Compilation of Public Comments

Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program

U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Air Quality Analysis Division
Air Quality Modeling Group
Research Triangle Park, NC

May 2017

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EXECUTIVE SUMMARY

On December 2, 2016, the U.S. Environmental Protection Agency (USEPA) released the *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program* as a draft guidance document for consideration, review, and comment by the regulatory air quality modeling community. The original comment period was to end on February 3, 2017 but was extended to March 31, 2017 after numerous requests were received from the stakeholder community for more time to review and consider the "Draft MERPs Guidance" in its entirety.

At the close of the comment period, the USEPA had received 17 comment packages from various industrial, environmental, and state/local regulatory stakeholders on the Draft MERPs Guidance. These comment packages are provided in this Compilation of Comments document for reference by the broader stakeholder community. The USEPA is currently considering all of these comments and making appropriate revisions to the draft guidance.

At the present time, the USEPA is projecting that a revised and non-draft version of the MERPs Guidance will be available for release later this year. Until such time as the release of the revised MERPs Guidance, anyone seeking the use of the Draft MERPs Guidance for regulatory purposes is encouraged to engage with the appropriate permit reviewing authority and USEPA Regional Office as early in the process as possible. This early coordination will ensure that potential issues and concerns will be identified and potentially resolved more quickly as part of the routine permit application process.

The "Draft MERPs Guidance" is also still available for reference on the USEPA's SCRAM website at the following web address:
https://www3.epa.gov/ttn/scram/guidance/guide/EPA-454_R-16-006.pdf.

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THE STATE of ALASKA
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Department of Environmental Conservation

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March 15, 2017

Submittal via e-mail: bridgers.george@epa.gov

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EPA Air Quality Modeling Group
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Subject: Modeled Emission Rates for Precursors Proposal

Dear Mr. Bridgers:

The Alaska Department of Environmental Conservation (ADEC) appreciates the U.S. Environmental Protection Agency's (EPA) effort to develop guidance on their Modeled Emission Rates for Precursors Proposal (MERPs). However, we remain concerned about the level of effort needed to conduct "Tier 1" assessments, especially since it appears that EPA is interpreting the "existing technical information" phrase in Sections 5.3.2.b and 5.4.2.b of 40 CFR 51 Appendix W (Appendix W) in a narrower manner than what may be necessary. This apparent interpretation would create an undue and unnecessary burden on many of our new source review (NSR) permit applicants. The draft proposal also appears to provide generally inadequate guidance for those situations where a MERPs approach could potentially be used. ADEC encourages EPA to: 1) consider ambient monitoring data as "technical information" for purposes of Sections 5.3.2 and 5.4.2 of Appendix W; 2) establish a de minimus emissions floor for triggering a Tier 1 assessment; and 3) discuss how permitting agencies/applicants could develop MERPs in situations where there are multiple emissions units of various types.

Section 1 of EPA's proposal states, "The first tier (or Tier 1) involves use of appropriate and technically credible relationships between emissions and ambient impacts developed from existing *modeling studies*…" (emphasis added). EPA did not impose a "modeling study" restriction to Sections 5.3.2b and 5.4.2b of Appendix W. They only listed modeling studies as examples of a Tier 1 analysis. EPA's adding of this "modeling study" restriction as part of the MERPs guidance is problematic since there are no existing modeling studies for most of Alaska that we could rely on for

conducting a Tier 1 analysis (including development of local/regional MERPs). The added language and EPA's narrow interpretation of Appendix W could even force our NSR permit applicants into a Tier 2 analysis since Sections 5.3.2.c and 5.4.2.c of Appendix W state, "The second tier of assessment for [ozone/secondary $PM_{2.5}$] impacts involves those situations *where existing technical information is not available*…" (emphasis added). EPA's webinar solution of using the worst-case nationwide relationships in situations where States have no existing data would allow Alaskan applicants to conduct a Tier 1 analysis rather than the more onerous Tier 2 analysis. However, it would still create an undue burden for most of our applicants since they would be treated as if they were operating in or near non-attainment areas, rather than in the "clean," unclassified areas that actually exist throughout most of Alaska.

Alaska has a number of Prevention of Significant Deterioration (PSD) major stationary sources that are located in isolated areas (i.e., hundreds of kilometers from both the nearest metropolitan area and nearest PSD major stationary source). We also have a number of PSD major rural electric power plants that are located in small communities, where the population ranges from several hundred to several thousand people. The rural electric power plants operate on very tight budgets due to the limited number of rate payers, and they likely do not have the resources that would be needed to develop the type of Tier 1 analysis discussed in EPA's MERPs guidance.

Our PSD sources tend to have relatively short stacks (and in the case of mines, ground-level fugitive releases) where the maximum direct impacts occur at or within a couple hundred meters of the ambient boundary. It is our understanding that the maximum secondary $PM_{2.5}/O_3$ impacts would occur well beyond this range since it takes time (which also equates to distance) for the atmospheric reactions to occur. The lack of competing sources also minimizes the potential for adverse secondary $PM_{2.5}$ or O_3 impacts. ADEC therefore asks that EPA state either in the MERPs guidance or elsewhere that applicants and permitting authorities may continue to use the much simpler qualitative and hybrid approaches described in EPA's March 20, 2014, *Guidance for $PM_{2.5}$ Permit Modeling* for making a Tier 1 $PM_{2.5}$ demonstration in these types of situations, and may use analogous approaches for making a Tier 1 O_3 demonstration.

For example, isolated/rural sources should be able to use ambient $PM_{2.5}/O_3$ data from an area where the sources have greater precursor emissions to qualitatively demonstrate that their emissions also would not cause secondary $PM_{2.5}/O_3$ impacts that are greater than the concentrations measured in that area. The use of ambient data from this other area would essentially provide an estimated upper bound of the applicant's regional $PM_{2.5}/O_3$ impacts. In situations where the applicant's precursor emissions are greater than the emissions described by the nearby ambient dataset, applicants should be able to prorate the measured concentrations by the change in emissions to demonstrate continued compliance. If these cursory approaches do not demonstrate compliance, applicants could then proceed to the more complex MERPs approach for conducting their Tier 1 demonstrations.

ADEC also encourages EPA to propose or promulgate de minimus emission floors below which no secondary $PM_{2.5}$ or O_3 demonstration of any kind would be needed by the applicant. EPA could

establish the floors under the "depending on the magnitude of emissions" phrase in Sections 5.3.2.a and 5.3.2.4a of Appendix W. Doing so could help streamline the permitting process for "small" PSD projects. For example, EPA chose to use 100 tons per year (tpy), rather than the 40 tpy PSD significant emission rate (SER), as the lowest emission rate in their illustrative assessments. This appears to imply that EPA considers project emissions in the 40 – 100 tpy range as inconsequential for secondary $PM_{2.5}$ or O_3 formation purposes. If true, then establishing a 100 tpy de minimus emissions floor could help streamline projects in the 40 – 100 tpy range. Establishing even higher de minimus emission floors, based on the illustrative MERPs or other existing empirical relations, would provide even greater benefits since it would help permitting authorities to focus their limited resources on projects that present a more substantive concern.

Establishing de minimus emission floors would also help streamline the permitting process for minor source NSR applicants. ADEC asked EPA to clarify whether the NSR ozone and secondary-$PM_{2.5}$ provisions would apply to minor source applicants in our October 23, 2015 comments on the proposed Appendix W revisions (enclosed; see comment 7). However, EPA did not provide the requested clarification in the final rule. ADEC subsequently asked EPA Region 10 (R10) on January 20, 2017 to address the issue. It is our understanding that R10 staff are preparing a reply. In the meantime, we are reiterating our concern to EPA because a determination that minor source applicants do need to comply with the secondary $PM_{2.5}$ requirements of Section 5.4.2 of Appendix W, [1] including EPA's proposed MERPs approach, would create a major burden for our minor source applicants. Establishing 250 tpy as the de minimus emission floor would provide a simple and clean approach for ensuring that minor source NSR applicants do not need to develop MERPs or conduct the more onerous Tier 2 assessments.

The draft MERPs guidance only addressed single stack scenarios. ADEC encourages EPA to clarify how MERPs could be developed in a multiple emissions unit scenario.[2] The clarification should also address the additional comments and questions provided under item 3 of the December 16, 2016, email from Alan Schuler (enclosed).

The draft MERPs guidance erroneously assumes that AERMOD is the only regulatory model allowed under EPA's *Guideline on Air Quality Models* for estimating primary $PM_{2.5}$ impacts. The MERPs guidance should also reference the Offshore Coastal Dispersion (OCD) model, since that is the regulatory model for overwater applications. (Note: Alaska has both onshore and offshore PSD major stationary sources. It would therefore be helpful if EPA's MERPs guidance pertained to both scenarios.)

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[1] Section 1.0a of Appendix W states, "The Guideline… should be applied… to New Source Review (NSR), including new or modifying sources under Prevention of Significant Deterioration (PSD)…." The sentence does not limit the NSR acronym to just "major source" scenarios, and the term "including … PSD" provides an example, not a limitation. 40 CFR 51.160(f) further indicates that Appendix W does apply to minor source NSR conducted under a State Implementation Plan (SIP), which means the secondary $PM_{2.5}$ requirements of Section 5.4.2 of Appendix W may also apply – unless exempted under Section 5.4.2a.

[2] Most of Alaska's PSD projects involve multiple emissions units of various types.

Thank you for considering our comments. Please contact Alan Schuler at (623) 271-9028 or alan.schuler@alaska.gov if you have any questions.

Sincerely,

Denise Koch, Director
Division of Air Quality

Enclosures: EPA-HQ-OAR-2015-0319 Appendix W letter, October 23, 2015
Questions on Draft MERP Guidance, December 16, 2016

cc: Larry Hartig, ADEC/Commissioner
Alice Edwards, ADEC/Deputy Commissioner
Tim Hamlin, EPA, Region 10/OAWT Director
John Kuterbach, ADEC/APP Program Manager
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October 23, 2015

U. S. Environmental Protection Agency
EPA Docket Center (EPA/DC)
Mailcode: 28221T
Attention Docket ID No. EPA-HQ-OAR-2015-0310
1200 Pennsylvania Ave. N.W.
Washington, DC 20460

Dear Docket Manager:

The Alaska Department of Environmental Conservation (ADEC) is providing the enclosed comments on the U.S. Environmental Protection Agency (EPA) proposal: Revision to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches To Address Ozone and Fine Particulate Matter, published in the *Federal Register* on July 29, 2015 (*Federal Register*, Vol. 80, No. 145). ADEC appreciates EPA's extensive efforts on this proposal and supports many of the proposed technical and editorial revisions to the Guideline on Air Quality Models (Guideline). However, there are a number of topics that need clarification or revision. ADEC's most substantive concerns are:

- the new and only partially developed single-source photochemical modeling requirements (see Comment 5);
- the required interaction with EPA's Model Clearinghouse regarding alternative modeling procedures (see Comment 9);
- the required consultation with the EPA Regional Office prior to conducting a Tier 3 nitrogen dioxide (NO_2) assessment (see Comment 21) ; and
- the downgrading of the "Method 1" deposition algorithm in AERMOD from a regulatory default option to an alternative modeling technique (see Comment 23).

In addition to the above and enclosed comments, ADEC also generally concurs with the National Association of Clean Air Agencies (NACAA) comment letter.

ADEC greatly appreciates EPA's review and consideration of the provided comments. If you require any additional information, please feel free to contact Alan Schuler via e-mail at alan.schuler@alaska.gov or by phone at (623) 271-9028.

Sincerely,

Denise Koch, Director
Division of Air Quality

Enclosure: ADEC Comments Regarding EPA's Proposed Revision to the Guideline on Air Quality Models

cc: Larry Hartig/ADEC Commissioner
Alice Edwards/ADEC Deputy Commissioner
John Kuterbach/ADEC Air Permits Program Manager
Barbara Trost/ADEC Monitoring Program Manager
Alan Schuler/ADEC Engineer, DEC
Deanna Huff/ADEC Environmental Associate I

ADEC Comments Regarding EPA's Proposed Revision to the Guideline on Air Quality Models

October 23, 2015

The Alaska Department of Environmental Conservation (ADEC) is providing the following comments to EPA's proposed revision to the Guideline on Air Quality Models (Guideline), published in the *Federal Register* on July 29, 2015 (*Federal Register*, Vol. 80, No. 145).

