

NOTE TO REVIEWERS: UPDATE TO DRAFT SILs GUIDANCE

DATE: August 18, 2016

The draft guidance, first posted on August 1, 2016, had two inadvertent errors (both on page 11) that have been corrected.

- The first error on page 11, in Table 2, was an incorrect set of recommended PM_{2.5} Class I PSD increment SILs; the originally posted value for the 24-hour averaging period was 0.07 µg/m³ but should be 0.27 µg/m³, and for the annual averaging period, 0.04 µg/m³ was listed but should be 0.05 µg/m³.
- The second error on page 11, in footnote 44, was a phrase that incorrectly referred to “NAAQS” instead of “PSD increments” in describing the class area ratio.

No changes have been made to any of the supporting documents posted with the draft guidance. Please ensure that comments are made on the revised draft guidance that includes the above corrections. The public comment period closes on September 30, 2016.

[DRAFT] MEMORANDUM

SUBJECT: Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program

FROM: Stephen D. Page, Director
Office of Air Quality Planning and Standards

TO: Regional Air Division Directors, 1-10

The purpose of this memorandum is to provide guidance on compliance demonstration tools for use with ozone and fine particles (PM_{2.5}) in the Prevention of Significant Deterioration (PSD) permitting program. The Environmental Protection Agency has developed a new analytical approach and has used it to identify a significant impact level (SIL) for each ozone and PM_{2.5} National Ambient Air Quality Standard (NAAQS) and the PM_{2.5} PSD increments. We recommend that permitting authorities¹ consider using these values to help determine whether a proposed PSD source² causes or contributes to a violation of the corresponding NAAQS or PSD increments. The supporting technical document³ provides a detailed discussion of the technical analysis used to develop these values. The supporting legal memorandum provides further detail on a legal basis that permitting authorities may choose to adopt to support using SILs to show that requirements for obtaining a PSD permit are satisfied.⁴ This memorandum provides the results of the technical analysis and information on the particular points in the PSD air quality analysis at which permitting authorities may decide to use these values on a case-by-case basis in the review of PSD permit applications.⁵ This memorandum and the supporting documents

¹ Permitting authorities include the EPA, state, local and tribal permitting authorities.

² As used in this memorandum, “PSD source” means a construction or modification of a major stationary source triggering PSD permitting requirements.

³ “Technical Basis for the EPA’s Development of Significant Impact Thresholds for PM_{2.5} and Ozone”; EPA/XXX-X-XX-XXX, [DATE]

⁴ Legal Support Memorandum: Application of Significant Impact Levels in the Air Quality Demonstration for Prevention of Significant Deterioration Permitting under the Clean Air Act,” [DATE]

⁵ The term “case-by-case basis” is used in this memorandum to refer to a permitting authority’s use of a SIL value in a particular air quality analysis in an individual PSD permitting action when the SIL value has not been adopted in the state’s EPA-approved PSD SIP rules (or the federal PSD rules, as applicable) pursuant to section 165(a)(3) of the Clean Air Act (CAA). When the SIL value has not been adopted into the applicable PSD rules, the permitting authority’s record of each PSD permitting action in which a SIL is used must contain a justification demonstrating that the particular level and use of the SIL value is consistent with the CAA and applicable PSD rules. The permitting authority’s justification may make use of the policy, legal and technical analysis documents developed by the EPA. We note that in a broader sense, all PSD permit reviews are “case-by-case” under section 165(a) of the CAA; in this memorandum, for clarity we refer to the case-specific nature of PSD permit reviews as “permit-specific” when not discussing the use of a SIL value by a permitting authority on a case-by-case basis.

are not final agency actions and do not create any binding requirements on permitting authorities, permit applicants or the public.

I. INTRODUCTION

When a PSD permit applicant has shown through air quality modeling that the projected impact from a proposed source is less than a SIL value for a particular pollutant, the EPA believes there is a valid analytical and legal basis for the permitting authority to conclude that this showing is sufficient to demonstrate that the proposed source will not cause or contribute to a violation of a NAAQS or PSD increment for that pollutant. Permitting authorities may elect to use the SILs discussed below, and the EPA has provided policy, technical and legal analyses that permitting authorities may choose to adopt or adapt in supporting their use of the SILs in particular PSD permitting actions. The use of SILs can help satisfy PSD requirements while conserving resources for applicants and permitting authorities.

The EPA has previously issued guidance describing particular uses of SILs.^{6,7,8,9} Permitting authorities have long had the discretion to apply SILs on a case-by-case basis in the review of individual permit applications, provided such use was justified in the permitting record.¹⁰ In an effort to reduce the need for case-by-case justification by permitting authorities, in 2010, the EPA finalized a rule to codify particular PM_{2.5} SIL values and specific applications of those values,¹¹ but in subsequent litigation the EPA found an inconsistency between the preamble and regulatory text, and the court granted the EPA's request to vacate and remand the inconsistent regulatory text.¹²

Following the litigation, the EPA initially began developing a new rule to address the inconsistencies identified in the 2010 rulemaking.¹³ However, after further evaluation and the identification of a revised set of SIL values based on the technical and legal analyses described below, the EPA believes it should first obtain experience with the application of these values in the permitting program before establishing a generally applicable rule.¹⁴ In addition, permit applicants and permitting authorities have

⁶ Memorandum from Stephen D. Page, EPA OAQPS, to EPA Regional Air Division Directors, "Guidance Concerning the Implementation of the 1-hour SO₂ NAAQS for the Prevention of Significant Deterioration Program," August 23, 2010.

