



# **Draft Guidance on Ozone and Fine Particle (PM<sub>2.5</sub>) Significant Impact Levels (SILs) for the Prevention of Significant Deterioration (PSD) Permitting Program**

## **Webinar Presentation**

August 24, 2016



## Webinar Overview

- Background on SILs in the PSD program
- Draft SILs Guidance and Supporting Documents Overview
- Guidance Memorandum
- Technical Basis for SILs
- Legal Considerations for SILs
- Recommended SIL values for NAAQS and PSD Increments
- Informal Public Comment Period



## Background of SILs in the PSD Program

- PSD is the major source NSR program in attainment areas. In order to obtain a permit to construct, a proposed PSD source (source), among other requirements, must demonstrate that it will not **cause or contribute** to a violation of the NAAQS or PSD increments.
- SILs have been used in the PSD permitting program for determining compliance with both the NAAQS and PSD increments for many years.
- Historically, a SIL is a PSD compliance demonstration tool used by the source to evaluate its air quality impact. SILs have been used to determine:
  - The geographic extent for the modeling analysis;
  - Whether a source needs to perform a cumulative analysis; and
  - Whether the results from the cumulative analysis indicate the source's impact causes or contributes to a violation of the NAAQS or PSD increments.



## Background of SILs in the PSD Program, *cont.*

- In 2010, EPA promulgated annual and 24-hour PM<sub>2.5</sub> SILs.
- During litigation, EPA found an inconsistency between the preamble and some of the regulatory text in the 2010 rule. As a result, EPA asked the court to vacate and remand 40 CFR 51.165(k)(2) and 52.21(k)(2).
- In 2013, the court granted EPA's request to vacate and remand the promulgated PM<sub>2.5</sub> SILs.
- Significance levels for PM<sub>2.5</sub> in 40 CFR 51.165(b)(2) are not affected by the vacatur and remand and are still in effect.



## Background of SILs in the PSD Program, *cont.*

- EPA has not previously developed a SIL for ozone.
- EPA is in the process of finalizing a rulemaking to revise the Air Quality Modeling Guidelines (40 CFR Part 51, Appendix W), which includes more specific guidance on particular models and analytical techniques to be used for single source modeling of ozone (and secondary PM<sub>2.5</sub>) impacts.



# Draft SILs Guidance and Supporting Documents Overview

- The guidance is not a final agency action and is not binding for industry, permitting authorities, or the public. It consists of:
  - A guidance memorandum that identifies recommended SIL values for ozone and PM<sub>2.5</sub> and describes how these values may be used in a PSD compliance demonstration; and supporting documents including:
    - A technical basis document (with appendices) describing how EPA developed the SIL values for PM<sub>2.5</sub> and ozone; and
    - A legal support document that discusses a legal basis that permitting authorities may choose to apply if allowing sources to use SILs as part of their compliance demonstrations.
- The guidance memorandum, technical basis and legal support documents are intended to be included in any permit record where the recommended SILs are used.



## Guidance Memorandum

- The memorandum (and supporting documents) were first posted for informal public review on August 1<sup>st</sup>. Inadvertent errors were found in the memorandum; they have since been corrected and the revised draft memorandum was reposted on August 18<sup>th</sup>.
- The memorandum:
  - Summarizes the history of SILs;
  - Discusses the recommended uses for SILs and the discretion permitting authorities have in using SILs;
  - Recommends SIL values for ozone NAAQS and PM<sub>2.5</sub> NAAQS and PSD increments; and
  - Summarizes the technical basis for the recommended values.



## Technical Basis for SILs

- Quantification of a “significant impact” is based on the inherent variability in air quality due to changes in weather (transport and transformation) and emissions (e.g., source operations, traffic patterns).
- This variability can be described and quantified by applying standard statistical techniques to ambient data from the national monitoring network.
- The results from the statistical analysis have been used to determine the amount of variability that typically occurs for ozone and PM in relation to the level and form of each ozone and PM<sub>2.5</sub> NAAQS.
- This analysis provides a basis for a permitting authority to conclude that concentration increases below the SIL do not cause or contribute to violations of the relevant NAAQS or PSD increments.