Comments on Topics Highlighted by EPA (Section IV.A of Preamble)

Subsection 2 – Updates to EPA's AERMOD Modeling System

1. ADEC supports EPA's proposal to incorporate the adjusted surface friction velocity (u*) algorithm in AERMET to help correct AERMOD's tendency to overpredict impacts under stable, low wind conditions.

2. ADEC supports EPA's proposal to incorporate the "POINTCAP" and "POINTHOR" source types as regulatory default options. These options automate the guidance developed by EPA in September 2005 in their AERMOD Implementation Guide, which is a better approach than having users manually make the recommended adjustments for each capped or horizontal stack.

3. ADEC requests that EPA promulgate AERCOARE as the meteorological preprocessor for overwater applications as part of this rule. EPA's current preferred model for overwater applications, the Offshore and Coastal Dispersion Model (OCD), is extremely dated and will not process the hourly estimates in a manner that is consistent with the more recently developed 1-hour nitrogen dioxide (NO_2), 1-hour sulfur dioxide (SO_2), and 24-hour fine particulate matter (PM-2.5) National Ambient Air Quality Standards (NAAQS). Promulgating AERCOARE would allow the AERMOD Modeling System, which incorporates updated dispersion algorithms and will also provide estimated concentrations that are consistent with these NAAQS, to be used in overwater applications. EPA should be able to use the May 6, 2011 EPA memorandum, Model Clearinghouse Review of AERMOD-COARE as an Alternative Model for Application in an Arctic Marine Ice Free Environment, and the April 1, 2011 EPA Region 10 (R10) memorandum, COARE Bulk Flux Algorithm to Generate Hourly Meteorological Data for Use with the AERMOD Dispersion Program; Section 3.2.2.e Alternative Refined Modeling Demonstration, as a substantial bases for an AERCOARE proposal.

4. EPA should incorporate shoreline fumigation and platform downwash algorithms in AERMOD so that it could eventually replace OCD as the preferred model for overwater applications (for the reasons described above).

Subsection 6 – Addressing Single-Source Impacts on Ozone and Secondary $PM_{2.5}$

5. ADEC recommends EPA:
   a. Withdraw this aspect of their proposal until they are ready to propose a comprehensive approach that includes the Model Emissions Rates for Precursors (MERPs); or

b. Extend the transition period for complying with the single-source photochemical modeling requirement until at least a full year after the pending MERPs become effective.

EPA should also consider an exemption to the photochemical modeling requirement for stationary sources located in remote locations.

ADEC cannot fully access EPA's proposed approach for conducting single-source ozone (O_3) and fine particulate ($PM_{2.5}$) assessments, since EPA has not yet proposed the MERP thresholds that could potentially be used to avoid a photochemical modeling analysis. Photochemical modeling could be a substantial burden to our rural applicants, especially the locally-owned and operated rural electric companies scattered across the State. Most of our rural sources are located in remote areas where the ambient O_3 and $PM_{2.5}$ concentrations from precursor emissions are likely low due to limited area-wide emissions, but there are no regional modeling assessments or peer-reviewed studies that applicants could rely on for purposes of conducting a "first tier" demonstration. ADEC is concerned that these applicants could therefore be forced into the "second tier" photochemical modeling requirements, which seems generally unnecessary and potentially cost prohibitive. ADEC is also concerned about the substantive computer and staff resources that it would need to develop for handling these extremely complex assessments, along with the lengthy delays that a photochemical analysis would add to the permit process.

ADEC does not have a state-wide meteorological dataset or emissions inventory that would be needed for conducting a photochemical analysis within any given part of Alaska. The ADEC air permit program also does not have the Linux-based computer platforms and staff trained in photochemical modeling that would be needed to advise applicants and review a permit-related photochemical modeling demonstration.

6. EPA should allow the use of existing ambient monitoring data (i.e., local or semi-regional) for assessing the potential likelihood of adverse secondary impacts from proposed projects in rural areas. EPA introduces this general concept in Section 9.1.c of the Guideline, but never develops it. The secondary formation issue seems like a case where this concept could, and should, be allowed.

7. ADEC, along with many other regulatory agencies, uses the Guideline in their minor permit programs. ADEC presumes that EPA would not expect minor permit applicants to conduct a photochemical modeling analysis to assess their O_3 or $PM_{2.5}$ impacts. In order to provide clarity, ADEC recommends that EPA include a statement to this effect in both the preamble for the final rule and in Appendix W itself. Regulatory agencies sometimes process controversial permit applications where the project opponents use ambiguity in EPA guidance to challenge a permit decision. Adding a simple statement regarding EPA's expectations within the minor permit realm would reduce this potential ambiguity and area of possible challenge.

Subsection 7 – Status of CALPUFF and Assessing Long-Range Transport for PSD Increment and Regional Haze

8. ADEC does not see photochemical modeling as a generally viable alternative to CALPUFF in Prevention of Significant Deterioration (PSD) permit applications, for the reasons described under Subsection 6.

Subsection 8 – Role of EPA's Model Clearinghouse

9. EPA should reserve formal Model Clearinghouse involvement for only those truly unique situations that have not been previously addressed in EPA guidance. ADEC does not see the need for formal Model Clearinghouse involvement on *all* alternative modeling requests. This additional procedural requirement will likely lengthen the permit process and provides no benefits when dealing with alternative techniques that EPA has already addressed through a guidance document. For example, ADEC has allowed, with Region 10 approval, the general use of the POINTCAP and POINTHOR beta options in AERMOD since these options mimic the procedure in Section 6.1 of EPA's AERMOD Implementation Guide. Under EPA's proposal, Region 10 essentially would have needed to "double-check" with the Model Clearinghouse as to whether our applicants could implement this EPA guidance through these modeling options. ADEC has also submitted numerous case-specific requests to use the Plume Volume Molar Ratio Method (PVMRM) or the Ozone Limiting Method (OLM) nitrogen dioxide (NO_2) modeling techniques to Region 10, which the Model Clearinghouse has also addressed in several memorandum. It is ADEC's understanding that Region 10 has been able to make these decisions without Modeling Clearinghouse involvement – and rightly so. ADEC does not understand why the Model Clearinghouse would want to be involved in these types of requests or why the associated delay would have helped the permit process.

Subsection 9 – Updates to Modeling Procedures for Cumulative Impact Analysis

10. The proposed changes to the various cumulative impact procedures in Section 8 of the Guideline are generally appropriate and very helpful. However, some topics need clarification or additional development. These topics are discussed by section and paragraph number under the "Additional Comments Specific to Appendix W of 40 CFR 51" section of ADEC's comments.

Subsection 11 – Transition Period for Applicability of Revisions to the Guideline

11. ADEC supports the proposed 1-year transition period, except as noted under Subsection 6. Establishing a transition period avoids the project delays and additional expenses that EPA discussed in the preamble to the proposed rule. Allowing a full year for the transition period is reasonable and consistent with other EPA transition periods for regulatory changes.

Additional Comments Specific to Appendix W of 40 CFR 51

12. **General comment regarding the term "source"**: EPA should clarify that the term "source" can mean either an "emissions unit" (see 40 CFR 51.165(a)(1)(vii)) or a "stationary

source" (see 40 CFR 51.165(a)(1)(i)), and that the meaning within any given section must be discerned through context. Alternately, EPA should clarify how the term is used within those sections. For example, ADEC presumes that EPA is referring to a stationary source, rather than an emissions unit (EU), when discussing the "single-source" modeling requirements for O_3 and secondary $PM_{2.5}$. ADEC likewise presumes that EPA is referring to an EU, not a stationary source, when discussing a "single-source" screening scenario in Section 4.2.1 of the Guideline. Either way, EPA should clarify what they mean by this term in order to avoid confusion.

13. **Section 1.0 Introduction**: EPA should clarify whether it expects regulatory agencies to use the Guideline in minor source New Source Review (NSR) programs conducted as part of their State Implementation Plan (SIP). Regulatory agencies obviously have the ability to adopt part or all of the Guideline by reference, but it is unclear whether EPA expects them to do so if the minor NSR program is part of their SIP.

14. **Section 2.2 Levels of Sophistication of Air Quality Models Analyses and Models; Paragraph b; Last Sentence**: ADEC recommends EPA change the phrase, "then the second level of more sophisticated models **should be applied**" to read "then the second level of more sophisticated models **may be warranted**" (emphasis added). Switching from a screening model to a refined model when there is a modeled violation is only one option available to permit applicants and regulatory agencies. Another option is to impose controls or operational restrictions. The revised wording acknowledges that other options may be available.

15. **Section 2.2 Levels of Sophistication of Air Quality Models Analyses and Models; Paragraph d**: ADEC recommends EPA provide examples or additional language to clarify what is meant by the term "reduced-form model." ADEC does not recall seeing this term in previous versions of the Guideline and is not aware of this term being used in other contexts. The attempted explanation in sub-paragraph ii indicates that it's a simpler model than a photochemical model, but it's unclear as to which models or tools would be classified as a "reduced-form model." ADEC requests that EPA clarify in the final rule what is meant by this term.

16. **Section 3.1.2 Requirements; Paragraph b; Last Sentence**: The wording in the last sentence implies that graphical user interface (GUI) vendors must provide a test case to the Regional Administrator before their GUI could be used within that EPA region. ADEC questions whether EPA intended to impose this new and cumbersome requirement for these commonly used products. ADEC recommends EPA clarify what, if any, steps are required in order for applicants and regulatory agencies to use these nationally available products (e.g., BEEST, Breeze, and AERMOD View). <u>If</u> EPA truly believes that prior EPA approval should now be required, then ADEC encourages EPA to have the Model Clearinghouse review these GUIs rather than having redundant reviews by each Regional Office. ADEC further recommends that EPA develop a mechanism that allows the modeling community to promptly know which products are approved for regulatory use.

17. **Section 4.2.1 Screening Models and Techniques; Paragraph b**: ADEC recommends that EPA state in the final rule that there are no current screening models for overwater applications.

18. **Section 4.2.3 Pollutant Specific Modeling Requirements**: The "models… are needed to meet" phrase in each subsection could erroneously be read to mean that the listed pollutants must be modeled in each NSR application. ADEC recommends that EPA add some type of acknowledgement that the triggered pollutants vary by project.

19. **Section 4.2.3.4 Models for Nitrogen Dioxide; Paragraph b;**
    a. **First Sentence**: ADEC recommends EPA change the phrase "is required' to "is available." The current wording implies that users must step through the tier process. ADEC does not see merit in requiring such a step-by-step approach, nor would it be productive for ADEC to have to review superseded approaches in a permit application.

    b. **Second Sentence**: EPA should insert "techniques" after the term "screening" to clarify that the term does not mean "screening model."

20. **Section 4.2.3.4 Models for Nitrogen Dioxide; Paragraph c;**
    a. **First Sentence**: ADEC recommends that EPA include the Section 4.2.1 screening models as allowed methods for estimating NO_2 impacts. ADEC is not aware of any reason as to why AERSCREEN or CTSCREEN could not be used in a Tier 1 NO_2 assessment.[1]

    b. **Last Sentence**: ADEC requests that EPA delete this sentence. It implies that a step-wise approach is needed for NO_2 modeling, and it also ignores the possibility of using emission controls or operational limits for resolving modeled violations. ADEC sees no reason as to why an applicant could not proceed directly to Tier 3 from Tier 1, or even start with Tier 3. However, those details are best left for the consultation process between the applicant and the reviewing authority.

21. **Section 4.2.3.4 Models for Nitrogen Dioxide; Paragraph e:** EPA should drop the consultation requirement and just let reviewing authorities determine whether they need Regional Office assistance. EPA provided inadequate justification for requiring reviewing authorities to consult with the EPA Regional Office prior to allowing a Tier 3 modeling approach. Reviewing authorities operating under a federal delegation or SIP-approved program should be just as capable of assessing the Tier 3 data inputs as they are with assessing all other aspects of a NSR permit application. Requiring a consultation with the EPA Regional Office would only lengthen the permit processing timeline without providing clear benefits.