⁷ Memorandum from Stephen D. Page, EPA OAQPS, to EPA Regional Air Division Directors, "Guidance Concerning the Implementation of the 1-hour NO₂ NAAQS for the Prevention of Significant Deterioration Program," June 29, 2010.

⁸ Memorandum from Stephen D. Page, EPA OAQPS, to OAQPS Personnel and EPA Regional Modelers, "Modeling Procedures for Demonstrating Compliance with PM_{2.5} NAAQS," March 23, 2010.

⁹ Memorandum from Gerald A. Emison, EPA OAQPS, to Thomas J. Maslany, EPA Air Management Division EPA Region 3, "Air Quality Analysis for Prevention of Significant Deterioration (PSD)," July 5, 1988.

¹⁰ Order Responding to Petitioner's Request that the Administrator Object to Issuance of a State Operating Permit, In the Matter of CF&I Steel, L.P. dba EVRAZ Rocky Mountain Steel, Petition Number VIII-2011-01, at 15-17 (May 31, 2012) ("Rocky Mountain Steel Order"); In re: Mississippi Lime Company, 15 E.A.D. 349, 375-379 (EAB 2011).

¹¹ 75 FR 84864 (October 20, 2010).

¹² *Sierra Club v. EPA*, 705 F.3d 458 (D.C. Cir. 2013). In its litigation brief at n. 10, the EPA stated an intent to issue guidance in the near future concerning PM_{2.5} SIL values remaining in 40 CFR 51.165(b). The EPA issued such guidance in May 2014. Memorandum from Stephen D. Page, EPA OAQPS, to EPA Regional Air Division Directors, "Guidance for PM_{2.5} Permit Modeling," May 20, 2014.

¹³ Fall 2015 Regulatory Agenda, USEPA, 80 FR 78024, December 15, 2015. Ozone and Fine Particulate Matter (PM_{2.5}) Significant Impact Levels (SILs) for Prevention of Significant Deterioration (PSD), RIN: 2060-AR28. <http://www.reginfo.gov/public/do/eAgendaViewRule?pubId=201510&RIN=2060-AR28>.

¹⁴ See *SEC v. Chenery Corp.*, 332 U.S. 194, 199-203 (1947) (recognizing that some principles may warrant further development before they are ready to be codified in a rule of general applicability).

communicated a need for the EPA to develop SIL values for ozone on an expedited basis. As a result, the EPA intends at this point to take a two-step approach.

First, the EPA is providing non-binding guidance so that we may gain valuable experience and information as permitting authorities use their discretion to apply and justify the application of the SIL values identified below on a case-by-case basis in the context of individual permitting decisions. We will be seeking to learn generally about permitting agencies' experiences in applying SILs in particular PSD permitting decisions. We will also be seeking more specific information, including how often and in what types of settings the application of a SIL at the single-source assessment and cumulative assessment stages of the PSD air quality analysis has made a critical difference in whether a conclusion was reached that the proposed source will not cause or contribute to a NAAQS or PSD increment violation. The EPA intends to obtain this information through its own PSD permitting activities in states that do not have SIP-approved PSD programs, regular discussions between our regional offices and air agencies, regular conference calls with the permitting committees of national organizations of air agencies, and technical conferences of air quality modelers and others interested in permitting activities.

Second, the EPA will use this experience and information to assess, refine and, as appropriate, codify SIL values and specific applications of those values in a future, potentially binding rulemaking.¹⁵ During this second step, to assess whether it is appropriate to codify the particular SIL values derived using EPA's technical methodology or to codify revised values, the EPA will consider what SIL values are suitable in all locations and circumstances to show that an increase in air quality concentration below the corresponding SIL value does not cause or contribute to a violation of the NAAQS or PSD increments. Until the EPA conducts a rulemaking, permitting authorities retain discretion to use or not to use the EPA-derived SILs in particular PSD permitting actions. If a permitting authority chooses to use these or other SIL values on a case-by-case basis, it must justify the values and their use in the administrative record for the permitting action.

Since the 2010 rulemaking, the EPA has examined the legal basis for using SIL values in PSD air quality impact analyses. In addition, the EPA has sought to develop an improved technical methodology for deriving SIL values. This memorandum and supporting documents are the products of this effort. They identify specific SIL values for ozone and PM_{2.5} and provide a supporting justification that permitting authorities may choose to apply on a case-by-case basis. The values and supporting justification are designed so that permitting authorities can choose to apply the SIL values at any location to demonstrate that a proposed source does not cause or contribute to a violation of air quality standards. In contrast to the 2010 rulemaking, we have developed separate SIL values for the PM_{2.5} NAAQS and PSD increments, and we have developed SILs for the ozone NAAQS. Since there are no PSD increments for ozone, the EPA has not developed SILs for ozone.

The EPA believes that the application of these SILs in the manner described below would be sufficient in most situations for a permitting authority to conclude that a proposed source will not cause or contribute to a violation of an ozone or PM_{2.5} NAAQS or PM_{2.5} PSD increment. However, this guidance is not a final agency action and does not reflect a final determination by the EPA that any particular

¹⁵ The EPA does not at present have a schedule for a future rulemaking on ozone and PM_{2.5} SILs, but we will review the status from time to time. This rulemaking will continue to appear in the EPA's regulatory agendas under longer-term actions until we develop a specific schedule.

proposed source, or class of proposed sources, does not cause or contribute to a violation or may obtain a PSD permit. A determination that a proposed source does not cause or contribute to a violation can only be made by a permitting authority on a permit-specific basis after consideration of the permit record. This guidance is not legally binding and does not affect the rights or obligations of permit applicants, permitting authorities, or others. The SIL values identified by the EPA have no practical effect unless and until permitting authorities decide to use those values in particular permitting actions. The experience of permitting authorities in using these SILs on a case-by-case basis, or in choosing to limit or forego their use in specific situations, will be valuable information for the EPA to consider in a future rulemaking. Permitting authorities retain the discretion to apply and justify different approaches and to require additional information from the permit applicant to make the required air quality impact demonstration, consistent with the relevant PSD permitting requirements.