## Technical Basis for SILs, *cont.*

- The statistical analysis:
  - Is based on the same ambient data used to determine design values at each monitor reporting data to AQS over the study period (2000-2014).
  - Accounts for the form of the NAAQS.
  - Estimates variability with a bootstrapping technique (non-parametric resampling with replacement) and determines “confidence intervals” around each design value.
  - Aggregates the variability from the national network to a single national value, which is:
    - Based on relative variability rather than absolute variability (determined as a percentage of the NAAQS); and
    - Has no observed national spatial bias trends.
  - Includes several sensitivity analyses for:
    - Temporal trends (inter-annual and intra-annual); and
    - Regional spatial variability (comparisons of near-by monitors).



## Technical Basis for SILs, *cont.*

- Study results indicated that:
  - There were not apparent spatial biases, so EPA has chosen to aggregate the results from individual monitors to a single national value in determining a national value for SIL that is consistent with the historical approach of the Agency.
  - The relative variability had no trends across the range of design values, so EPA has chosen to average the relative variability from all monitors.
    - EPA can determine a percentage-based variability estimate that can be applied to the level of the NAAQS to produce a SIL with units comparable to the NAAQS.
    - Percentage variations are easily converted to concentration values (the mathematical form commonly used for SILs).



## Technical Basis for SILs, *cont.*

- Applying the study to SILs
  - A goal of the analysis was to determine what impact levels would not be significant.
    - EPA has selected the 50% confidence interval to represent a level of change that can be considered statistically insignificant.
  - EPA has determined that the representativeness of air quality is best achieved by averaging the national variability from the three most recent 3-year design value periods, which will reflect recent air quality and also remove any bias from unusual years.



# Legal Considerations for SILs

- Sections 165(a)(3) and 165(e)(1) of the Clean Air Act (Act) require
  - a proposed source subject to the PSD program to “demonstrate ... that emissions... will not cause, or contribute to, air pollution in excess of any” NAAQS or PSD increment, and
  - an analysis of “ambient air quality at the proposed site and in areas which may be affected by emissions from such facility”.
- There are two basic ways to make the demonstration required by section 165(a)(3).
  - Demonstrate that no NAAQS or PSD increment violation is projected to occur in the area potentially affected by emissions from the proposed source; or
  - Demonstrate that emissions from the proposed source is not projected to cause or contribute to a NAAQS or PSD increment violation.



## Legal Considerations for SILs, *cont.*

- Congress gave EPA the responsibility of defining how a proposed source is to demonstrate whether it will cause or contribute to a NAAQS or PSD increment violation.
- There is no specific language in the Act regarding the degree of contribution that is required, so EPA has the discretion to determine the degree of impact that “contributes” under section 165(a)(3).
- SILs may be part of a demonstration that a proposed source has an insignificant impact that will not cause or contribute to a NAAQS or PSD increment violation if the SILs are properly supported in the permitting record by a permitting authority choosing to use SILs.



## Recommended SIL Values: NAAQS

- NAAQS are not class-specific (i.e., Class I,II,III); therefore, ozone and PM<sub>2.5</sub> NAAQS SILs do not need class-specific values.
- For PM<sub>2.5</sub>:
  - The analysis resulted in similar NAAQS SIL values for PM<sub>2.5</sub> as promulgated in the 2010 SILs rule: **1.3 µg/m<sup>3</sup> (24-hr)** and **0.2 µg/m<sup>3</sup> (annual)**.
  - 51.165(b)(2) values are still in effect and these values constrain the upper limits for PM<sub>2.5</sub> NAAQS SILs: **1.2 µg/m<sup>3</sup> (24-hr)** and **0.3 µg/m<sup>3</sup> (annual)**.
  - We recommend the most conservative values that are provided overall from the 2010 rule and the technical analysis.