22. **Section 4.2.3.5 Models for $PM_{2.5}$; Paragraph b**: EPA should include the Section 4.2.1 screening models as allowed methods for estimating direct $PM_{2.5}$ impacts. ADEC is not aware of any reason as to why AERSCREEN or CTSCREEN could not be used, other than the fact that these tools tend to provide conservative results.

[1] ADEC is likewise not aware of any reason as to why screening models could not be used in a Tier 2 analysis, or why AERSCREEN could not be used in a Tier 3 analysis. Section 2.1.6 of the AERSCREEN User's Guide even indicates that AERSCREEN includes the Plume Volume Molar Ratio Method (PVMRM) and the Ozone Limiting Method (OLM) Tier 3 modeling options.

23. **Section 4.2.3.6 Models for PM_{10}; Paragraph b, Second Sentence**: EPA did not justify, nor even discuss, why particle deposition must now be treated as an alternative modeling technique under Section 3.2 of the Guideline. EPA has previously considered the "Method 1" particle deposition option in AERMOD as an allowed option in regulatory assessments per Section 1.2 of the Addendum to the AERMOD User's Guide.[2] ADEC is not aware of any study that supports this change in approach when using AERMOD. Therefore, EPA should either note that the AERMOD "Method 1" deposition algorithm is still allowed in regulatory assessments or make the underlying studies that EPA is relying on available for public review and comment prior to adopting this newly developed language.

24. **Section 5.4.2 Models for Single-Source Air Quality Assessments; Paragraph a; Second Sentence**: The sentence erroneously presumes that all permit-related modeling occurs at onshore locations and that only refined models can be used to assess primary $PM_{2.5}$ impacts. Since offshore projects can also trigger $PM_{2.5}$ modeling (e.g., a PSD project at an offshore oil and gas platform in State water), EPA should either include OCD in the list of allowed models, or replace the term "AERMOD" with the phrase "a refined model." EPA should also note that the screening models listed in Section 4.2.1 of the Guideline may also be used to assess the primary $PM_{2.5}$ impacts.

25. **Section 8.1.2 Requirements; Paragraph a**: EPA should allow reviewing authorities the ability to accept smaller modeling domains when warranted. ADEC frequently deals with relatively short-stack, downwash-dominated stationary sources where the maximum impacts occur in the immediate near-field.[3] The typical maximum impact from an Alaskan stationary source subject to NSR review occurs within a couple hundred meters of their ambient air boundary. However, the significant impact area may have a 5 – 10 kilometer radius. In these situations, there is no need for extending the modeling domain throughout the entire significant impact area, especially when dealing with isolated stationary sources in flat terrain or scenarios where the off-site source impacts are represented through data from a single ambient monitoring station. Extending the modeling domain in these situations only lengthens the model run-time – it does not provide any additional information needed to determine whether the stationary source complies with the applicable NAAQS or PSD Increment. Using the entire significant impact area should only be encouraged for situations where the area of maximum impact is unclear (e.g., due to unfamiliar source characteristics, terrain effects, or the presence of multiple stationary sources spread throughout the significant impact area), or there is concern that the stationary source may be causing or contributing to a known or suspected far-field violation.

    A better approach for this paragraph would be to say that the modeling domain should be large enough to ensure the maximum impact(s) are found for each modeled pollutant and averaging period, and then impose the significant impact area/50 km range as the furthest possible boundary.

26. **Section 8.2.2 Requirements; Paragraph e; First Sentence**: ADEC recommends that EPA include the following qualification (or similar) at the end of the first sentence, "when

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[2] Section 1.2 of EPA's Addendum to the AERMOD User's Guide states: "Consistent with Section 7.2.7(b) of the *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W), the use of 'Method 1' for particle deposition in AERMOD is allowed under the regulatory DFAULT option."

[3] EPA acknowledged in Section 8.3.3, paragraph b, sub-paragraph ii, that the largest concentration gradients (and therefore, the maximum impacts) generally occur at distances within 10 times the stack height.

conducting a cumulative impact analysis in an urban environment." Background impacts, including those from mobile sources, are not included in a project impact analysis. There are also cumulative impact scenarios where the mobile source contribution is negligible (e.g., a modeling analysis of a remotely located stationary source with on-site worker housing, or a diesel-fired power plant in small, rural village). In these types of situations, ADEC does not ask the applicant to quantify the local mobile source inventory since it's clear that the emissions and impacts would be non-substantive.

27. **Tables 8-1 and 8-2**: The units under the "Operating level" column heading should be "MMBtu/hr" not "lb/MMBtu."

28. **Table 8-2; Footnote 2**: The last sentence is incomplete (it's missing the ending phrase "time periods") – however, the sentence should be deleted since it does not accommodate the wide variety of possible permit restrictions. It is also inconsistent with other EPA guidance.

    ADEC rarely imposes time of day restrictions in a permit. The more common approach is to limit the hours of operation in a given period (e.g., a day or year), the total fuel consumption in a given period, or the total emissions in a given period. These are viable means for restricting the emissions from an EU that operates on a variable and unpredictable schedule. However, the only practical means for including these types of restricted emissions in a modeling analysis is to assume that the EU is continuously operating, but at the allowed emissions rate. For example, if the permit restricts the operation of a given EU to 500 hours per year, then the only practical means for estimating the annual average impact from that EU would be to assume that the EU is constantly emitting at the maximum hourly rate times 500/8760. EPA even used a similar example on page 11 of their March 1, 2011, memorandum, Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard.

29. **Section 8.3 Background Concentrations**: EPA made a number of excellent changes to the Background Concentration section. However, there are several areas that need clarification or additional consideration. EPA should also check for editorial mistakes, such as missing words, since there are several of them in this section. The areas that need clarification or additional consideration are discussed below.

    a. **Section 8.3.1; Paragraph a**:
        i. The transition from paragraph a. to sub-paragraph i. is confusing. The second sentence of Section 8.3.1 seems to regard ambient monitoring data while Section i. regards modeling. ADEC recommends replacing the last two sentences with, "The background concentration typically includes contributions from:"

        ii. If EPA choses to keep the second sentence of paragraph a., then the phrase, "should not include" should be changed to "need not include" (or similar). ADEC never requires applicants to take the time and effort to cull ambient data if the maximum reported values are adequate for demonstrating compliance with the applicable NAAQS. Conservative approaches for demonstrating compliance are always acceptable.

    b. **Section 8.3.1; Paragraph b**:

i. **First Sentence**: EPA should qualify the "and other requirements" phrase. The "other requirements" that EPA references is EPA's, Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD) (EPA-450/4-87-007). Section 2.4.1 of this guidance states the monitoring data should represent the **maximum** impact;[4] however, it appears that **non-maximum** impact data could actually be used in some situations to meet the Section 8.3 requirements (e.g., the "regional" data discussed in Section 8.3.2.b of the Guideline).

Note: using an alternative data set for the background concentration may require PSD applicants to provide *two or more* ambient data sets in their application: one or more data sets that represent the background concentrations used to supplement the modeling analysis;[5] and another data set collected to meet the PSD pre-construction monitoring requirement in Section 165(e)(2) of the Clean Air Act (as elaborated on in EPA's PSD monitoring guidance). ADEC has accepted this multiple-data set approach for meeting these separate and distinct elements of the PSD program but notes that some applicants believe that only one data set should be used for both elements. It would be helpful if EPA provided a short discussion regarding this issue.

ii. **General Comment**: EPA is tacitly stating that the 4 – 12 months of ambient pre-construction data collected under 40 CFR 52.21(m)/40 CFR 51.166(m) is an adequate period for determining the background concentrations used in a cumulative impact analysis, including the background concentrations for those NAAQS with a three-year averaging period. ADEC agrees that applicants should not be forced into obtaining three-years of ambient pollutant data for their ambient demonstrations. However, ADEC recommends that EPA clearly state their position on the data period issue, rather than just tacitly implying it.

c. **Section 8.3.2; Paragraph c; Sub-paragraph i**: It is unclear if applicants could alternatively use ambient monitoring data to represent their *existing* impacts and then limit the modeling analysis to just the *proposed* modifications. This alternative approach would be the simplest way for PSD applicants to incorporate the maximum impact data collected under EPA's PSD monitoring guidance (EPA-450/4-87-007) with the ambient demonstration requirements in 40 CFR 52.21(k)/40 CFR 51.166(k). EPA should clarify whether this is an acceptable approach.

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[4] Section 2.4.1 of EPA PSD monitoring guidance states: "The existing monitoring data should be representative of three types of areas: (1) the location(s) of maximum concentration increase from the proposed source or modification, (2) the location(s) of the maximum air pollutant concentration from existing sources, and (3) the location(s) of the maximum impact area, i.e., where the maximum pollutant concentration would hypothetically occur based on the combined effect of existing sources and the proposed new source or modification."

[5] More than one background data set may be needed since anyone one data set may not adequately represent the background concentration for each of the triggered pollutants; plus there may be a need for using multiple monitors, as discussed in Paragraph d. of Section 8.3.2 of the proposed Guideline.

d. **Section 8.3.2; Paragraph c; Sub-paragraph ii**:
   i. The first two sentences describe a newly developed approach that is long overdue and warrants special applause. ADEC encourages EPA to keep this newly developed provision in the promulgated version of the Guideline.

   ii. The remaining scaling/adjustment discussion is a completely new concept that warrants additional discussion – perhaps in Section 8.3.1. EPA should also provide examples of when or how these adjustments could be made, or the factors that a reviewing authority may need to consider when evaluating a proposed change to measured values.

   iii. There are at least three editorial errors in this paragraph.

e. **Section 8.3.3; Paragraph a**: This newly developed discussion is very helpful.

f. **Section 8.3.3; Paragraph b**:
   i. The opening sentence is well written and a good approach for introducing the subsequent concentration gradient concept.

   ii. **Sub-paragraph iii**: The "10 to 20 km" reference appears to apply to areas where the stationary sources have relatively tall stacks. Since the tall stack scenario does not reflect all areas of the entire country, please also state that the range could be substantially shorter when dealing with areas where the stationary sources have relatively short stacks and/or ground-level releases (e.g., mines).

g. **Section 8.3.3; Paragraph c; Sub-paragraph ii**: The discussion ignores the influence of a nearby source operating within the averaging period of concern, even if it's operated non-concurrently with the applicant's source. For example, a nearby EU that operates during different seasons than the applicant's stationary source still contributes to the annual average impacts. ADEC recommends EPA incorporate averaging period considerations in the discussion.

h. **Section 8.3.3; Paragraph d**: ADEC encourages EPA to add a period after "section 8.3.2" – i.e., make the first concept its own sentence – and to make the newly created second sentence an option. As previously stated, applicants should be allowed to use conservative values for their background concentrations, rather than forcing a refined approach that takes them additional time to conduct and the reviewing agency additional time to review.

30. **Section 8.4 Meteorological Input Data**: EPA made a number of excellent changes to this section. The areas that need clarification or additional consideration are discussed below.

    a. **Section 8.4.2; Paragraph d**: Please add "or MPRM" after "PCRAMMET."

    b. **Section 8.4.3.2; Paragraph d**: EPA should clarify that the randomly generated numbers used to process standard hourly data (paragraph c) should not be applied when using 2-minute wind data pre-processed with AERMINUTE.

c. **Section 8.4.6.1; Paragraph b**: EPA should clarify which value should be used as the threshold wind speed when the wind speed sensor and the wind direction sensor have different starting thresholds. It is ADEC's understanding from personal communication with EPA that the larger of the two values should be used. Either way, EPA should clarify this point since the question does arise.

31. **Section 9.2.2; Paragraph d**: ADEC recommends moving the receptor discussion to the Modeling Domain section (Section 8.1).

32. **Section 9.2.3; Paragraph b; First Sentence**: EPA should change the phrase, "of any NAAQS or PSD increment" to "of the NAAQS or PSD increments for the triggered pollutants."

33. **Appendix A. Section A.1 AERMOD, Paragraph b. Input Requirements, Sub-paragraph (2)(i), Last Sentence**: EPA should indicate that representative solar radiation, delta-temperature (SRDT) data may be used as an alternative to cloud cover data.