II. BACKGROUND

A PSD permit applicant must demonstrate that “emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of any” NAAQS or PSD increment.¹⁶ The EPA has reflected this requirement in its PSD regulations.¹⁷ The CAA does not specify how a permit applicant or permitting authority is to make this demonstration, but section 165(e) authorizes the EPA to determine how the analysis is to be conducted, including the use of air quality models. In accordance with this authority, the EPA has promulgated regulations that identify such models and the conditions under which they may be used in the PSD program to make the demonstration required under the Act.¹⁸

Using the models identified in EPA regulations, there are two basic ways that a PSD permit applicant can demonstrate that the proposed source’s emissions will not cause or contribute to a violation of any NAAQS or PSD increment. One way is to demonstrate that no such violation is occurring or projected to occur in the area affected by the emissions from the proposed source.¹⁹ A second way is to demonstrate that the emissions from the proposed source do not cause or contribute to any identified violation of the NAAQS or PSD increments.²⁰

The Act does not define “cause” or “contribute.” Reading these terms in context, the EPA has historically interpreted this provision in section 165(a)(3) of the CAA and associated regulations to mean that a source must have a “significant impact” on ambient air quality in order to cause or contribute to a violation.²¹ Thus, the EPA and other permitting authorities have concluded that a proposed source may meet the requirements in CAA section 165(a)(3) and the EPA’s PSD regulations by showing that its projected impact on air quality at the site of a modeled violation is below a level of air quality impact considered to be significant.²²

¹⁶ Section 165(a)(3) of the CAA. The EPA interprets the phrase “in excess of” to mean a violation, not the exceedance described in 40 CFR 50.1(l).

¹⁷ 40 CFR 51.166(k); 40 CFR 52.21(k).

¹⁸ 40 CFR 51.166(l); 40 CFR 52.21(l); 40 CFR part 51, Appendix W (Guideline on Air Quality Models).

¹⁹ 1990 Draft NSR Workshop Manual at C.51.

²⁰ 40 CFR part 51, App. W, § 10.2.3.2(a); 1990 Draft NSR Workshop Manual at C.52.

²¹ *In re Prairie State Generating Co.*, 13 E.A.D. 1, 105 (EAB 2006). This EAB opinion includes a long discussion of EPA’s prior guidance with other examples.

²² 1990 Draft NSR Workshop Manual at C.52.

Historic Use of SILs

In the context of section 165(a)(3) of the CAA, the EPA has historically used pollutant-specific concentration levels known as “significant impact levels” to identify the degree of air quality impact that “causes, or contributes to” a violation of a NAAQS or PSD increment.²³ Consistent with EPA guidance, proposed sources have met the requirement to demonstrate that they do not cause or contribute to a violation by showing that the ambient air quality impacts resulting from the proposed source’s emissions would be below these concentration levels.²⁴ The SIL values have served as a compliance demonstration tool to make the required demonstration in the PSD program. They have helped to reduce the burden on permitting authorities and permit applicants to conduct often time-consuming and resource-intensive air dispersion modeling where such modeling was unnecessary to demonstrate that a permit applicant meets the requirements of section 165(a)(3), consistent with the procedures set forth originally in 1977 in the “Guidelines for Air Quality Maintenance Planning and Analysis, Vol 10 (Revised) and Procedures for Evaluating Air Quality Impact of New Stationary Sources.”²⁵

Recent Status of SILs for Ozone and PM_{2.5}

Stakeholders have long sought compliance demonstration tools for ozone and secondarily-formed PM_{2.5}. In July 2010, Sierra Club petitioned the EPA to designate computer models to use in determining if major proposed sources of air pollution cause or contribute to violations of the ozone or PM_{2.5} NAAQS. In January 2012, the EPA granted the petition and committed to engage in rulemaking to evaluate whether updates to Appendix W are warranted and, as appropriate, incorporate new analytical techniques or models for ozone and secondarily-formed PM_{2.5}. In granting the petition, the EPA explained that the “complex chemistry of ozone and secondary formation of PM_{2.5} are well-documented and have historically presented significant challenges to the designation of particular models for assessing the impacts of individual stationary sources on the formation of these air pollutants.”²⁶ Because of these considerations, the EPA’s past judgment had been that it was not technically sound to designate with particularity specific models that must be used to assess the impacts of a single source on ozone and secondarily-formed PM_{2.5} concentrations. Instead, the EPA established a consultation process with permitting authorities for determining (on a permit-specific basis) the analytical techniques that should be used for single-source analyses for both ozone and secondarily-formed PM_{2.5}.

The EPA has responded to the Sierra Club petition by proposing revisions to Appendix W.²⁷ As discussed in the Appendix W proposed language, recent technical advances have made it reasonable for the EPA to provide more specific guidelines that identify appropriate analytical techniques or models that may be used in compliance demonstrations for the ozone and PM_{2.5} NAAQS. The EPA expects that the final Appendix W revisions will include criteria and process steps for choosing single-source analytical techniques or models to estimate ozone impacts from precursor nitrogen oxide and volatile organic compound emissions. The ozone SIL value recommended in this guidance is intended to

²³ 61 FR 38250, 38293 (July 23, 1996); 72 Fed. Reg. 54112, at 54139 (September 21, 2007).

