

For Round 4, EPA may designate an area as attainment/unclassifiable if information indicates it meets the SO₂ NAAQS and does not likely contribute to a violation in a nearby area based on the most recent three years (i.e., 2017-2019) of ambient air quality monitoring data. Once EPA has determined the boundaries for nonattainment areas (areas that are violating the NAAQS or contributing to a nearby violation) and any unclassifiable areas, EPA intends to designate the remainder of the undesignated areas as attainment/unclassifiable. EPA requests that states and tribes recommend how they would draw the boundaries for their attainment/unclassifiable areas.

⁹ <https://www.epa.gov/sites/production/files/2016-04/documents/so2modelingtad.pdf>.

¹⁰ In the case of a contributing SO₂ source located very near a county boundary or state border, it may be appropriate for the corresponding nonattainment area to include portions of multiple counties or multiple states.

Additional Information

Staff members at EPA's Office of Air Quality Planning and Standards are available for assistance and consultation throughout the designations process. Questions on the designations process may be directed to Corey Mocka at (919) 541-5142 or *mocka.corey@epa.gov*. Modeling-related questions may be directed to Clint Tillerson at (919) 541- 2051 or *tillerson.clint@epa.gov*. Monitoring-related questions may be directed to Neelson Watkins at (919) 541-5522 or *watkins.neelson@epa.gov*.

Attachments (2)

ATTACHMENT 1

Timeline for 2010 Primary SO₂ NAAQS Designations Process – Round 4 Areas Associated with December 31, 2020, Court Ordered Deadline

Milestone	Date
States and tribes certify 2019 SO ₂ monitoring data	No later than May 1, 2020
States and tribes may submit updated recommendations and supporting information for area designations to EPA*	No later than May 1, 2020
States submit exceptional events demonstrations for event-influenced SO ₂ monitoring data from 2017-2019	No later than May 1, 2020
EPA notifies states and tribes concerning any intended modifications to their recommendations (120-day letters)	On or about August 13, 2020
EPA publishes public notice of state and tribal recommendations and EPA's intended modifications, initiating a 30-day public comment period	On or about August 26, 2020 (No later than 120 days prior to final designations)
End of 30-day public comment period	On or about September 25, 2020
In response to EPA's intended designations, states and tribes submit additional information, if desired, to demonstrate why EPA's proposed modification in the 120-day letter to the state's recommended designation or boundary is inappropriate	No later than October 16, 2020
EPA signs notice promulgating final SO ₂ area designations for Round 4	On or about December 17, 2020 (No later than December 31, 2020)

* For any remaining undesignated area (i.e., those areas that installed and began operating EPA-approved SO₂ monitoring networks pursuant to the DRR and that have not been previously designated).

ATTACHMENT 2

Determining Area Designations and Appropriate Nonattainment Area Boundaries for the 2010 SO₂ NAAQS

Designation Categories*		
Nonattainment	Attainment/Unclassifiable	Unclassifiable
<p>An area that, based on available information including (but not limited to) monitoring data and/or appropriate modeling analyses, EPA has determined either: (1) does not meet the 2010 SO₂ NAAQS, or (2) contributes to ambient air quality in a nearby area that does not meet the NAAQS.</p>	<p>An area that, based on available information including (but not limited to) appropriate monitoring data and/or modeling analyses, EPA has determined meets the NAAQS and determined that the available information indicates that the area does not likely contribute to ambient air quality in a nearby area that does not meet the NAAQS.</p>	<p>An area for which the available information does not allow EPA to determine whether the area meets the definition of a nonattainment area or the definition of an attainment/unclassifiable area.</p>

* The statutory definitions of attainment, nonattainment, and unclassifiable are described in CAA section 107(d)(1)(A)(i)-(iii). EPA may later refine these definitions consistent with the CAA to better reflect the Round 4 designations process.

Nonattainment Area Boundaries

EPA intends to use the county boundary as the analytical starting point for assessing the appropriate geographic boundaries of an SO₂ nonattainment area. The five factors listed below comprise a framework for area-specific analyses to support final boundary determinations. The information addressing these factors could include ambient air quality monitoring data and/or appropriate air quality dispersion modeling as recommended by the SO₂ NAAQS Designations Modeling TAD.

Developing Supporting Information (Factor Analysis)

As a framework for area-specific analyses to support final boundary determinations, EPA intends to evaluate the five factors listed below, as well as other relevant available information. The purpose of evaluating these factors is to determine the appropriate boundaries encompassing the area meeting the CAA’s definitions. Considered as a whole, results may support boundaries that are either larger or smaller than the analytical starting point.

