

July 22, 2013

James Thurman and Neilson Watkins  
Office of Air Quality Planning and Standards  
U.S. Environmental Protection Agency  
109 T.W. Alexander Drive  
Research Triangle Park, NC 27709

Re: *Draft SO<sub>2</sub> NAAQS Designations Modeling Technical Assistance Document*  
*Draft SO<sub>2</sub> NAAQS Designations Monitoring Technical Assistance Document*

Dear Mr. Thurman and Mr. Watkins:

The Northeast States for Coordinated Air Use Management (NESCAUM) offers the following comments on the *Draft SO<sub>2</sub> NAAQS Designations Modeling Technical Assistance Document* and *Draft SO<sub>2</sub> NAAQS Designations Monitoring Technical Assistance Document* that were released by the U.S. Environmental Protection Agency (EPA) for public review on May 21, 2013. NESCAUM is submitting these comments as one document because they apply to both of the Draft Technical Assistance Documents (TADs). We refer to these documents throughout these comments as the Draft Modeling TAD and Draft Monitoring TAD, respectively, or as the Draft TADs when discussing issues that pertain to both.

NESCAUM thanks the EPA staff for their efforts in developing these Draft TADs and for providing us the opportunity to comment on them. NESCAUM is the regional association of air pollution control agencies representing Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

### **Unanswered Questions**

The Draft TADs are notable as much for what they include as for what they do not. Many questions remain. Which sources (i.e., above what emissions threshold) will be required to demonstrate compliance through modeling or monitoring? How will rural and urban areas be treated? Without certainty about the criteria that will be used to determine which sources should be included, we cannot fully anticipate the impact that the process will have on our states. As such, it is difficult to provide substantive comments about some aspects of these documents until the forthcoming Data Requirements Rule (directly referenced 22 distinct times in the Draft Monitoring TAD), other forthcoming rules, and associated guidance documents are released.

*Specification of Source Identification Criteria*

The importance of the emissions threshold cannot be overstated in the context of this designation process. In aggregate, the NESCAUM states have dozens of sources with emissions above 100 tpy, a threshold level that had been suggested and withdrawn by the EPA, but few over 1,000 tpy. Table 1 lists the number of sources in each of the NESCAUM states with actual emissions at or above emissions thresholds of 100 or 1,000 tpy. At emissions levels below 100 tpy, the number of sources increases dramatically. In some states in the NESCAUM region, the universe of sources with emissions of 25 tpy is four times as large as those with emissions greater than 100 tpy.

**Table 1. Number of Emission Sources with Actual SO<sub>2</sub> Emissions above Threshold Levels**

State	Threshold (tpy)	
	100	1000
Connecticut	4	0
Maine	13	0
Massachusetts	10	4
New Hampshire	8	2
New Jersey	12	4
New York	50	17
Rhode Island	2	0
Vermont	2	0

Sources: State average SO<sub>2</sub> emissions data: (2009-2011) unless otherwise marked, except Massachusetts (2008-2010), Rhode Island (2008-2010), and New Hampshire (2010-2012).

The EPA stated in the Draft Monitoring TAD that sources subject to analysis for this standard will be identified based on annual emissions and proximity to population areas (Section 2.1), but did not provide further details on the methodology of such an approach.

Comment: The Draft TADs represented an opportunity for the EPA to clarify the approach for identifying sources subject to modeling and/or monitoring requirements. Instead of supplying certainty in the process for designations under the 1-hour SO<sub>2</sub> NAAQS with the Draft TADs, the EPA has failed to release clear criteria for the identification of sources. Without these criteria, states will need to continue to wait for further guidance and rulemaking before pursuing designation modeling activities. States that proceed with modeling or monitoring will be at risk of needing to re-do modeling or relocate monitors to meet the future EPA rule. Data collected from the early efforts may conflict with data collected in accordance with the future rule, which could create public and regulatory confusion.

NESCAUM urges the EPA to outline a clear, straightforward approach for identifying sources subject to these requirements at the earliest opportunity to give states time to proactively work with sources and ensure attainment of the NAAQS.