²⁴ 1990 Draft NSR Workshop Manual at C.51-C.52.

²⁵ October 1977, U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711. Specific applications of how SILs have been used in the PSD program are discussed later in this memorandum.

²⁶ Letter from Gina McCarthy, Assistant Administrator, EPA Office of Air and Radiation, to Robert Ukeiley, Sierra Club, January 4, 2012.

²⁷ 80 FR 45340 (July 29, 2015).

complement the Appendix W updates by providing a threshold that may be used to determine whether an impact predicted by the chosen technique or model causes or contributes to a violation. With respect to PM_{2.5}, the EPA expects the final Appendix W revisions will include criteria and process steps for choosing single-source analytical techniques or models to assess concentrations of direct and secondarily-formed PM_{2.5}.

In the 2010 PM_{2.5} SILs rule, the EPA established SIL values for PM_{2.5} in paragraph (k)(2) of 40 CFR 51.166 and 52.21 of the PSD regulations. In January 2013, the U.S. Court of Appeals for the District of Columbia Circuit granted the EPA's request to vacate and remand the paragraph (k)(2) provision in both PSD regulations so the EPA could correct them.²⁸ Paragraph (k)(2) as promulgated in 2010 included numerical values of PM_{2.5} SILs and statements about their role in completing an air quality impact analysis with regard to the PM_{2.5} NAAQS and PSD increments. Specifically, the 52.21(k)(2) rule text stated that if the impact of a proposed source seeking a federal PSD permit were below the relevant SIL value(s), then the proposed source would be deemed to not cause or contribute to a violation. The 51.166(k)(2) rule text stated that a state's PSD rules could contain a similar provision. The EPA asked the court to vacate and remand the (k)(2) paragraphs of both PSD regulations so that the EPA could correct an inconsistency between (1) that rule text, which left no discretion for the permitting authority, and (2) our statements in the preamble to the 2010 PM_{2.5} SILs rule, which identified circumstances where it may not be appropriate for a permitting authority to rely solely on the PM_{2.5} SILs as a basis for concluding that a proposed source does not cause or contribute to a violation.²⁹

The court left intact the PM_{2.5} NAAQS SIL values contained in 40 CFR 51.165(b)(2), because the regulatory text therein did not say that a showing that a proposed source has an impact equal to or less than the SIL value is always deemed to not cause or contribute. The regulatory text contained at 51.165(b)(2) says that, at a minimum, an impact greater than the listed SIL must be considered significant, but does not compel the opposite conclusion for impacts equal to or below that value.³⁰

III. RECOMMENDED SIL VALUES FOR USE IN AIR QUALITY IMPACT DEMONSTRATION REQUIRED TO OBTAIN A PSD PERMIT

As discussed above, the EPA has interpreted the phrase “cause, or contribute to” in section 165(a)(3) of the Act to mean that a proposed source is prevented from obtaining a permit if the proposed source will have a “significant impact” on air pollutant concentrations that violate the standards. In this context, the EPA believes permitting authorities may read the phrase “cause, or contribute to” to be inapplicable to an air quality impact that is insignificant. This interpretation is more fully explained in the legal support

²⁸ *Sierra Club v. EPA*, 294 F.3d 155, 160 (D.C. Cir. 2002).

²⁹ These preamble statements were the following: “[N]otwithstanding the existence of a SIL, permitting authorities should determine when it may be appropriate to conclude that even a *de minimis* impact will ‘cause or contribute’ to an air quality problem and to seek remedial action from the proposed new source or modification.” See 75 FR 64864 at 64892. “[T]he use of a SIL may not be appropriate when a substantial portion of any NAAQS or increment is known to be consumed.” See 75 FR 64864 at 64894. “[W]e earlier provided an example of when it might be appropriate to require a modified source to mitigate its contribution to a violation of a NAAQS or increment even when the predicted ambient impact of the proposed emissions increase would result in what is normally considered to be *de minimis*.” See 75 FR 64864 at 64894.

³⁰ Section 165(b)(2) is phrased such that an impact equal to the listed value is treated the same as impacts below the listed value. This contrasts to the approach in (k)(2), and in this guidance, that an impact equal to the SIL is treated the same as impacts above the SIL.

memorandum. In this context, the EPA believes an insignificant impact is an impact on air quality concentrations that is small and not meaningful. (The EPA has often described such an impact as “trivial” or “*de minimis*”.)

The term “contribute,” as used in the context of section 165(a)(3), is ambiguous. In the absence of specific language in section 165(a)(3) regarding the degree of contribution that is required (such as the term “significantly”), the EPA has the discretion under this provision to exercise its judgment to determine the degree of impact that “contributes” to adverse air quality conditions based on the particular context in which the term “contribute” is used. The EPA may also identify criteria or factors that may be used to determine whether something “contributes,” including qualitative or quantitative criteria that are appropriate to the particular context.³¹ For purposes of implementing section 165(a)(3) of the Act, the EPA has found it more expedient and practical to use a quantitative threshold (expressed as a level of change in air quality concentration) to determine whether increased emissions from proposed construction or modification of a source will contribute to air quality concentrations in violation of applicable standards. The EPA believes that the permitting process can be streamlined without compromising air quality, if the EPA and permitting authorities are able to identify a quantitative threshold or dividing line between an insignificant and significant impact on air pollutant concentration. Using a quantified threshold for this purpose is permissible as long as the EPA or the appropriate permitting authority provides a reasoned explanation for why impacts below that value do not constitute a contribution to a violation in this context.