34. **Appendix A. Section A.1 AERMOD, Paragraph b. Input Requirements, Sub-paragraph (3), Last Sentence**: The National Elevation Dataset (NED) data should be specifically referenced as well. Same comment applies to paragraph f.

35. **Appendix A. Section A.1 AERMOD, Paragraph l. Chemical Transformation, Last Sentence**: The second "and" appears to be a typographical error.

Schuler, Alan E (DEC)

From: Schuler, Alan E (DEC)
Sent: Friday, December 16, 2016 7:08 AM
To: George Bridgers
Cc: Schuler, Alan E (DEC); Jay McAlpine - EPA Region 10 (McAlpine.Jay@epa.gov); Smith, Rebecca T (DEC); Jack, Jesse R (DEC); Renovatio, James J (DEC)
Subject: Questions on Draft MERP Guidance

George,
The State of Alaska is trying to work through EPA's draft MERP guidance. We are confused by some parts of it. Would you be able to address the following questions during the MERP webinar?

1. Could applicants/regulatory agencies still use the qualitative or hybrid approaches described in EPA's May 20, 2014 *Guidance for $PM_{2.5}$ Permit Modeling*, for making a Tier I $PM_{2.5}$ demonstration? Could a qualitative/hybrid approach likewise be used for a Tier I O_3 demonstration?

   Discussion: Alaska has only one $PM_{2.5}$ nonattainment area (Fairbanks/North Pole), and no O_3 nonattainment areas. We therefore do not have existing photochemical $PM_{2.5}$ or O_3 modeling assessments for most of this extremely large state. That puts us at a severe disadvantage for developing regional/statewide MERPs – i.e., states with nonattainment areas are likely better equipped for developing MERPS than we are. With that being the case, we're trying to figure out how we can comply with the anticipated two-step Appendix W requirements, without routinely making our PSD applicants conduct Tier II modeling assessments.

2. Are EPA's example modeling results applicable to Alaska, Hawaii and the US Territories, or do they only pertain to the contiguous states?

   Note: the draft guidance used the term "continental U.S." which would include Alaska since its part of the North American continent. However, the maps and discussion indicate the example runs were only conducted for the contiguous states – i.e., "the lower-48" states. Could we potentially use the "western U.S." results for developing our MERPs?

3. What would be the process for developing statewide/regional MERPs for PSD-projects with multiple emission units and various stack designs? Is stack height a greater issue for developing MERPs than plume height or buoyancy flux?

   Discussion: the examples appear to regard PSD projects with single emission units. However, it's probably been 20 years or so since we've processed such a simple PSD application. Most of our PSD projects regard multiple emission units of various types. We're therefore trying to figure out how to justify/develop generic MERPs in this more realistic type of scenario.

   The two examples regard a 1 m tall stack and a 90 m tall stack, but both stacks have an exhaust flow rate of 537 m^3/s – which greatly exceeds the flow rates commonly seen in Alaska. I developed a comparison of the EPA example flow rate and buoyancy flux (for an assumed ambient temperature of 40F) to the values for *some* of the various emission units in seven of our more recent PSD applications. The ratio of applicant to example flow rates varied from 0.3% to 55%, and the ratio of applicant to example buoyancy fluxes varied from 0.5% to 317%. Are these variations something we would need to be concerned about in a MERP demonstration?

4. Why did EPA use 100 tpy as the lowest emission rate in their examples, rather than the 40 tpy PSD significant emission rate (for NOx, SO_2, and VOC)? Does this imply that EPA considers project emissions in the 40 – 100 tpy range as inconsequential for secondary $PM_{2.5}$ and O_3 purposes?

   Discussion: It seems that EPA should be able to promulgate de minimus emission floors below which no secondary $PM_{2.5}/O_3$ demonstration of any kind would be needed by the applicant/permitting agency. Doing so would streamline the secondary formation issue for "small" PSD modifications of an existing PSD-major stationary source. Alaska will likely provide this type of comment in its formal submittal.

Thanks in advance for considering our questions. You'll likely see some of the above discussion in the formal set of comments that we're developing.

Alan

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Alan Schuler, P.E.
Alaska Department of Environmental Conservation
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American Forest & Paper Association

AMERICAN WOOD COUNCIL

March 31, 2017

Richard A. Wayland
Division Director, Air Quality Assessment Division
US EPA William Jefferson Clinton Building
1200 Pennsylvania Avenue NW
Washington, DC 20004
Mail code: 6101A

Dear Mr. Wayland:

RE: Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program (EPA-454/R-16-005)

The American Forest & Paper Association and the American Wood Council appreciate the opportunity to comment on EPA's Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program.

The American Forest & Paper Association (AF&PA) serves to advance a sustainable U.S. pulp, paper, packaging, tissue and wood products manufacturing industry through fact-based public policy and marketplace advocacy. AF&PA member companies make products essential for everyday life from renewable and recyclable resources and are committed to continuous improvement through the industry's sustainability initiative - *Better Practices, Better Planet 2020*. The forest products industry accounts for approximately 4 percent of the total U.S. manufacturing GDP, manufactures over $200 billion in products annually, and employs approximately 900,000 men and women. The industry meets a payroll of approximately $50 billion annually and is among the top 10 manufacturing sector employers in 45 states.

The American Wood Council (AWC) is the voice of North American wood products manufacturing, representing over 75 percent of an industry that provides approximately 400,000 men and women in the United States with family-wage jobs. AWC members make products that are essential to everyday life from a renewable resource that absorbs and sequesters carbon. Staff experts develop state-of-the-art engineering data, technology, and standards for wood products to assure their safe and efficient design, as well as provide information on wood design, green building, and environmental

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regulations. AWC also advocates for balanced government policies that affect wood products.

Executive Summary

AF&PA and AWC hope the following comments will help EPA develop methods to effectively address compliance with the ozone and $PM_{2.5}$ NAAQS for individual sources, without an undue burden on the regulated community. We support the MERP concept as simplifying the permitting process, but have concerns about how they are to be developed and applied. Our comments can be summarized as follows:

- Permitting authorities should be allowed to develop and use their own critical air quality concentration threshold values for deriving MERPs rather than relying solely on the Significant Impact Levels (SILs);
- Draft MERP values are based on SILs, which are currently set to levels that are unnecessarily low;
- MERPs should not be based on peak modeled concentrations but on the modeled NAAQS Design Values that appropriately reflect the statistical form of the standards;
- Given the highly complex nature of photochemical model, EPA should expand the screening process to include simple yet conservative modeling procedures;
- Straightforward and definitive guidance needs to be provided on how to select the representative MERP site;
- EPA's regional aggregation of MERPs should be refined to better aggregated source regions;
- Adding Modeled Primary $PM_{2.5}$ to SIL ratio to the precursor to MERP ratio is overly conservative in determining whether a source's impacts are significant;
- Emissions increases that are compared to MERPs should be more precisely defined.

Please consider the following detailed comments as you reevaluate the MERP guidance.

1. ***We support the MERP concept as simplifying the permitting process, but have concerns about how they are to be developed and applied.***

Although ozone has been a criteria pollutant since 1979 and $PM_{2.5}$ has been a criteria pollutant since 1997, due to technical challenges and model limitations, single source NAAQS compliance demonstrations have not been required to address secondarily formed ozone or PM2.5. AF&PA-AWC concur with EPA's historical reluctance to require that models be used to estimate ambient concentrations of secondarily formed pollutants. In the 1980's and early 1990's, EPA supported the progressive development of the Reactive Plume Model (starting at RPM and evolving to RPM IV) for ozone modeling, but use of RPM has long since been abandoned. Similarly, CALPUFF simulates formation of the sulfate and nitrate portion of secondary $PM_{2.5}$, but besides its use for Regional Haze, EPA no longer supports this model. The past two decades have seen the development of "whole atmosphere" photochemical grid models (notably CMAQ and CAMx) and the more recent development of a Lagrangian model that includes atmospheric chemistry, SCICHEM, which is presently being developed by Electric Power Research Institute (EPRI). We note these modeling techniques as applied to individual point sources have yet to be extensively validated with ambient measurement studies. We recognize that using ambient measurements to discern downwind impacts of secondary pollutants from individual point sources is technically challenging, but we do not think that EPA is justified in applying regional modeling techniques and interpreting results in an "absolute" sense" without having first conducted appropriate model validation studies.

We agree with EPA's proposed MERP approach of using quantitative emission increase thresholds to distinguish between projects that are not expected to have a significant impact on pollutant concentrations and those requiring a more detailed assessment based on predictions from modeling precursors. However, our examination of the overly conservative way the MERPs are developed and how they will be applied indicates that new sources may be unnecessarily required to apply overly complicated, burdensome and expensive photochemical grid models as a means of showing that impacts are insignificant and NAAQS are protected. The practical consequences of requiring modeling for secondarily formed ozone and $PM_{2.5}$ is that there is a potential for significant delays, obstructions and added costs to applicants for little or no environmental benefit.

The complexity and uncertainty of applying photochemical models can greatly extend the time horizon for a proposed project and can result in unduly large expenditures in the effort of attempting to secure an air emissions permit. The modeling results are subject to numerous technical options to be selected for the meteorological, emissions, and dispersion aspects of the modeling, each of which is a substantial effort. The overall effort is such that for a Tier 2 modeling analysis, it could be several months or more of effort at great cost for a proposed source to be able to determine whether a project design is viable. These issues point to the need for a streamlined path in evaluating ambient air impacts of secondary pollutants. EPA's MERP concept is a first step in that direction. However, we find that the MERP guidance is incomplete and in its current form does not provide a sufficiently clear path forward. The following comments offer

specific suggestions of how the process of ensuring future NAAQS compliance for ozone and $PM_{2.5}$ could be improved.

2. ***Permitting authorities should be allowed to develop and use their own critical air quality concentration threshold values for deriving MERPs.***

EPA's suggests that MERPs use the proposed SILs for ozone and $PM_{2.5}$ to derive MERPs for precursors of these pollutants. While this is recognized as a conservative approach, in managing NAAQS compliance, a permitting authority should have the autonomy to determine if other, less stringent, concentration thresholds than the SILs may be appropriate in determining MERPs. This line of reasoning may be appropriate in regions where the NAAQS are presently achieved by a suitably wide margin. For instance, at locations where the margin between the NAAQS and ambient air measurements are many times the SIL, setting the MERP to match the SIL may be more protective than would be required to assure compliance. Otherwise, because modeling of secondary pollutant formation is a technical challenge, agency and applicant resources could be wasted trying to quantify very small increases in these criteria pollutants. We suggest that agencies be given the latitude to make the case to EPA that a threshold greater than the SIL is appropriate for developing MERPs for air sheds under their jurisdiction with due consideration of potentially impacted areas downwind located in other jurisdictions.

3. ***MERP values listed in the draft document are based on Significant Impact Levels (SILs) which were recommended by EPA in a previous rulemaking which, as discussed in previous comments, are arguably too low.***

Ambient impact threshold levels selected as a basis for MERPs should be able to clearly identify ambient levels and emission rates that do not cause or contribute to a violation of the NAAQS or PSD increment. However, we believe threshold impact values used in EPA's guidance document (based on previously recommended SILs) are overly conservative leading to MERPs that are lower than is sufficient to protect NAAQS compliance. EPA's proposed ozone and $PM_{2.5}$ SILs are related to the level of variability and uncertainty in measured ambient concentrations. We have concerns that the EPA's analysis underestimated the uncertainty due to the selection of the 50th percentile (vs. the standard 95th percentile) for the bootstrapping confidence interval. In addition, it is not clear that EPA appropriately considered instrumentation calibration tolerances in their uncertainty estimates. There is also the concern that the basis for the uncertainty determination could change over time with updated instrumentation techniques, rendering EPA's SILs obsolete. We suggest that SILs are better tied to the NAAQS, which are based on protecting public health. For example, a reasonable approach would be to follow EPA's long standing precedent of setting an SIL to 4% ($1/25^{th}$) of an NAAQS, allowing the presence of multiple (up to 25) identical sources near the proposed source while not threatening the NAAQS.