### *Establishment of an Hourly Emissions Threshold*

In its September 2011 draft guidance for the SO<sub>2</sub> NAAQS, the EPA recommended that sources greater than 100 tpy be required to submit modeling for attainment demonstration. An annual emission rate can help in identifying sources that may cause or contribute to a violation of the SO<sub>2</sub> NAAQS, but some sources that cause or contribute to a violation of the standard and operate on a non-continuous basis may have emissions below the annual threshold. An hourly emission rate is more directly comparable to hourly concentrations.

Comment: When the EPA establishes the criteria for sources that must be modeled or monitored for purposes of designation of the 1-hour SO<sub>2</sub> NAAQS, the levels should include an hourly SO<sub>2</sub> emission rate above which monitoring or modeling for designation purposes will be required. Emissions rates based on annual averages (i.e., emissions reported in tons per year) should only be used for prioritization purposes, and should not be used to set an applicability threshold.

### *Need for Rulemaking*

States are sure to face legal challenges from regulated facilities and from citizen and advocacy groups over actions to determine attainment status around sources. States require rulemaking and guidance with regulatory backing that the Draft TADs do not provide. According to the EPA's February 6, 2013 SO<sub>2</sub> Strategy Document (*Next Steps for Area Designations and Implementation of the Sulfur Dioxide National Ambient Air Quality Standard*), release of the draft Data Requirements Rule had been targeted for June 2013. It now appears that this draft rule has been delayed until at least late 2013 or early 2014.

Comment: NESCAUM encourages the EPA to forestall any additional delays and publish a draft Data Requirements Rule and related guidance, along with any other related rules and technical documents, no later than early 2014, and then open an additional comment period for the Draft TADs before subsequent finalization. While helpful for planning purposes, the TADs simply do not provide the states with enough regulatory assurance for early analyses or actions.

## **Designation Schedule**

### *Designation Schedule for Monitored and Modeled Sources*

The Draft TADs outline a designation process that would treat similar sources differently depending on which assessment method each source selected. For instance, a source that modeled a violation of the 1-hour SO<sub>2</sub> standard and acknowledged that its emissions were causing or contributing to that violation would be designated as nonattainment in 2017 and begin emission reduction efforts; whereas an identical source could delay such efforts until at least 2020 by installing monitors in 2017. This discrepancy in designation schedule may create a perverse incentive for sources to delay the designation process until the latest possible date by selecting monitoring programs in 2017. This situation may result in additional emissions and near-source impacts from these sources from 2017 through 2020.

Comment: NESCAUM requests that the EPA outline a process that guards against sources seeking to delay emissions reductions by selecting the monitoring approach. For instance, a source may be required to explicitly justify why modeling is insufficient to determine whether an area is in nonattainment. Such a process would give the state discretion to approve a modeling program (with designation in 2017) instead of a monitoring program (with designation in 2020). To meet this timeline, we suggest that the EPA set a deadline for states to select an attainment designation approach for each applicable source by 2015.

## **Emissions**

### *Actual Emissions*

Section 5.2 of the Draft Modeling TAD (first paragraph) refers to the use of a simple approach to estimate hourly emissions for modeling by calculating an annual average hourly emission rate. The source's annual emissions of SO<sub>2</sub> would be divided by 8,760 hours per year to derive the hourly emission rate. As a result, those periods of high actual hourly SO<sub>2</sub> emissions that occur during the year would not be reflected in the modeling, but would be averaged throughout the year. This approach will underestimate ambient 1-hour SO<sub>2</sub> impacts from the source, and will significantly underestimate the 99<sup>th</sup> percentile impacts.

Comment: The guidance should state that this approach—i.e., using annual average emission rates to derive hourly emission rates—is not allowed. This annualized average approach is especially problematic for electric generating units (EGUs) that emit SO<sub>2</sub> at a high hourly rate, but only operate on a limited basis throughout the year.

### *Missing Emissions*

Gaps in data recorded by a continuous emissions monitoring system (CEMS) at sources presents a problem for modeling impacts of those emissions. Incorrectly assuming that there are little or no SO<sub>2</sub> emissions during those hours will result an under-prediction of impacts.

Comment: Guidance must be provided on filling in hours with missing CEMS data with a SO<sub>2</sub> emission rate. NESCAUM suggests gap filling using the 99<sup>th</sup> percentile emission rate.

### *Allowable Emissions*

Section 5.3 of the Draft Modeling TAD describes the procedure for using allowable emissions.