To determine what is (and is not) a significant impact in the context of section 165(a)(3) of the Act, the EPA has generally supported using the values in 40 CFR 51.165(b).³² The EPA has described these levels as “significance levels.”³³ Section 51.165(b)(2) was originally promulgated by the EPA in 1987 as part of an offset program that permitting authorities could apply after it was determined that construction at a stationary source was predicted to cause or contribute to a violation of the NAAQS.³⁴ This regulation provides that a proposed source planning to locate in an attainment area will be considered to “cause or contribute to” a violation of the NAAQS if its impact would exceed specific values identified in the regulations. For example, section 51.165(b) states that a proposed source impact any larger than 5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for the 24-hour SO_2 NAAQS causes or contributes to a violation of that NAAQS. The section refers to these values as “significance levels.” Values are not provided for every NAAQS, and in particular not for ozone (and until 2010 not for $\text{PM}_{2.5}$), but for those NAAQS

³¹ See *Catawba County, N.C. v. EPA*, 571 F.3d 20, 39 (D.C. Cir. 2009). In this case interpreting the term “contributes” in section 107(d) of the CAA, the court held that the EPA is not required to establish a quantitative or objective, bright-line test to define a contribution by sources to adverse air quality conditions in a nearby area in the context of designations with respect to attainment of a NAAQS. The court recognized that the EPA has the discretion to use a totality-of-the-circumstances test if the agency defines and explains the criteria that it is applying. While this opinion said that a quantified threshold is not required to define contribution in the context of section 107(d), the court’s reasoning does not preclude PSD permitting authorities from choosing to use a quantitative level of impact to represent a contribution to a violation of the NAAQS or PSD increment when implementing section 165(a)(3) of the CAA.

³² Emison Memo at footnote 5 references 40 CFR 51.165(b), which defines “significant,” and the NSR Workshop Manual at C.26-C.28 lists values from 40 CFR 51.165(b)(2) for the purpose of defining the area of “significant ambient impact.”

³³ The EPA initially promulgated these same concentration values in 1979 as the “significance levels” under which a source locating in the “clean” portion of a nonattainment area may be exempt from the preconstruction review requirements in Appendix S to Part 51, 44 FR 3274, 3283 (January 16, 1979).

³⁴ 52 FR 24672, 24713 (July 1, 1987).

covered in this regulation, the application is the same. Over time, these air quality concentration significance levels in section 51.165(b) have become known as “significant *impact levels*”³⁵ [emphasis added] in order to distinguish them from the significant *emissions rates* reflected in the definition of the term “significant,” which serve a different function in the PSD program.³⁶ The EPA has also issued guidance memoranda that have provided recommended SIL values for the 1-hour NO₂ and SO₂ NAAQS, to be used for the purpose of determining what are (and are not) significant impacts for these pollutants.³⁷ The EPA has also observed that permitting authorities have discretion to develop their own SIL values, provided that such values are properly supported in permitting authority actions or decisions in which the values are used to make the required showing.³⁸

The EPA’s basis for the values in section 51.165(b)(2) of its regulations has generally been a percentage of the applicable PSD increments for each pollutant. The EPA used a similar approach in 2010 to add PM_{2.5} values to section 51.165(b)(2) and establish PM_{2.5} values in sections 51.166(k)(2) and 52.21(k)(2). However, given limitations in the rationale supporting them, the EPA recognized in the preamble to the 2010 PM_{2.5} SILs rule that a permitting authority may not be able to apply the SIL values derived through this approach in every situation to show that proposed construction does not cause or contribute to a violation of standards. The EPA acknowledged that “the use of a SIL may not be appropriate when a substantial portion of any NAAQS or increment is known to be consumed.” The EPA also said that “notwithstanding the existence of a SIL, permitting authorities should determine when it may be appropriate to conclude that even a *de minimis* impact will ‘cause or contribute’ to an air quality problem and to seek remedial action from the proposed new source or modification.”³⁹ To guard against the improper use of the 2010 SILs for PM_{2.5} in such circumstances, the EPA later recommended that permitting authorities use those SILs only where they could establish that the difference between background concentrations in a particular area and the NAAQS was greater than those SIL values.⁴⁰ This approach was intended to guard against misuse of the SILs that were based on a percentage of the PM_{2.5} PSD increments.

Since that PM_{2.5} modeling guidance was issued, the EPA has developed a new technical method for determining a concentration level that can be considered an insignificant impact on air pollutant concentrations for ozone and PM_{2.5} in the context of PSD permitting. This technical method, referred to as the air quality variability approach, is described in the supporting technical document. Given the improvements reflected in this method, the EPA does not see a need for permitting authorities to show that the difference between background concentrations and the relevant NAAQS is greater than the SIL

³⁵ The first reference to “significant impact levels” is in the 1980 NSR Workshop Manual, which the EPA subsequently updated in the 1990 draft. It is worth noting that the 1977 comments to the proposed Appendix W rule (45 FR 58543) addressed whether a single-source screening technique should be used to determine if a cumulative modeling analysis would be required in a preconstruction review; industry and state agency comments indicated both groups favored some use of a tool to alleviate resource burden.

³⁶ Section 52.21(b)(23) also uses the term “significance” and applies discrete values for determining if a proposed source is significant. This regulation states that significance is any net emissions increase equal to or exceeding 40 tons per year (TPY) for ozone, and, for direct emissions of PM_{2.5}, 10 TPY (40 TPY for SO₂ and 40 TPY NO₂ unless demonstrated not to be a PM_{2.5} precursor).