Even if measurement uncertainty were a legitimate basis for SILs, rather than establishing an objective approach, EPA appears to have selected the particular statistical probability level so that it would correspond to a result that was consistent with policy considerations. An objective evaluation would start with an uncertainty probability level that is deemed to be significant, such as 95th percentile, which EPA has repeatedly applied in other contexts. The resultant SIL would then be statistically based rather than tainted by subjective policy decisions.

4. ***MERPs should be based on the modeled NAAQS Design Values reflecting the statistical form of the standards rather than peak concentrations.***

In developing the MERPs, EPA has carried its overly conservative policy of comparing the maximum modeled concentration for the respective NAAQS averaging time to the SILs rather than the NAAQS design concentration. For ozone, this means modeling the highest 8-hour concentration rather than the 99th percentile daily maximum (4th highest per year averaged over three years) and for $PM_{2.5}$ this means modeling of the highest daily 24-hour concentration instead of the 98th percentile (8th highest per year averaged over 3 years). The espoused rationale is to use the peak instead of the design concentration when comparing modeled impacts to an SIL is to account for the highly improbable possibility that the location and time period of the modeled peak concentration exactly coincides with the time period and location of the background design concentration. The chance of this ever happening is vanishingly small. An alternative, but still conservative approach is to model the design concentration as this assumes that the design concentration of the modeled source and background overlap in both time and space, which is still a rather remote possibility.

This variability occurs because the peak modeled concentration is much more variable than the more statistically stable design concentration. It is also unstable as a function of the number of years modeled due to the chance for outlier outcomes for any given year modeled. The design concentrations for ozone and 24-hour $PM_{2.5}$ are in a probabilistic form that is based on percentiles, and purposefully less insensitive to the number of years modeled. In contrast, the peak concentration is an outlier that is the result of many factors that can vary substantially from year to year, leading to a much higher degree of uncertainty than the design concentration form. As discussed below, the use of the peak modeled concentrations rather than design concentrations to estimate MERPs results in high degree of model uncertainty, contributing to high MERP variability and uncertainty. Modeling the design concentration rather than the peak concentration would also reduce the noted extreme spatial variability in the North Dakota MERPs for ozone due to NOx precursor emissions noted[1] in Figure 1, below.

[1] The values plotted in Figure 1 are derived from the EPA's MERP guidance appendices and formula provided in their draft guidance.

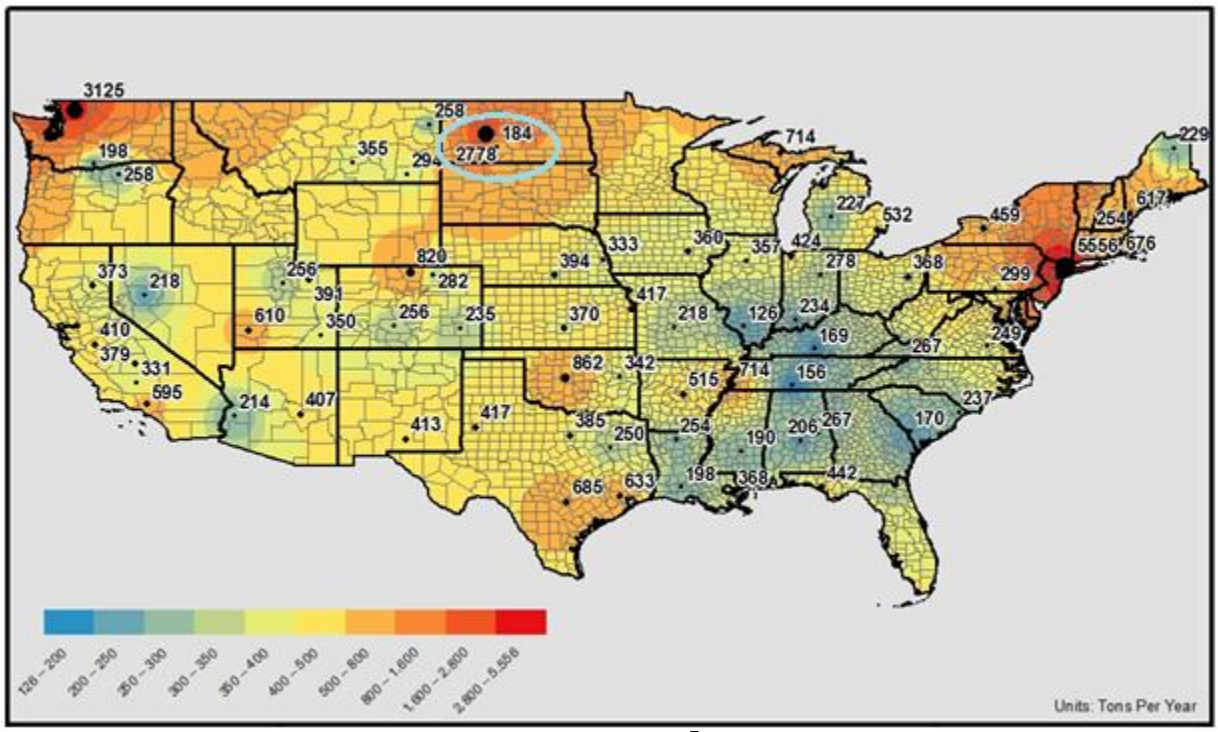
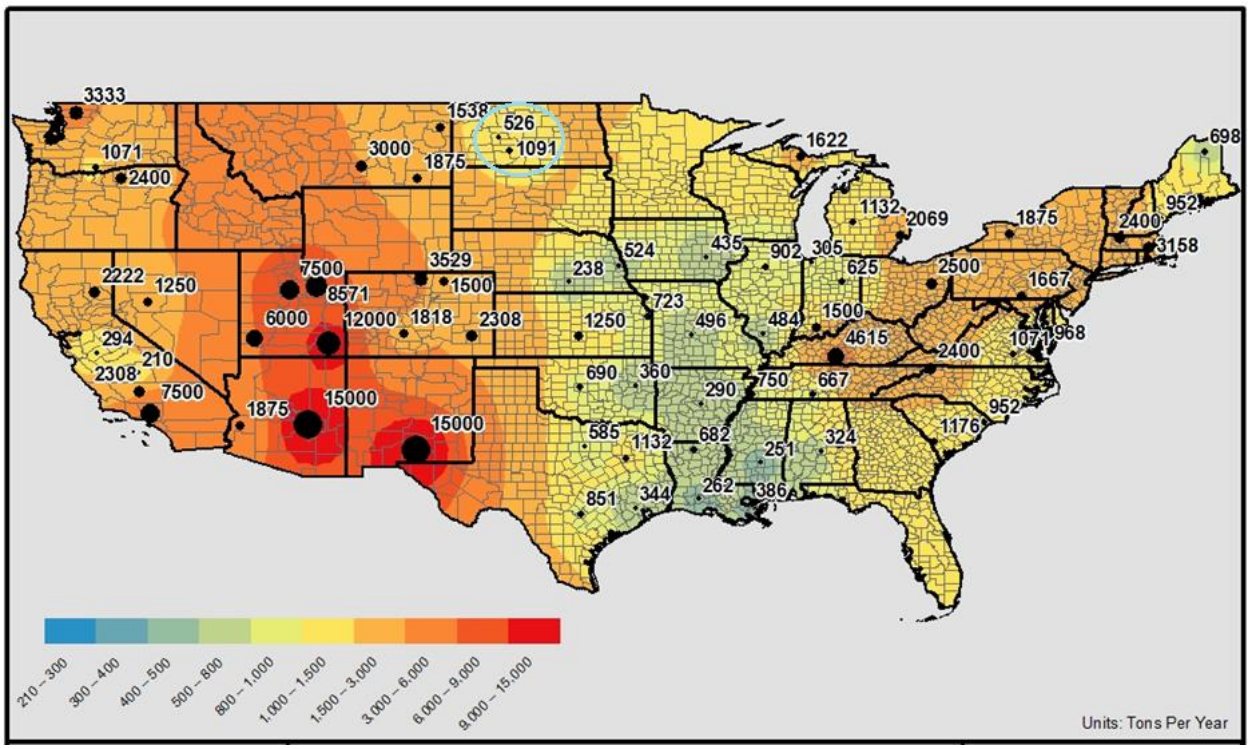


Figure 1 MERPs for NOx Precursors to Ozone[2]



[2] *"Unprecedented NSR Challenges: Modeling Conundrum for Ozone and PM2.5" by Bob Paine and Dave Heinold Presented at the EUEC Annual Conference, San Diego, February 8-10, 2017.*

Figure 2 MERPs for NOx Precursors to 24-hour $PM_{2.5}$

The fact that the proposed MERPs vary widely over very small spatial scales as shown in Figure 1 reflects modeling uncertainty, especially when using the model to estimate maximum impacts. This is demonstrated in dramatic fashion by two of EPA's hypothetical sources located in adjacent rural North Dakota counties (Mercer and Morton, within the blue oval). The results of the sensitivity analyses for maximum 8-hour ozone and 24-hour $PM_{2.5}$ model estimates from the sensitivity studies from the two nearby sites are very different from one another. The peak ozone concentration from Morton source is on-average 1400% more sensitive to the effects of NO_x emissions than on NOx emissions from Mercer. The peak impacts of 24-hour $PM_{2.5}$ from SO_2 are also unstable as shown in Figure 2. The reasons for these large differences in sensitivity between sources may be related to the uncertainty in modeling extreme events, or due to very localized characterizations of chemistry or terrain issues. These comparisons serve as evidence that model estimations of peak secondary pollutant concentrations can be highly variable, providing less confidence in their applicability for areas not specifically modeled. If the peak modeled concentrations were replaced with the NAAQS design values (99th percentile daily maximum for ozone and 98th percentile daily average for $PM_{2.5}$) the inherent modeling uncertainty could be substantially reduced. EPA should revise the MERPs to use the statistical form of the NAAQS design concentrations instead of the peak concentrations.

5. ***Given the highly complex nature of photochemical modeling, EPA should expand the screening process.***

Because applying photochemical models is a highly complex and labor intensive undertaking, EPA should provide for additional conservative screening level analysis tool between the MERPs and refined (Tier 2) modeling. Such a tool would ensure NAAQS compliance, but reduce the number of full-blown photochemical modeling runs which could otherwise pose a severe burden on industry and overburden regulatory agencies. If a new source's combination of precursor emissions is shown to exceed the MERPs, then a Tier 1 tool could be applied to conservatively estimate downwind impacts to be added to background. Only if these Tier 1 impacts exceed compliance objectives would refined modeling be applied. There are a number of ways EPA could approach development of the Tier 2 tool based on the model sensitivity studies already compiled to develop the MERPs. We offer here a possible approach that could be readily implemented.

In the sensitivity studies used for the MERP proposed guidance, EPA modeled emissions of 500, 1000 and 3000 tons per year for two ozone and two $PM_{2.5}$ precursors. Given that precursor and criteria pollutant impacts are generally not quite linear these data could be used to derive a regression equation. A possible form of regression equation could a power law (concentration = a x [precursor emissions]^b), because zero impacts are estimated for zero precursor emissions and impacts monotonically increase

with precursor emissions. Given the Tier 1 tool is intended to be conservative, a safety factor (perhaps ~ 10%) could be applied to the modeled concentrations before the regression equation is developed. The modeled impact of a new source could then be estimated by first selecting the site that is most representative. [As noted in the comment that follows, selection of the appropriate MERP modeling site requires additional guidance.] The precursor emissions would then be entered into the site's regression equations and the sum of the precursor contributions would then constitute a conservative estimate of the new source's impact on either ozone or $PM_{2.5}$. The regression for each precursor would be applied and results added. These conservatively estimated values would then be added to the established (modeled or measured) background concentrations to evaluate future NAAQS compliance.

To demonstrate this procedure, consider a proposed new source located in Porter County, Indiana, which will emit 500 tpy of NOx and 1000 tpy of VOC. Using the modeling results provided in Appendix A of the MERP Guidance and using EPA's method to interpolate the modeling, the ozone MERP for NO_x would be about 400 tpy and for VOC about 1400 tpy. Tier 2 modeling based on both precursors would be required if the emissions of either precursor exceeded the MERP. In this case only the increase in NO_x emissions exceeds the MERP. As such a Tier 2 screening analysis that conservatively estimates 8-hour ozone impact accounting for both precursors is conducted.