Comment: When allowable emissions are used, the SO<sub>2</sub> emission rate used in the modeling must reflect a 24-hour or shorter allowable SO<sub>2</sub> emission limit. If there is currently no short-term allowable emission limit for the source, a new short-term emission limit should be designated for the source and used in the modeling.

## Meteorological Data

### *Use of On-Site Meteorological Data*

Section 7.1 of the Draft Modeling TAD states the following:

*The most recent 3 years of meteorological data should be used in the designations modeling to allow the modeling to simulate a monitor. This use of 3 years of data for designations differs from the usual meteorological data requirements in other regulatory applications (NSR, PSD, or SIP) of dispersion modeling, which require at least one year of site-specific data or five years of representative NWS data, not necessarily from the most recent years.*

There are a number of regulated sources in the NESCAUM states—but particularly in Maine—that had previously collected site-specific (on-site) stack-top<sup>1</sup> meteorological data, many of which had collected five-years of multi-level meteorological data in strict accordance with the EPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (EPA-454/R-99-005). Unfortunately, once these sources collected a valid five-year dataset, the on-site data programs were typically discontinued, many of them terminating data collection in the mid-1990s.

Comment: Site-specific data is typically considered the 'gold-standard' benchmark for dispersion modeling. While the National Weather Service (NWS) has indeed made great strides in improving the collection of its surface data for use in dispersion modeling, we disagree that single-level NWS data, even when incorporating improvements such as the AERMINUTE algorithm, could ever be considered superior or more accurate than site-specific, multi-level data, regardless of age.

We fully comprehend what the TAD is attempting to do: to pair the most recent three years of meteorological data with concurrent emissions data (such as hourly CEMS data) to provide a current representation of local dispersion characteristics and modeled impacts. However, we disagree with sources using NWS/ASOS data when historical on-site data are available, especially when these NWS/ASOS data are collected at airport sites that may be far removed from the modeled source (sometimes as far as 50-100 miles) and may potentially not be fully representative of the meteorological conditions near the modeled source.

The TAD should provide additional guidance as to how historical site-specific data can be utilized in the analysis, rather than basing the SO<sub>2</sub> analysis solely on NWS/ASOS data for purposes of meeting the most recent three year requirement. One possible approach for incorporating older on-site data would be to match the meteorological data from each of the most recent three years at the representative NWS/ASOS station with a historical on-site data year using the annual wind roses and a set of criteria designed for such data matching. Such an

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<sup>1</sup> Stack top is generally taken as the height of the tallest stack at the facility.

approach would fulfill the requirement of using the most recent meteorological data to inform the modeling analysis, while maintaining the advantages of using site-specific data.

## **Interstate and Inter-regional Issues**

### *Establishment of Roles and Responsibilities*

Neither of the Draft TADs addresses situations that may arise when sources are located near the border between two states or EPA regions. Coordination between states (and regions) is critical to creating a successful program to mitigate emissions from such sources.

Comment: The EPA must define the roles and responsibilities of states, the EPA regional offices, the EPA Headquarters, and other federal agencies when analysis of modeling results suggests that a monitor be placed in a different state (and even EPA region) from that of the SO<sub>2</sub> emissions source. If the maximum impact from a modeled source using the procedures outlined in the Draft Modeling TAD is predicted to occur in a neighboring state, then the process for notifying states and the EPA, developing a sufficient monitoring plan (if warranted), and conducting any necessary monitoring needs to be clearly addressed in the documents. This will avoid any potential confusion and outline a course of action when potential violations that affect a neighboring state are discovered through modeling.

### *Approval of Monitoring Network Designs*

The SO<sub>2</sub> regulation (75 FR 119, June 22, 2010) identifies both monitoring and modeling as suitable approaches to determine stationary sources' compliance with the 1-hour SO<sub>2</sub> NAAQS. The modeling TAD precisely specifies which models and parameters must be used to make the results consistent from one application in one state to another in any other state. Conversely, the Draft Monitoring TAD leaves the full responsibility for designing monitoring networks to state agencies, subject to Regional EPA Administrator approval.