³⁷ Page memoranda at footnotes 5 and 6.

³⁸ 77 FR 37038 (June 20, 2010); 14 E.A.D. 723 (EAB 2010).

³⁹ 75 FR 64864, 64892.

⁴⁰ Memorandum from Stephen D. Page, EPA OAQPS, to EPA Regional Air Division Directors, “Guidance for PM_{2.5} Permit Modeling,” May 20, 2014.

value before applying one of the recommended PM_{2.5} SIL values, as previously stated. The EPA's intention with this new method is to derive SIL values that are more universally applicable to a range of conditions, including those where a substantial portion of the NAAQS or PSD increment is known to be consumed. The EPA does not consider its qualifying statements from the preamble of the 2010 rule (quoted in the prior paragraph) to be applicable to the PM_{2.5} SIL values derived with this new method; however, permitting authorities retain discretion to decide to apply or not to apply SILs as a general matter, or in particular permitting actions based on information in the administrative record.

In order for a concentration level to be used to show that the air quality impact of a proposed source does not cause or contribute to a violation of the NAAQS or PSD increment, the concentration value must represent a level of impact on ambient air quality that is insignificant or not meaningful. An insignificant impact on air pollutant concentrations can be identified and quantified based on an assessment of the variability of air quality, using data from the U.S. ambient PM_{2.5} and ozone monitoring network. Due to fluctuating meteorological conditions and changes in day-to-day source operations, there is an inherent variability in the air quality in the area of a monitoring site. This variability can be characterized through the application of a well-established statistical framework for quantifying uncertainty in population statistics. The analysis described in the supporting technical document quantifies the fluctuations in pollutant concentrations (as measured by design values) and, for each NAAQS, determines a value for a concentration difference that is meaningful in the context of inherent variability. Changes of less than this magnitude may be considered to be in the "noise" of observed design values. This technical analysis provides a basis for a permitting authority to conclude that concentration increases below this SIL do not cause or contribute to violations of the relevant NAAQS or PSD increments.

SILs for NAAQS

Using this air quality variability approach, the EPA derived SIL values for the 8-hour ozone NAAQS and each PM_{2.5} NAAQS averaging period, which are applicable to attainment and unclassifiable areas. The SIL values for the NAAQS are listed in Table 1. Each SIL value is based on the level, averaging period and statistical form of its corresponding NAAQS. For example, for ozone the recommended SIL value is based on the 4th highest daily maximum 8-hour concentration, averaged over 3 years. The derived value from the air quality variability analysis is 1.0 parts per billion (ppb), and we recommend the case-by-case application of this value as the SIL for the 8-hour ozone NAAQS.

For the 24-hour PM_{2.5} NAAQS, the SIL value we recommend is 1.2 µg/m³. The derived value from the air quality variability analysis is 1.3 µg/m³ and is based on an analysis of the 98th percentile 24-hour concentrations averaged over 3 years; however, 40 CFR 51.165(b)(2) still lists 1.2 µg/m³ as the SIL value for the 24-hour PM_{2.5} NAAQS, and, pending further evaluation by the EPA, we recommend it for maintaining consistency with the rule. In the 2010 PM_{2.5} SILs rulemaking, the EPA determined that an impact above this value will be considered to cause or contribute to a violation of the 24-hour PM_{2.5} NAAQS at any location that does not meet this standard. In the same rule, the EPA also sought to establish that an impact below this value would not cause or contribute to a violation of this NAAQS but acknowledged that there could be circumstances where this conclusion was not always valid. Even though the ambient air quality variability approach indicates that an impact below 1.3 µg/m³ is not significant, 51.165(b)(2) remains in the EPA's regulations and the agency is presently bound by its prior conclusion (that an impact above 1.2 µg/m³ is significant and will cause or contribute to a violation of

the 24-hour PM_{2.5} NAAQS). Thus, the EPA cannot conclude at this time that an impact between 1.2 µg/m³ and 1.3 µg/m³ is an insignificant impact or an impact that will not cause or contribute to a violation of the NAAQS. However, based on the ambient air quality variability approach, the EPA is able to conclude that impacts below 1.2 µg/m³ are insignificant at any location and will not cause or contribute to a violation of the NAAQS.⁴¹ The case-by-case use of this recommended SIL value should be justified in the record for each permit.

For the annual PM_{2.5} NAAQS, we recommend 0.2 µg/m³ as the SIL value, which is the value derived from the air quality variability analysis and is based on a 3-year average of annual average concentrations. The case-by-case use of this recommended SIL value should be justified in the record for each permit. This value is lower than the value of 0.3 µg/m³ listed in 51.165(b)(2). Since section 51.165(b)(2) does not address whether an impact below 0.3 µg/m³ causes or contributes to a violation of the NAAQS, permitting authorities retain the discretion under this provision to determine on a case-by-case basis whether an impact between 0.2 µg/m³ and 0.3 µg/m³ will cause or contribute to a violation of the annual PM_{2.5} NAAQS. Based on the ambient air quality variability approach, the EPA's judgment is that an impact below 0.2 µg/m³ is insignificant and should be considered to not cause or contribute to any violation of the annual PM_{2.5} NAAQS that is identified.

Table 1. Recommended SIL Values for Ozone and PM_{2.5} NAAQS

Criteria Pollutant (NAAQS level)	NAAQS SIL concentration
Ozone 8-hour (70 ppb)	1.0 ppb
PM _{2.5} 24-hour (35 µg/m ³)	1.2 µg/m ³ *
PM _{2.5} annual (12 µg/m ³ or 15 µg/m ³)	0.2 µg/m ³

* The table takes into account the SIL value for the 24-hour PM_{2.5} NAAQS that is in section 51.165(b)(2). Refer to the guidance discussion for details.