A Tier 2 power law regression equation has been derived from the Appendix A modeling results for Porter County. The peak modeled 8-hour ozone is increased by a 10% safety factor and two power law regressions are developed based on the three modeled emission rates (500, 1000 and 3000 tpy) of NO_x and VOC, respectively. The resulting form of the equation is as follows:

$$\text{Maximum 8-hour Ozone} = 0.0703\,[\text{NOx tpy}]^{0.4798} + 0.0021\,[\text{VOC tpy}]^{0.8697}$$

$$= 0.0703\,[500]^{0.4798} + 0.0021\,[1000]^{0.8697} = 2.2 \text{ ppb.}$$

This result is then added to the background design concentration to assess NAAQS compliance. This analysis is conservative in several aspects:

1) Appendix A's modeled ozone concentration is increased by 10% to develop the regression relationships;
2) The effect of increases in NO_x emissions and VOC emissions are assumed to be additive; and
3) Modeled peak ozone concentrations are assumed to coincide with design value background concentrations.

Using this type of simple and conservative Tier 2 approach would greatly simplify compliance assessments for most facilities.

6. ***More definitive guidance needs to be provided on how to select the representative MERP site.***

To be able to use EPA's Tier 1 demonstration analysis, applicants have to present a technically credible justification that emission characteristics of the source being permitted and the chemical and physical environment are adequately represented by the various hypothetical sources modeled by EPA. EPA needs to clarify expectations for this demonstration. In order for a permit applicant to utilize existing EPA modeling data to derive MERPs, the applicant is advised to consider the characteristics of its proposed source and source location and that of EPA modeled hypothetical sources. This would include comparison of information such as local dispersion climatology, air flow influenced by terrain, mix of precursors in the ambient air, and air shed classification such as urban, industrial, suburban, rural or remote. Because this process requires a great deal of judgment, it is unclear how this could be accomplished in a manner that the EPA and state regulatory agencies would find acceptable. EPA should provide a table that includes these types of classifications for each MERP site and provide a demonstration how this information could be used to select the most appropriate MERP site. One possible concept is for an applicant to develop the same tabular information for the site of the facility and then find the MERP site with the best match. If a single MERP site does not emerge from this matching process, interpolation of the modeling results between two or more sites may be possible. Following such detailed and quantitative guidance an applicant could more readily identify the most representative MERP site.

7. ***EPA's regional aggregation of MERPs requires more refinement to decrease variability and meaningfully represent sources in different geographic areas.***

EPA's MERP analysis segregates the Continental U.S. into three areas: Eastern, Central and Western, despite the high degree of variability in the MERPs in each region. As noted previously in our comments, some of the MERP variability is likely to be associated with basing them on the peak modeled concentration rather than the much more statistically stable design concentrations. Given this variability, using the lowest MERP in each as shown in Table 7.1 of the MERP Guidance results is extremely conservative. An improved aggregation would divide the country into a larger number of sectors where the intra-sector variability is less.

8. ***Adding Modeled Primary $PM_{2.5}$ Impacts to Secondary Impacts from the MERP emission ratios is unrealistically conservative.***

EPA suggests that the ratio of a new source's precursor emissions to the $PM_{2.5}$ MERP should be summed. That ratio multiplied by the critical air quality threshold (which EPA represents as the SIL) is the screening level estimate of the secondary $PM_{2.5}$ concentration. In establishing whether the source's impact is significant, the guidance

indicates that this be added to maximum modeled primary $PM_{2.5}$. This method is unrealistically conservative because the downwind distance at which the maximum primary $PM_{2.5}$ concentration occurs for sources affected by downwash is typically at or near the property boundary. Assuming a very high gas to particle conversion rate of 5% per hour, and a transport time of perhaps 10 minutes (corresponding to 900 m under 1.5 m/sec winds) to the point where primary impacts occur, only about 1 percent of the precursor emissions will have been converted to $PM_{2.5.}$ This implies that the peak secondary contribution to $PM_{2.5}$ occurs further downwind. It is noted that modeling of hypothetical sources conducted by EPA[3] using photochemical grid models are limited in resolution to the size of the grid. For the $PM_{2.5}$ MERP modeling used a 12 km resolution. Although that study indicated that maximum concentrations mostly occur within the closest grid cell, grid models with that degree of resolution cannot be used to estimate secondary particulate concentrations at a facility's fence line. On this basis, sources for which maximum primary $PM_{2.5}$ impacts occur within about 1 km should independently compare primary and secondary PM2.5 when comparing to the SIL.

9. Emissions increases to be compared to MERPs should be precisely defined to promote clarity and avoid confusion or inconsistent application.

Throughout the draft MERPs guidance, EPA suggests comparing the "proposed emissions increase" to the MERPs to determine whether a significant impact would occur. However, the method for determining the "proposed emissions increase" is not defined within the guidance, and regulatory provisions for assessing emissions increases provide many different approaches. New major sources are assessed based on potential emissions on a tons per year basis. Major modifications at existing major sources are assessed based on the difference between projected actual emissions and baseline actual emissions to determine if a significant emission increase occurs, plus creditable and contemporaneous emissions changes to determine if a significant net emission increase occurs, each on a tons per year basis. Determination of significant impacts compares allowable and past actual emissions on various averaging periods (e.g., 1-hour, 24-hour, and annual) for relevant pollutants. NAAQS compliance demonstrations for primary pollutants rely on maximum allowable emission rates. PSD Increment compliance demonstrations for primary pollutants are determined based on the difference between current actual emissions and actual emissions before the relevant baseline date. Guidance for evaluating whether sources subject to PSD review must model effects on air quality related values at Class I areas use the annualized maximum 24-hour average lb/hr emission rate.

The "proposed emission increase" compared to the MERPs should be specified to avoid inconsistent implementation in light of the many emissions increases that are compared for various aspects of a PSD permit application. Because photochemical grid modeling

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[3]*Bake, Kotchenruther and Hudman, 2016. Estimating ozone and secondary $PM_{2.5}$ impacts from hypothetical single source emissions in the central and eastern United States, Atmospheric Pollution Research, Volume 7, January 2016, pp 122–133.*

relies on inventories of actual emissions, we recommend that the MERPs guidance specify that the comparison be made using the following

- For a new major source, potential emissions.
- For a major modification at an existing major source, the "Step 1 emissions increase" based on the difference between projected actual emissions and baseline actual emissions from existing emissions units and potential emissions from new emissions units, as applicable. Only the actual emissions changes associated with a project at an existing major source should be evaluated because the existing source emissions (including those that might be considered in an emissions netting analysis) would already have been included in the actual emissions inventory simulated in the photochemical modeling analysis.

The preceding approach will ensure that excessive conservatism is not added by double counting impacts from existing sources that are already part of the modeling basis for the MERPs.

If you have any questions on these comments, please contact Tim Hunt at 202-463-2588 or tim_hunt@afandpa.org.

Sincerely,

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March 31, 2017

Submitted via email to bridgers.george@epa.gov

Mr. George Bridgers
Office of Air Quality Planning and Standards
United States Environmental Protection Agency
109 T.W. Alexander Drive
Research Triangle Park, NC 27709

RE: Draft *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program*

Dear Mr. Bridgers:

The American Petroleum Institute (API) provides comments on the Environmental Protection Agency's (EPA) December 2, 2016 draft *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program* (Guidance).

API represents over 625 oil and natural gas companies, leaders of a technology-driven industry that supplies most of America's energy, supports more than 9.8 million jobs and 8 percent of the U.S. economy, and, since 2000, has invested nearly $2 trillion in U.S. capital projects to advance all forms of energy, including alternatives. Efficient and cost-effective permitting procedures are important both to conserve state resources and to facilitate our members' timely construction or modification of facilities to meet our nation's energy needs.

We encourage EPA to continue to explore and develop less expensive and resource-intensive modeling alternatives for assessing the impacts of ozone and $PM_{2.5}$ precursors. Although the MERP Guidance outlines a useful screening tool for permit applicants, if a proposed project cannot utilize MERPs then costly and time-intensive photochemical grid modeling or Lagrangian modeling must be conducted.[1] Some alternatives under development,

[1] These Tier 1 and Tier 2 modeling provisions are contained in the final Appendix W rule, which has a current effective date of May 22, 2017 and which includes a one-year transition period for modeling requirements.

such as the SCICHEM model, show promise as more efficient tools for assessing single-source precursor impacts, and EPA should actively support and prioritize such development efforts.

We support using MERPs for Tier 1 demonstrations, but the MERP guidance needs to be further expanded and clarified.

As detailed in our attached comments, our recommendations for improving the MERP guidance include:

- Clarifying the use of Table 7.1 and correcting the scenarios to align with the written guidance already in the document
- Inclusion of additional guidance and examples of the processes for comparing a proposed source to a particular EPA modeled source
- An alternative method for summing primary and secondary $PM_{2.5}$ impacts for comparison to the SILs

Thank you for your consideration of these comments. If you have any questions, please contact me at kaliszc@api.org or at (202) 682-8318.

Sincerely,

Cathe Kalisz

Attachment

Comments on EPA's December 2, 2016 Draft "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program"

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Comments on EPA's December 2, 2016 Draft "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program"

The American Petroleum Institute (API) provides the following comments on EPA's December 2, 2016 Draft "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program" ("MERP Guidance" or "Guidance").

1.0 TIER 1 DEMONSTRATIONS AND MERP CONCEPT.

1.1 We support the use of Modeled Emission Rates for Precursors (MERPs) for Tier 1 demonstrations.

Many PSD permit applications will be for projects with relatively small emission rate increases of ozone or $PM_{2.5}$ precursors. The use of MERPs allows applicants to avoid the needless expenditure of resources to model what are certain to be insignificant impacts. Because MERPS are established using the Significant Impact Levels (SILs), they are a conservative screening method protective of air quality. MERPs reflect an appropriate balance between protection of air quality and economic development per the statutory intent of the PSD program.

1.2 The modeling results that provide the estimated ozone and $PM_{2.5}$ impacts for hypothetical sources should be able to be used as a Tier 1 approach for sources with emission rate increases that exceed the MERPs.

As EPA has noted in its guidance, the Tier 1 approach for estimating ozone and $PM_{2.5}$ impacts from new proposed sources would utilize estimates based upon existing modeling information. The MERPs are one form of the Tier 1 approach for which estimated impacts below the SILs are sufficient grounds to exempt the source from detailed modeling. However, even if the source-related impact is above the SIL, the Tier 1 information should be considered a relevant and conservative indicator of the source's impact for the PSD assessment.

EPA's newly-issued "Guidance on the Use of Models for Assessing the Impacts of Emissions from Single Sources on the Secondarily Formed Pollutants: Ozone and $PM_{2.5}$" (EPA-454/R-16-005, December 2016) has a relevant discussion in this regard. In that guidance, EPA discusses in Section 3 the First Tier approach:

> "Existing technical information is used in combination with other supportive information and analysis for the purposes of estimating secondary impacts from a particular source."
>
> "The permit applicant should generate a modeling protocol and describe how the existing modeling conforms to the nature of O_3 and/or secondarily formed $PM_{2.5}$ that is conceptually thought to form in that particular area."

In Section 6, EPA further discusses its openness for both screening and refined approaches:

> "The Guideline allows for the flexibility to use more simple and conservative approaches where appropriate as well as more complex and sophisticated approaches that allow for a more representative impact for a source."

> "The approaches for estimating source and cumulative impacts described in this section reflect the flexibility available for using both screening and refined level model and techniques that are suitable for PSD permit assessments."

Later in Section 6, for both ozone and $PM_{2.5}$, EPA describes the cumulative analysis approach as being the sum of a representative monitored value and the modeled project source impact as described above. The rank of the monitored value to be added to the modeled value may differ depending upon the conservative or representative nature of the modeling. If the modeling can be documented as conservative, then it would seem appropriate to add the design monitored value (rather than the maximum monitored value) to the modeled value.