*Since each situation will be case-specific, the TAD will not recommend minimum criteria for a number of SO<sub>2</sub> monitors in a network or an area to characterize air quality in order to satisfy the anticipated data requirements rule. As noted earlier, specific elements of a network, including the appropriate number of monitors would be determined through analysis and subsequent discussion with the EPA for eventual approval by EPA Regional Administrators.*

Comment: A nationally uniform network design is necessary to provide public protection from pollutants, to provide a consistent regulatory structure for facility owners, and to ensure that monitoring resources are utilized in an efficient manner. The EPA must establish and approve only adequate minimum network design. This will insure network consistency and avoid legal challenges to the monitoring programs undertaken by state agencies in gathering data to meet the forthcoming Data Requirements Rule.

## Monitoring Issues

### *Funding of Source-Oriented Monitoring Networks*

There are no new EPA funds for this network, and continuation of future 103/105 grant funding at current levels is uncertain at best. The EPA suggests that non-required monitors be shut down to free resources (both equipment and staff time) for these new networks. However, there are few to no un-needed monitors in state networks in the NESCAUM region; the culling process has been ongoing for several years now. Any source-oriented monitoring for a given facility will likely be required to be funded by that facility. Even with this approach, there will be a significant increase in state agency efforts to oversee these facility networks. Monitoring sites require regular performance audits, monitoring data requires review for quality control, and new sites will be required to be included in state network plans.

Comment: In light of these budget constraints, NESCAUM requests that the EPA address the funding gap for whatever monitoring program may be required during the designation process.

### *Use of Passive Sampling for Exploratory Monitoring to Support Source-Oriented Monitoring Location*

In the Draft Monitoring TAD, the EPA discourages the use of passive samplers during exploratory monitoring to determine where (or where not) to locate a fixed-site monitor, and suggests that new continuous sensor technologies be employed for this purpose. A continuous monitor provides highly-time resolved data (1-hour or less) and requires electricity and other infrastructure. Conversely, passive gas samplers are simple devices without any pump or electronics that are typically deployed for many days to a few weeks, providing a single average value over that interval. Modeling will always be the first step in assessing ideal placement. Sampler placement for exploratory monitoring would be based on modeling results and thus be considered a complementary site evaluation approach rather than a primary approach.

Continuous sensor technologies for SO<sub>2</sub> may become more readily available but must be capable of generating data of useful quality for this purpose. Passive samplers can also be used for exploratory monitoring. The EPA deployed a passive sampler network for preliminary assessment of siting for measurement of near-road nitrogen dioxide (NO<sub>2</sub>) pursuant to the 1-hour standard for that pollutant.<sup>2</sup> The low cost and ease of deployment of passive samplers allows for deployment at more sites relative to continuous sensors.

Comment: NESCAUM suggests that both continuous and passive samplers be recommended as options for exploratory monitoring. NESCAUM recognizes the limitations of a one to two week integrated sample to assess placement of sites for 99<sup>th</sup> percentile hourly concentrations over a three-year period. The low cost and ease of deployment of passive samples are advantages that must be considered against the disadvantage of the long sampling interval. Data from passive

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<sup>2</sup> <http://www.epa.gov/ttnamti1/nearroad.html>

samplers can be used to remove a site from consideration if the integrated SO<sub>2</sub> is close to background levels. This has as much value as confirming that a site is likely to experience maximum 1-hour SO<sub>2</sub> concentrations. While there is uncertainty about the temporal pattern at a passive sampler site with elevated SO<sub>2</sub>, real-time emissions and on-site wind data specific to the sampling period would enhance the value of the passive sampler data in the context of confirming a location for measurement of short-term peak concentrations.

#### *Monitor Placement*

The draft Monitoring TAD does not address issues that may arise in monitor placement that prevent siting at the maximal location indicated through modeling. In some cases—when terrain precludes monitoring at the area of highest expected impacts, for instance—a monitor will be placed at a location that is not where the model predicts the highest maximum concentrations. When this situation arises, states need clear guidance on how to determine whether a violation may exist despite the monitor's placement, most likely using a combination of monitoring and modeling data.

Comment: The EPA should address the situation when monitors are placed in non-maximal concentration locations in its guidance, and specify whether and how states may use modeling data to augment monitoring data to determine an area's attainment status.