We recommend that these SIL values apply everywhere, regardless of the class of the airshed.⁴² For PM_{2.5}, this recommendation is different than what was provided in the vacated (k)(2) paragraphs, where the SIL value that would be used for NAAQS purposes was different for Class I areas than for Class II and III areas. The EPA recognizes that, historically, Congress has provided special protections to Class I areas, via PSD increments. The EPA believes that because each ozone and PM_{2.5} NAAQS is uniform throughout the class areas, no class-specific protection via SILs is necessary when assessing whether a source causes or contributes to a violation of the NAAQS.

⁴¹ 40 CFR 165(b)(2) provides that a source impact higher than one of the listed significance levels is to be considered significant. A source impact exactly equal to a significance level need not be considered significant. In contrast, in this memorandum, consistent with past guidance, we are recommending that a value exactly equal to a recommended SIL be considered significant. Thus, these two approaches treat a value equal to the stated level differently. In practice, we do not expect this to be a practical difference because it will be very unusual for a source's impact to exactly equal one of the recommended SIL values.

⁴² When Congress established the PSD program requirements under the 1977 CAA Amendments, it included specific numerical increment levels for SO₂ and particulate matter (expressed at that time as "total suspended particulate") for Class I, II and III areas. Congress designated Class I areas (including certain national parks and wilderness areas) as areas of special national concern, where the need to prevent deterioration of air quality is the greatest. Consequently, the PSD increments are the smallest in Class I areas. The increments of Class II areas are larger than those of Class I areas and allow for a moderate degree of emissions growth. Class III areas have the largest increments, but to date no Class III areas have been designated. The EPA subsequently defined Class I, II and III increments for NO₂ and PM₁₀, and PM_{2.5} in multiple rulemakings.

SILs for PSD Increment

There are no PSD increments established for ozone, and, thus, no ozone SIL values are needed for PSD increment compliance purposes. We used the air quality variability approach to develop increment SILs for the PM_{2.5} PSD increments (Table 2), but in an indirect way. The SIL values for the PM_{2.5} PSD increments are derived from the NAAQS SIL values and reflect that, under the PSD regulations, the allowable PSD increment values are different for Class I, II and III areas. For Class II areas (which comprise most of the U.S.) and Class III areas (of which there are currently none), we recommend that the values of the NAAQS SILs also be used for PSD increment SILs. For Class I areas, we are recommending annual and 24-hour PSD increment SIL values that are lower than the NAAQS SIL values. The EPA recognizes that Class I areas have historically been provided special protection.⁴³ To achieve this additional protection, we applied the ratios of the Class I and Class II allowable PSD increments to the NAAQS SIL values derived in our technical analysis.⁴⁴ The EPA believes these values for Class I areas will continue to reflect this higher level of protection through the PSD increment SILs.

Table 2. Recommended SIL Values for PM_{2.5} Increment

Criteria Pollutant (averaging period)	PSD increment SIL concentration		
	Class I	Class II	Class III
PM _{2.5} (24-hour)	0.27 µg/m ³	1.2 µg/m ³	1.2 µg/m ³
PM _{2.5} (annual)	0.05 µg/m ³	0.2 µg/m ³	0.2 µg/m ³

IV. APPLICATION OF SILS

The EPA recommends that permitting authorities consider using these SIL values for PM_{2.5} and ozone on a case-by-case basis at the same points in the PSD air quality analysis as SIL values historically have been used in the PSD program, as described below, with one exception regarding defining the spatial extent for modeling.

First, permitting authorities may elect to use the SIL values reflected in this memorandum in a preliminary (single-source) analysis that considers only the impact of the proposed source in the permit application on air quality to determine whether a full (or cumulative) impact analysis is necessary before reaching a conclusion as to whether the proposed source would (or would not) cause or contribute to a violation.⁴⁵ A model result predicting that a proposed source's maximum impact will be below the corresponding SIL value recommended above generally may be considered to be a sufficient demonstration that the proposed source will not cause or contribute to a violation of the applicable NAAQS or PSD increment. If the single-source analysis shows that a proposed source will not have a significant impact on air quality, permitting authorities may generally conclude there is no need to conduct a cumulative impact analysis to assess whether there will be any violations of the NAAQS or

⁴³ The CAA section 169A declares a national goal of preventing future and remedying any existing impairment of visibility in Class I areas.

⁴⁴ The Class I PSD increment SIL value starts with the NAAQS SIL value as the base number and is further constrained by the ratio of the associated Class I and II PSD increments. For the annual PM_{2.5} NAAQS, the NAAQS SIL value is reduced by the ratio of 1:4, because the Class I PSD increment is 1 µg/m³ and the Class II PSD increment is 4 µg/m³. The ratio of 2:9 is used for the 24-hour PM_{2.5} NAAQS. For the 24-hour NAAQS, we are using the 51.165(b)(2) value of 1.2 µg/m³ as our base number.

⁴⁵ 1990 Draft NSR Workshop Manual at C.24-C.25, C.51.

PSD increment. However, upon considering the permit record in an individual case, if a permitting authority has a basis for concern that a demonstration that a proposed source's impact is below the relevant SIL value at all locations is not sufficient to demonstrate that the proposed source will not cause or contribute to a violation, then the permitting authority should require additional information from the permit applicant to make the required air quality impact demonstration.