Criteria pollutant (NAAQS level)	Recommended NAAQS SIL concentration
Ozone 8-hour (70 ppb)	<b>1.0 ppb</b>
PM <sub>2.5</sub> 24-hour (35 µg/m <sup>3</sup> )	<b>1.2 µg/m<sup>3</sup></b>
PM <sub>2.5</sub> annual (12 µg/m <sup>3</sup> or 15 µg/m <sup>3</sup> )	<b>0.2 µg/m<sup>3</sup>*</b>

\*The permitting authority has discretion to interpret an annual impact between 0.2 µg/m<sup>3</sup> and 0.3 µg/m<sup>3</sup> as significant.



# Recommended SIL Values: PSD Increments

## ■ Ozone:

- There is currently no PSD increment for 8-hour ozone NAAQS; therefore the guidance does not provide a recommended SIL value for an ozone increment.

## ■ PM<sub>2.5</sub>:

- The PM<sub>2.5</sub> PSD increment SILs were included in the 2010 rule remand and vacatur.
- EPA recognizes that Class I areas have historically been provided special protection by relying on more stringent increments.
- EPA views the ratio of the Class I and Class II PSD increments as the additional protection Congress intended for the Class I areas; that protection is reflected in this guidance by applying the Class I and Class II increment ratio to the NAAQS SIL in creating each PM<sub>2.5</sub> PSD Class I increment SIL.

$$PM_{2.5} \text{ PSD Class I increment SIL} = \text{NAAQS SIL} \times \frac{\text{Class I increment}}{\text{Class II increment}}$$



## Recommended SIL Values: PM<sub>2.5</sub> PSD Increments, *cont.*

- For Class I PSD increment SIL values, we have applied the equation in the previous slide to the recommended NAAQS SIL values.
- For Class II and Class III PSD increment SIL values, we recommend the NAAQS SIL values in this guidance.

PM <sub>2.5</sub> Annual PSD increments, increment SILs	Concentrations, µg/m <sup>3</sup>		
	Class I	Class II	Class III
Increments	1	4	8
2010 rule PSD increment SILs	0.06	0.3	0.3
Recommended PSD increment SILs	<b>0.05*</b>	<b>0.2</b>	<b>0.2</b>

PM <sub>2.5</sub> 24-hr PSD increments, increment SILs	Concentrations, µg/m <sup>3</sup>		
	Class I	Class II	Class III
Increments	2	9	18
2010 rule PSD increment SILs	0.07	1.2	1.2
Recommended PSD increment SILs	<b>0.27*</b>	<b>1.2</b>	<b>1.2</b>

\*Class I PSD increment SIL values were listed incorrectly in the initial draft guidance, posted on August 1<sup>st</sup>. They have since been corrected; please refer to the August 18<sup>th</sup> version for these correct values.



# Informal Public Comment Period

- EPA has posted the guidance for 60 calendar days for informal public review and comment through **September 30, 2016**.
- Guidance can be accessed through the following sites:
  - <https://www.epa.gov/nsr/forms/significant-impact-levels-ozone-and-fine-particles-prevention-significant-deterioration>
  - <http://www3.epa.gov/ttn>, EPA's Technology Transfer Network (TTN) SCRAM website, under the Recent Additions section
- Comments can be submitted through the host website or the following email address: [SILguidance@epa.gov](mailto:SILguidance@epa.gov).
  - Please ensure memorandum comments are in response to the version dated August 18<sup>th</sup>, which corrects inadvertent errors on the original August 1<sup>st</sup> draft.
- For questions:
  - Memorandum – Raj Rao, [Rao.Raj@epa.gov](mailto:Rao.Raj@epa.gov)
  - Technical – Tyler Fox, [Fox.Tyler@epa.gov](mailto:Fox.Tyler@epa.gov)
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Questions?