An example of this Tier 1 approach is provided here. Suppose that an EPA modeling exercise has established that a new NOx source with an emission rate of 400 tons per year will lead to a peak ozone concentration of 1 ppb. For a proposed project with a NOx increase of 1,000 tons per year located close to the EPA modeled site (and determined to be representative), it is desired to use the existing EPA modeling rather than conduct new modeling. The project impact can be estimated through scaling as 1000/400 x 1 ppb, or 2.5 ppb ozone. Such scaling is expected to result in conservatively high impacts because it implicitly assumes a linear response. Because the actual responses are non-linear, we would expect real ozone and PM impacts to be lower, as suggested by sensitivity analysis using Brute Force or DDM approaches.

According to EPA's modeling guidance referenced above for a screening-level analysis, the highest modeled concentration from the project should be added to the highest design value (among monitors in the area) to determine the cumulative impact. Suppose that the highest monitored design value in the area is 60 ppb. Then the total cumulative impact would be 62.5 ppb, which is still below the 70 ppb NAAQS. This assessment is very conservative because the highest (not the design ranking, which is the 4th highest) modeled project impact is added to the highest design background. The likelihood for the coincident occurrence of the highest modeled impact with the design monitored concentration is very low, so the assumption that the two components of this impact occur in the same time and location add to the conservative nature of this approach.

It should be stressed that applying such a screening-level approach would not preclude the option of a more refined Tier 2 model estimate in the event that the conservative nature of the screening modeling approach results in a prediction above the applicable NAAQS or PSD increment. A more refined Tier 2 approach would also account for the varying locations and times of the proposed source and background concentrations.

2.0 ADDITIONAL SUPPORTING DATA AND FURTHER CLARIFICATION ON APPLICATION OF MERP GUIDANCE ARE NEEDED.

2.1 Development and Use of Table 7.1.

2.1.1 EPA should clarify that applicants can use the region-specific minimum MERP values in Table 7.1 without the need for any detailed supporting data.

EPA should clarify that if a proposed project's precursor emissions are less than EPA's respective most conservative (lowest) MERP values for their region (according to Table 7.1 in the Guidance), the applicant can directly use the Table 7.1 MERP values to demonstrate that the project has insignificant ozone and $PM_{2.5}$ impacts. When MERP values from Table 7.1 are used, no additional data or analyses of source or location characteristics would be required by the applicant.

EPA proposes that the sum of estimated precursor impacts (NOx and VOC for ozone, NOx and SO_2 for $PM_{2.5}$) should be compared to the respective ozone and $PM_{2.5}$ SILs. Sections 6 and 7 of the Guidance describe how such estimates should be determined from fractions of the respective MERPs. We include additional comments later (Section 2.5) regarding the appropriateness of this conservative additive approach for precursor impacts.

EPA should clarify that an applicant may compare project emissions to region-specific data in Table 7.1, and revise the Scenarios accordingly. In Scenario "A" (Section 7, subsequently revised in EPA's February 23, 2017 Errata memo), a facility is located in the "upper Midwest region". However, EPA compares NOx and VOC emissions for this facility to the lowest MERPs listed in Table 7.1 in the eastern US (170 and 1159 TPY, respectively) instead of the lowest MERPs in the central US (126 and 948 TPY) where the source is presumably located. In the $PM_{2.5}$ analysis of Scenario "B", the proposed source is located in the southeastern US, but EPA uses the NOx and SO_2 MERPs from the western US (1075 and 210 TPY, respectively) rather than from the eastern US (2295 and 628 TPY). This is erroneous and contrary to language in Section 7.1: "As illustrated in the examples above, use of MERPs for each precursor as a Tier 1 demonstration tool could be based on either the most conservative (lowest) value ***across a region/area*** or the source-specific value derived from a more similar hypothetical source modeled by a permit applicant, permitting authority or EPA."

2.1.2 Table 7.1 should be based on 5th or 2nd percentile MERP rather than the absolute lowest MERP.

Table 7.1 present the most conservative (lowest) NOx, SO_2 and VOC MERPs across the WUS, CUS, and EUS regions, according to maximum ozone and $PM_{2.5}$ impacts among all source configurations modeled by EPA (as listed in Appendix A of the Guidance). Figures 5-1, 5-2 and 5-3 of the guidance display the box-whisker distributions of 24-hour $PM_{2.5}$, annual $PM_{2.5}$ and MDA8 ozone MERPs, respectively, for each region and precursor. It would be helpful if the figure captions defined the percentile ranges for the boxes and whiskers. In many cases, the absolute minimum MERPs from these figures are well below the bulk of the populations and thus represent statistical outliers. Furthermore, each single outlier value could potentially result from modeling artifacts (e.g., uncertainties in NEI, over-stated biogenic VOC, among many others). Therefore, it would be more appropriate to choose the 2nd or 5th percentile MERPs among all sources for Table 7.1, or more preferably, to recalculate MERPs for each hypothetical source based on the 95th or 98th percentile maximum ozone and $PM_{2.5}$ impacts over the year. Such methods are common for air quality issues related to tail-end values (e.g., modeled 98th percentile visibility impacts in BART analyses; 1-hour NO_2 and SO_2 NAAQS defined at 98th percentiles).

Table 1 below represents the values in Table 7.1 of the Guidance (corrected according to EPA's February 23, 2017 Errata memo). Note that we cannot replicate the EUS NOx MERP of 10,144 TPY for annual $PM_{2.5}$ from data in Appendix A.[1] Tables 2 and 3 show how the values in Table 1 would change as the 2nd and 5th percentile MERPs are chosen among all sites in each region, rather than the lowest among all sites (given lack of data, we could not re-calculate MERP values based on source-specific 95th and 98th percentile ozone and $PM_{2.5}$ impacts).

[1] Based on our review, the MERP value should be 10037 tpy instead of 10144 tpy, using the maximum impact from Montcalm, Michigan (Source ID EUS 16).

Table 1. Most conservative (lowest) illustrative MERP values (tons per year) by precursor, pollutant and region (from Table 7.1 of the draft Guidance).

Precursor	Area	8-hr O_3	Daily $PM_{2.5}$	Annual $PM_{2.5}$
NOX	CUS	126	1693	5496
	EUS	170	2295	10144[1]
	WUS	184	1075	3184
SO2	CUS		238	839
	EUS		628	4013
	WUS		210	2289
VOC	CUS	948		
	EUS	1159		
	WUS	1049		

Table 2. 2nd percentile (over all sources in a region) MERP values (tons per year) by precursor, pollutant and region.

Precursor	Area	8-hr O_3	Daily $PM_{2.5}$	Annual $PM_{2.5}$
NOX	CUS	154	1818	7416
	EUS	171	3073	10154
	WUS	200	1966	4313
SO2	CUS		262	1782
	EUS		803	4476
	WUS		540	5329
VOC	CUS	1239		
	EUS	1304		
	WUS	1087		

Table 3. 5th percentile (over all sources in a region) MERP values (tons per year) by precursor, pollutant and region.

Precursor	Area	8-hr O_3	Daily $PM_{2.5}$	Annual $PM_{2.5}$
NOX	CUS	185	1982	7887
	EUS	188	4723	12332
	WUS	216	2063	6034
SO2	CUS		305	2126
	EUS		1013	6641
	WUS		808	5680
VOC	CUS	1339		
	EUS	1530		
	WUS	1262		

2.1.3 Dividing the US into several additional regions may be more appropriate than the western, central, and eastern divisions used by EPA.

Division of the country into three regions appears to be an arbitrary selection based on the original source modeling of Baker et al. (2015) and the new source modeling conducted in developing the Guidance – thus not based on a spatial analysis of peak air quality impacts (and respective MERPs) with respect to air quality/climate zones. We would expect, for example, that ozone impacts would be more sensitive to NOx in areas rich in biogenic VOC (e.g., the southeast US) and that PM nitrate impacts would be more sensitive to NOx in areas rich in ammonia (e.g., agricultural areas of the Midwest). It would be inappropriate to compare SO_2 emissions for a proposed project in Colorado, where 24-hour $PM_{2.5}$ MERPs range well over 1000 TPY for the hypothetical sources listed in Appendix A, with the minimum WUS $PM_{2.5}$ MERP from Table 7.1 (210 TPY) estimated for a hypothetical source in the San Joaquin Valley of California.

Figures 1 and 2 show the spatial distribution of NOx MERPs for ozone and SO_2 MERPs for 24-hour $PM_{2.5}$ across the US, which represent the most limiting MERPs. These plots were derived from the data in Appendix A (including revisions according to EPA's February 23, 2017 Errata memo) taking the minimum values among co-located sources. Although the EUS, CUS, and WUS divisions fit the spatial patterns marginally well, both the ozone and $PM_{2.5}$ MERP patterns align well with our expectations for regional climate zone sensitivity, such as the NOAA-based US climate regions used by EPA to evaluate photochemical model performance (Figure 3). These climate zones represent simple state-level breakouts with which regulators and most applicants are already familiar. We note that including additional regions that better reflect the general spatial patterns of sensitivity would lift the minimum MERPs listed in Table 7.1 for certain new regions but lower them for others.

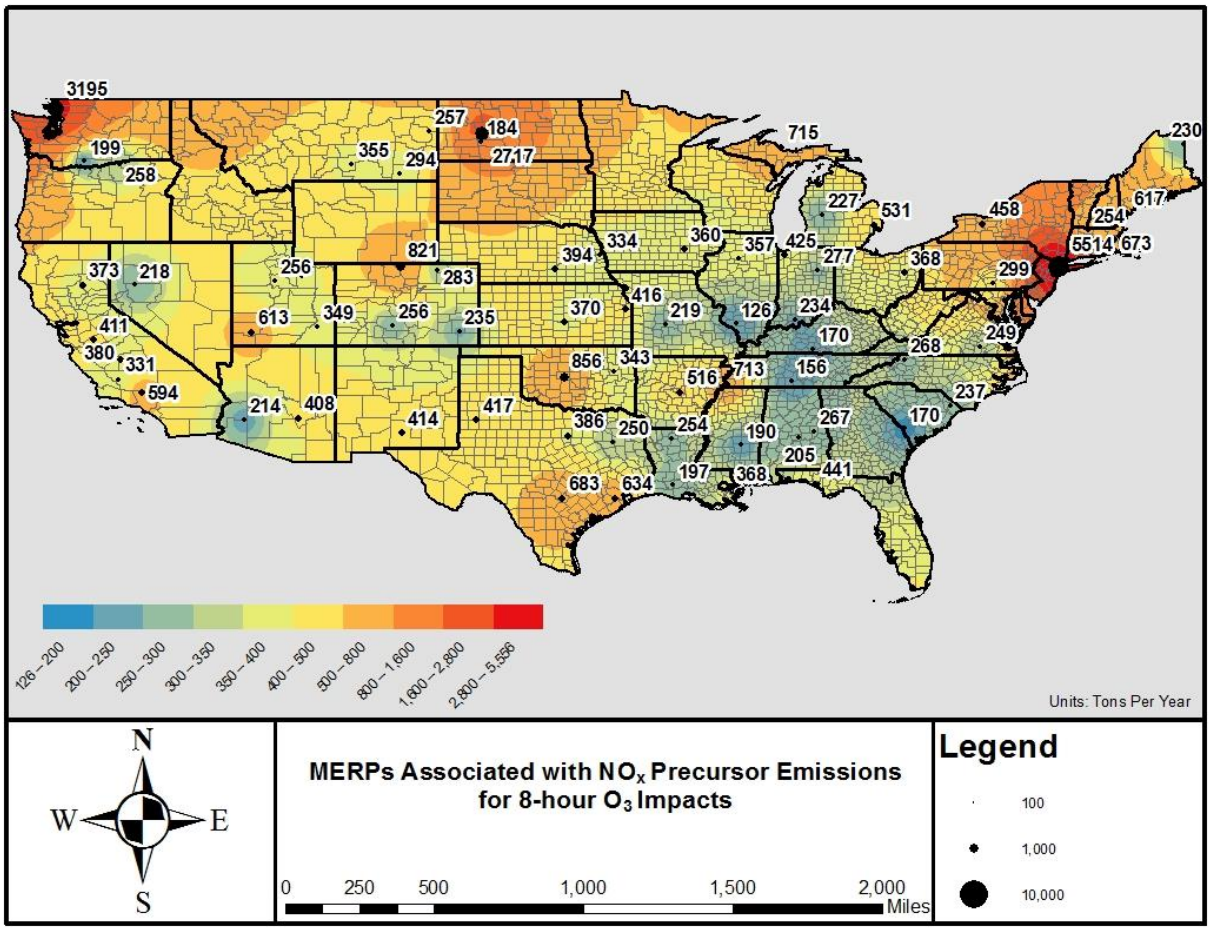


Figure 1. Spatial distribution of NOx MERPs for ozone, plotted from the minimum MERPs among co-located source configurations.