Second, where the preliminary analysis described in the prior paragraph is not sufficient, permitting authorities may choose to use the recommended SIL values in a cumulative impact analysis for a NAAQS, which, in addition to the proposed source, includes the impact of existing sources (on and offsite), and the appropriate background concentration. The EPA has described this application of a SIL as a "culpability analysis."⁴⁶ Where a cumulative impact analysis predicts a NAAQS violation, the permitting authority may further evaluate whether the proposed source will cause or contribute to the violation by comparing the proposed source's modeled contribution to that violation to the corresponding SIL value. If the modeled impact is below the SIL value at the violating receptor during the violation, the EPA believes this will be sufficient in most cases for a permitting authority to conclude that the source does not cause or contribute to (is not culpable for) the predicted violation; thus, allowing the permit to be issued. If the proposed source's modeled impact is higher than or equal to the SIL value at the violating receptor during a violation, then a permit should not be issued unless (1) further modifications are made to the proposed source to reduce the proposed source's impact to an insignificant level at the affected receptor during the violation, or (2) the proposed source obtains sufficient emissions reductions from other sources to compensate for its contribution to the violation.⁴⁷

Third, permitting authorities may decide to use the SIL values recommended above in a cumulative impact analysis for a PSD increment. According to 40 CFR 51.166(c)(1) and 52.21(c), an allowable PSD increment based on an annual average may not be exceeded and the allowable PSD increment for any other time period may be exceeded during one such period per year at any one location. In either case, the PSD increment SILs recommended above may be used to determine if the proposed source will cause or contribute to that exceedance. If the cumulative impact analysis shows an annual average PM_{2.5} PSD increment exceedance or a 24-hour PSD increment exceedance at a location, then the comparison of the proposed source's impact at that location during the exceedance to the corresponding SIL value may be used to determine whether the proposed source will cause or contribute to the exceedance(s) at that receptor. If the modeled impact is below the SIL and all other PSD requirements are met, then the permitting authority may conclude that the source does not cause or contribute to a violation of the PSD increment.

Finally, SILs have been used in defining the spatial extent of the modeling domain for a cumulative impact analysis. Because an impact from a proposed source below a SIL value is considered not to cause or contribute to a violation, the EPA has previously recognized that there was no informational value in placing modeling receptors farther from the proposed source than the most distant point at which the proposed source's impact is equal to or greater than the applicable SIL value. Streamlining the modeling demonstration to reduce the number of receptors to those of value in determining if the proposed source will cause or contribute to a violation of the applicable NAAQS or PSD increment has enabled permit applicants and reviewers to complete the required modeling with a reasonable effort. As discussed

⁴⁶ *Prairie State*, 13 E.A.D. at 100; *Mississippi Lime*, 15 E.A.D. at 374.

⁴⁷ 1990 Draft NSR Workshop Manual at C.52-C.53; this latter alternative is referred to as a PSD offset, and state implementation plans may include an offset program based on federal regulations at 40 CFR 51.165(b).

earlier, the EPA recently proposed updates to its Guideline on Air Quality Models. The revisions include providing an appropriate, revised basis for determining the modeling domain for NAAQS and PSD increment assessments. Once finalized, the revised Appendix W will be the appropriate resource to use when considering the extent of the modeling domain.

The SILs identified in this memorandum should not influence Air Quality Related Values analyses, which are independent reviews by the Federal Land Managers during the application review process.

Before a rulemaking is conducted and subject to limitations described in this memorandum, we recommend that permitting authorities consider using the values in the above tables on a case-by-case basis to support air quality analyses and demonstrations required for issuance of PSD permits. Permitting authorities that implement the PSD program under an EPA-approved implementation plan may also choose to use these recommended SILs. Since this memorandum is neither a final determination nor a binding regulation, permitting authorities retain the discretion not to use SILs as described here, either in specific cases or programmatically.

To ensure an adequate record, any PSD permitting decision that is based on the guidance in this memorandum should incorporate the information contained in this memorandum and the supporting technical and legal supporting documents. The permitting authority should also consider any additional information in the record that is relevant to making the required demonstration.

The permitting authorities also retain the discretion to use other values that may be justified separately from this memorandum as levels of insignificant impact, subject to one limitation for the PM_{2.5} NAAQS. Since the EPA has established by regulation that a PM_{2.5} impact greater than certain values will cause or contribute to a violation of the relevant NAAQS, permitting authorities may not use a value higher than 1.2 µg/m³ for the 24-hour PM_{2.5} NAAQS or a value higher than 0.3 µg/m³ for the annual PM_{2.5} NAAQS. Because ozone is not addressed in section 51.165(b)(2), permitting authorities are not precluded from developing a higher ozone NAAQS SIL value than recommended in this guidance. Likewise, section 51.165(b)(2) does not address PSD increments and, thus, does not constrain the discretion of a permitting authority to use a higher SIL value that a permitting authority may develop for increment purposes. Permitting authorities are also not precluded from developing and using lower SIL values than recommended in this guidance. The case-by-case use of a SIL value should be supported by a comparable record in each instance that shows that the value represents a level below which a proposed source does not cause or contribute to a violation of the NAAQS or PSD increment.

Please inform your permitting authorities of the guidance provided by this memorandum. If you have questions regarding policy or general implementation, please contact Raj Rao at rao.raj@epa.gov or (919) 541-5344. For questions regarding the supporting technical document, please contact Tyler Fox at fox.tyler@epa.gov or (919) 541-5562. For questions regarding the supporting legal document, please contact Brian Doster at doster.brian@epa.gov or (202) 564-1932.