1. **Ambient air quality data or dispersion modeling results.** As explained in the SO₂ NAAQS Designations Monitoring TAD, data from a properly sited monitoring network may be sufficient to establish that an area meets the SO₂ NAAQS. We intend to review SO₂ ambient air quality monitoring data, including the design value calculated for each monitor in the area, for the most recent 3-year period (i.e., 2017-2019). Areas where

monitoring data may indicate a violation of the 1-hour, 75 ppb primary SO₂ standard will be designated as “nonattainment.”¹ Source-oriented modeling may be used to assess the geographic extent of source(s) impacts that are causing the monitored NAAQS violations in a particular location. The SO₂ NAAQS Designations Modeling TAD provides further recommendations on using refined dispersion modeling for this type of air quality assessment. An area may be demonstrated to meet the SO₂ NAAQS if appropriate modeling analysis based on allowable emissions from relevant sources indicates no violations of the SO₂ NAAQS. When using modeling to evaluate the extent of a monitored violation, the portion of the modeling domain encompassing the violating receptors is an appropriate reference point for determining a nonattainment area boundary.

2. **Emissions-related data** (e.g., location of sources and potential contribution to ambient SO₂ concentrations). We intend to examine actual emissions of SO₂ from sources located in and around the violating area. Significant emissions levels in a nearby area indicate potential for the area to contribute to observed or modeled violations of the NAAQS. We intend to review, at a minimum, the 3 most recent years of emissions data, including data from the latest National Emissions Inventory or other relevant sources, such as state inventories or inventories from other federal sources (e.g., EPA’s Emissions Inventory System). We would also consider any additional information we receive on federally-enforceable emissions controls that are not reflected in recent inventories but which will require compliance before final designations are issued.
3. **Meteorology** (e.g., weather and transport patterns). We intend to evaluate meteorological data to help determine how weather conditions, including wind speed and direction, affect the plume of sources contributing to ambient SO₂ concentrations. This factor also can be assessed in the context of source-oriented dispersion modeling as recommended in the SO₂ NAAQS Designations Modeling TAD.
4. **Geography and topography** (e.g., mountain ranges or other air basin boundaries). We intend to examine the physical features of the land that might affect the distribution of SO₂ over an area. Mountains or other physical features may affect the distribution of emissions and may help define area boundaries.
5. **Jurisdictional boundaries** (e.g., counties, townships, air districts, pre-existing nonattainment areas, reservations, metropolitan planning organizations). For nonattainment areas, once the geographic area associated with the area violating the SO₂ NAAQS and the nearby area contributing to violations are determined, we intend to consider existing jurisdictional boundaries for the purposes of providing a clearly defined legal boundary for carrying out the air quality planning and enforcement functions for the area. If an existing jurisdictional boundary is used to help define the nonattainment area, it should encompass all of the area that has been identified as meeting the nonattainment definition. Where existing jurisdictional boundaries are not adequate to describe the nonattainment area, other clearly defined and permanent landmarks or physical features

¹ As noted above, EPA might consider, on a base-by-case basis, a designation other than nonattainment for areas where a source-oriented monitor has a design value above the NAAQS in two situations.

may be used. In certain cases, geographic coordinates may be appropriate, but geopolitical boundaries are preferred. For attainment areas, these same jurisdictional considerations may play a role in determining appropriate boundaries.

EPA plans to consider these factors, along with any other relevant information, in determining whether to make modifications to the designation and area boundary recommendations made by states and tribes. The factors listed above, while generally comprehensive, are not intended to be exhaustive. States and tribes may submit additional information they believe is relevant for EPA to consider. Any information provided to support a boundary recommendation for a nonattainment area should show that: 1) violations are not occurring in nearby portions that are excluded from the recommended nonattainment area; and 2) the excluded portions of the recommended nonattainment area do not contain emission sources that contribute to the violation. Any information provided to support a boundary recommendation for an attainment area should show that: 1) violations are not occurring in the recommended attainment area; and 2) the included portions of the recommended attainment area do not contain emission sources that may contribute to monitored or modeled violations outside the area boundary. EPA intends to designate an area as unclassifiable when available information does not allow EPA to determine whether the area meets the definition of a nonattainment area or the definition of an attainment/unclassifiable area.