State officials tasked with placing monitors must have latitude to interpret modeling results and make decisions about monitor placement using a range of locations corresponding to the highest 20 percent of modeled values. The EPA should state that the modeling output should be treated as a guide, rather than a specific requirement, for siting the monitors to determine compliance.

#### *Number of Monitors*

In its Draft Monitoring TAD, the EPA refers several times to the state, local, or tribal air agency determining where a "sufficient number of SO<sub>2</sub> monitors" may be sited to properly characterize the source impacts, but does not specify what that number is. Of course, the number will need to be determined on a case-specific basis. Multiple monitoring sites may not be necessary if the maximum impact area can be assessed with a single monitor given three years of representative data.

Comment: The EPA should specify that when monitoring is required, exactly one monitor should usually be sufficient to characterize a source, and that additional monitors must be sufficiently justified before that approach be selected. Additional monitors may be necessary when the primary monitor has recorded 1-hour average SO<sub>2</sub> concentrations greater than 50 percent of the level of the NAAQS, or if the modeled maximum impact area(s) is located in two distinct geographical regions, due to unusual terrain features, for example. NESCAUM agrees that the EPA should not specify an upper limit to the number of monitors that should be placed around a source.

### *Extended Monitoring*

Due to a combination of factors—market forces chief among them—many coal-fired sources are not currently operating on a continuous basis. If monitoring is conducted while the source only operates occasionally, results may show that no violation exists. As a result, monitoring may be discontinued due to low source utilization. In the future, however, coal utilization may increase at these sources. If market or other forces compel the source to increase its operations, violations may arise in the future. The Draft Monitoring TAD does not specify whether in such situations extended monitoring may be required.

Comment: NESCAUM requests that the EPA describe in detail the process for extending monitoring at sources, including when such extended monitoring will be required. For example, it may be practical to require that permitted emissions be no higher than those that occur during source monitoring as a condition for discontinuation of source monitoring. Alternatively, the source could perform a modeling demonstration in order to maintain or obtain higher permitted emission limits.

### *Monitoring Prior to the Deadline*

Regarding the timeline of monitor placement, there are many questions remaining about situations that may arise if the monitor is sited earlier. It is unclear from the Draft Monitoring TAD whether a monitoring program may be started prior to 2017 in time for the 2020 designation deadline. If a monitor is placed prior to the release of the rule, and the rule indicates that the state should have acted differently, will the state be compelled to change the location of the monitor?

Comment: NESCAUM urges the EPA to fully address how to treat monitors that were sited prior to the release of the forthcoming rule, associated guidance, and final TAD(s).

### *Specification of Monitoring Shutdown Conditions*

The Draft Monitoring TAD does not discuss the conditions under which a monitor set up for the purposes of area designation could be shut down and removed from the state's monitoring network plan. Such conditions will be critical to identifying monitoring sites that are no longer needed to characterize a source so that resources can be allocated elsewhere. Existing monitoring stations may be available for reallocation to higher priority sites. For instance, some population weighted emissions index (PWEI) monitors are maintained in locations remote from sources and are recording data far below the NAAQS. In some cases, data from these PWEI monitors are redundant with data recorded at National Core (NCore) site monitors.

Comment: NESCAUM urges the EPA to specify criteria under which the state could shut down a site. Such criteria should include: assurance that source emission rates will not rise above the rates when monitoring occurred; retirement of the source; installation of control devices; changes

in fuel; or other conditions that would be expected to result in substantial reductions of SO<sub>2</sub> from the source.

In situations when a PWEI monitor consistently records peak SO<sub>2</sub> data below 25 percent of the NAAQS, or where PWEI monitors are redundant with NCore monitors, the EPA should grant states discretion to close the PWEI site under the condition that it be used as a source-specific monitor, subject to regular monitoring network design processes, including public comment.

### **Summary Recommendation**

States need to plan for the designation process by conducting realistic modeling and using the modeling results in an informed manner to develop a monitoring approach, if necessary. As such, NESCAUM recommends that the TADs be combined into a single document upon finalization. A single document is warranted because of the interrelatedness of the topics and in how the document(s) will be used by the states during the designation planning process.

If you have any questions regarding the issues raised in these comments, please contact Leiran Biton of NESCAUM at 617-259-2027.

Sincerely,



Arthur N. Marin  
Executive Director

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