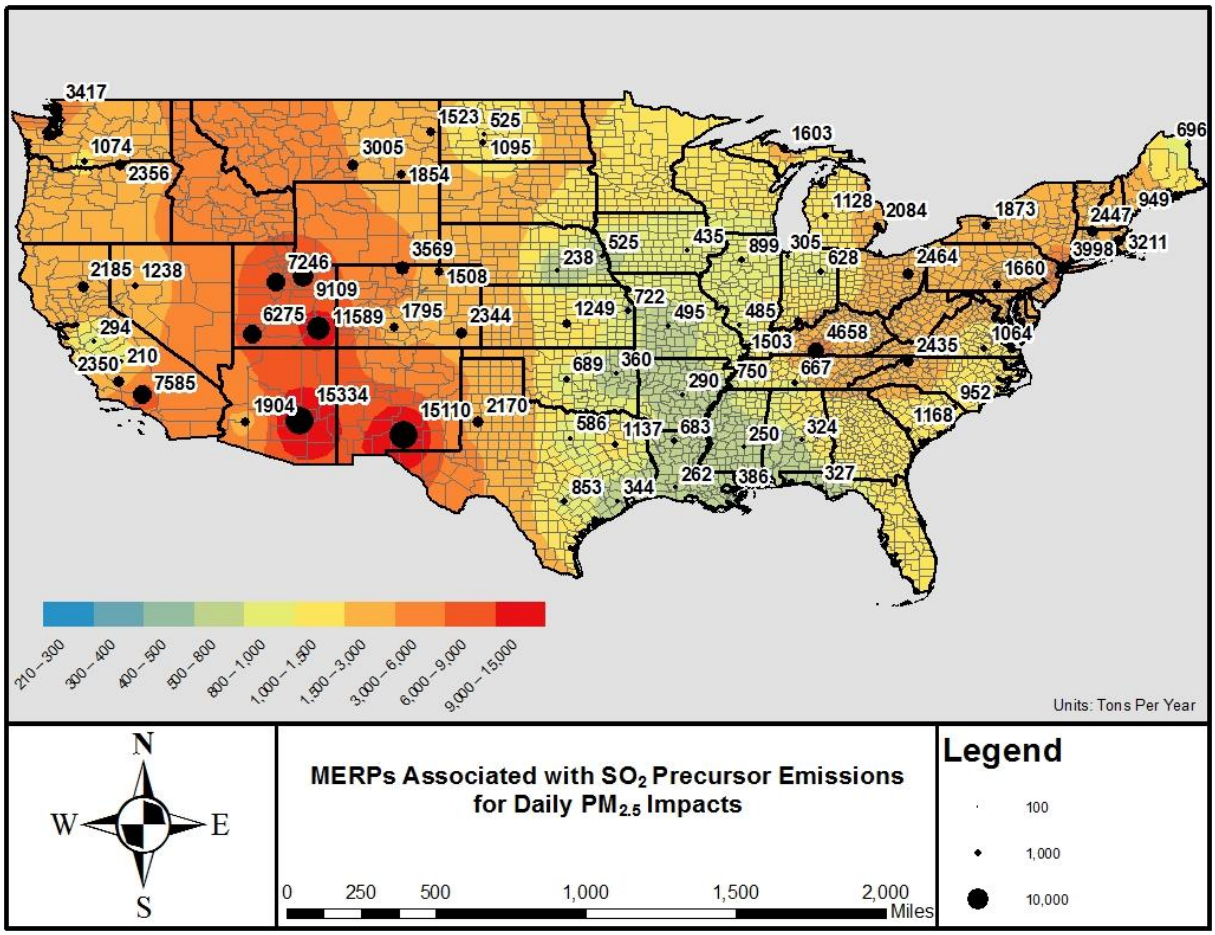


Figure 2. Spatial distribution of SO_2 MERPs for 24-hr $PM_{2.5}$, plotted from the minimum MERPs among co-located source configurations.

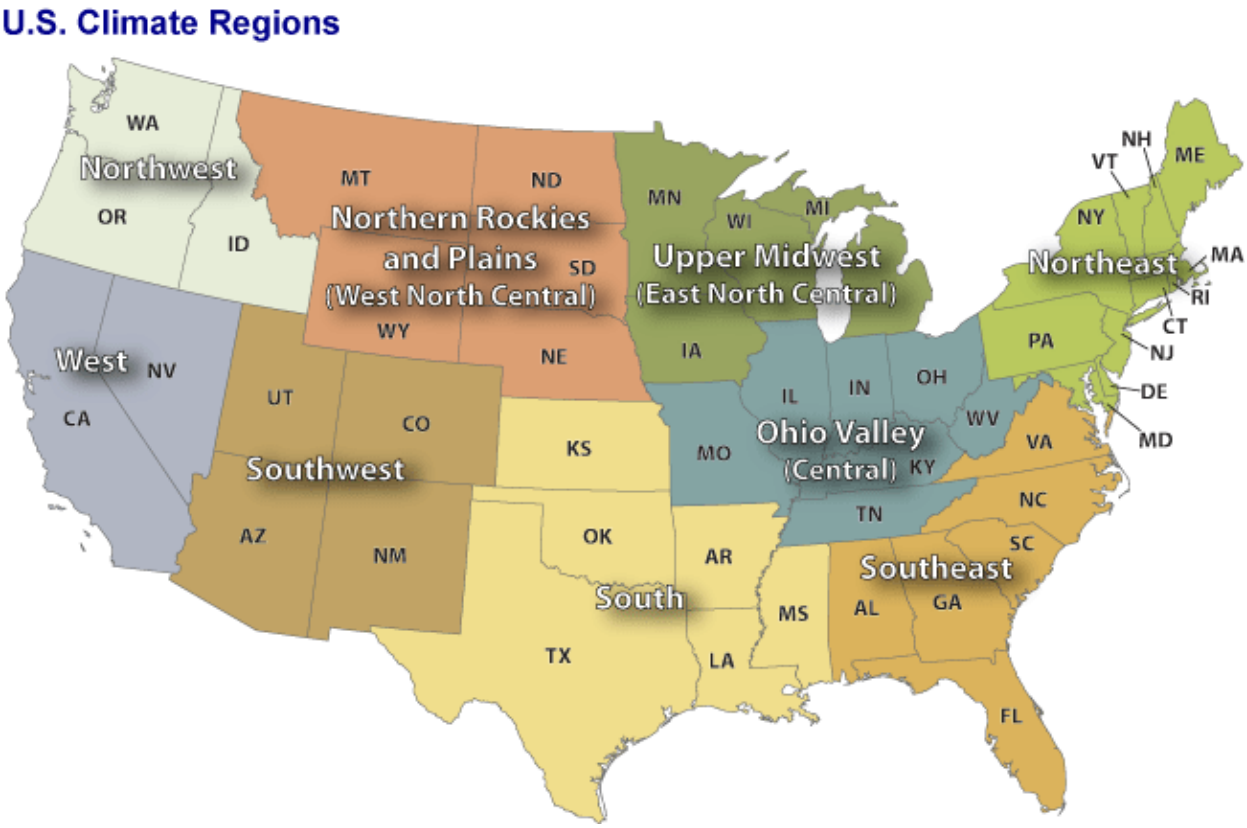


Figure 3. NOAA climate regions used by EPA to evaluate photochemical model performance. Image taken from Figure A-2 of "Air Quality Modeling Technical Support Document for the 2015 Ozone NAAQS Preliminary Interstate Transport Assessment" (December 2016). Source: http://www.ncdc.noaa.gov/monitoring-references/maps/usclimate-regions.php#references.

2.2 Certain aspects of EPA's modeling results (Appendix A of the MERP Guidance) require further clarification.

Two Ft. Berthold, ND locations have vastly different modeling results. Sources WUS1 and WUS2 are located in Mercer and Morton Counties, respectively, and are within 50 km of each other according to source coordinates obtained from EPA. The WUS2 NOx MERPs for ozone range between 184-556 TPY/ppb (where 184 is the minimum for the WUS region listed in Table 7.1) for peak ozone impacts between 2.7-5.4 ppb. In stark contrast, the WUS1 NOx MERPs for ozone range between 2717-3860 TPY/ppb for peak ozone impacts between 0.2-0.8 ppb. The reasons for this disparity are not obvious, since both sources are located in rural areas that appear to be somewhat devoid of anthropogenic emissions. Without further investigation, we conjecture that a possible cause could be the proximity of WUS2 to Bismark, ND (2013 population of 67,000), which might enhance reactivity of background emissions into which emissions from the hypothetical sources mix. Otherwise, this disparity may be the result of a modeling artifact. EPA should thus investigate this disparity and determine why there is such a large gradient, or determine whether one of the MERPs is an outlier. If EPA finds that one of these is the result of an artifact or the disparity is not explainable, the source should be removed from the MERP dataset.

2.3 EPA should provide additional data for each of its modeled source locations, so that applicants can more readily identify a scenario similar to that of the applicant's proposed project.

In order for a permit applicant to utilize existing EPA modeling data to derive MERPs, the applicant must consider the characteristics of its proposed source and source location and that of EPA modeled hypothetical sources. In comparing data for an applicant's site, information such as meteorology/climate, terrain, chemical environment, and proximity to urban centers and other industrial sources may be considered. As described in the sub-sections below, EPA could provide additional data resources for each of its modeled source locations so that permit applicants could more readily identify a MERP location that is similar to the applicant's proposed project site. EPA also could provide an example of how to use this information in a way to obtain agency approval for the use of the MERP information.

2.3.1 Sources in mountainous areas.

Terrain elevation may be important for sources in mountainous areas; besides the unique climates and source mixtures in such areas, we would expect higher photolysis rates (snow, thinner atmospheric opacity) and generally higher background ozone. These factors may be particularly important in areas such as the Rockies, Great Basin, California, the Cascades and the Appalachians. EPA should provide more information as to how terrain has been factored into the MERP guidance, and how applicants should consider this effect in reviewing the existing modeling information.

2.3.2 Other data useful for selecting representative ozone MERPs.

Considering non-linear photochemistry, the local chemical environment may be useful in selecting representative hypothetical sources from Appendix A. To aid permit applicants in their comparative analysis, EPA could provide chemical parameters such as modeled morning VOC:NOx ratio (ppbC/ppb) on the day of peak ozone impacts for each hypothetical source, either from the individual 12 km grid cells where peak ozone impacts occur, or from an area-average around the peak location. Such data reflect the entire precursor mix present in the air from all regional sources. Reporting parameters such as VOC:NOx ratios for all grid cells over the US would allow applicants to "look up" conditions for the locations of their proposed project (especially to remain consistent with how such conditions are represented in EPA's modeling).

For example, suppose an applicant's new source is located in a rural area of the central US, is considered a "low release" at 10 m, and will emit NOx and VOC. Based on the source's coordinates, the applicant looks up the corresponding grid cell VOC:NOx ratio reported from EPA's modeling results and finds it is 12 ppbC/ppb. VOC:NOx ratios exceeding about 10 indicate clearly NOx-sensitive conditions, ratios below about 5 indicate clearly VOC-sensitive conditions, and values between 5-10 are in the transition zone. Since the reported VOC:NOx ratio for the area of the applicant's source is 12 (NOx-limited), the applicant could choose a hypothetical source associated with VOC:NOx ratio above 10 (also NOx-limited) for the MERP analysis.

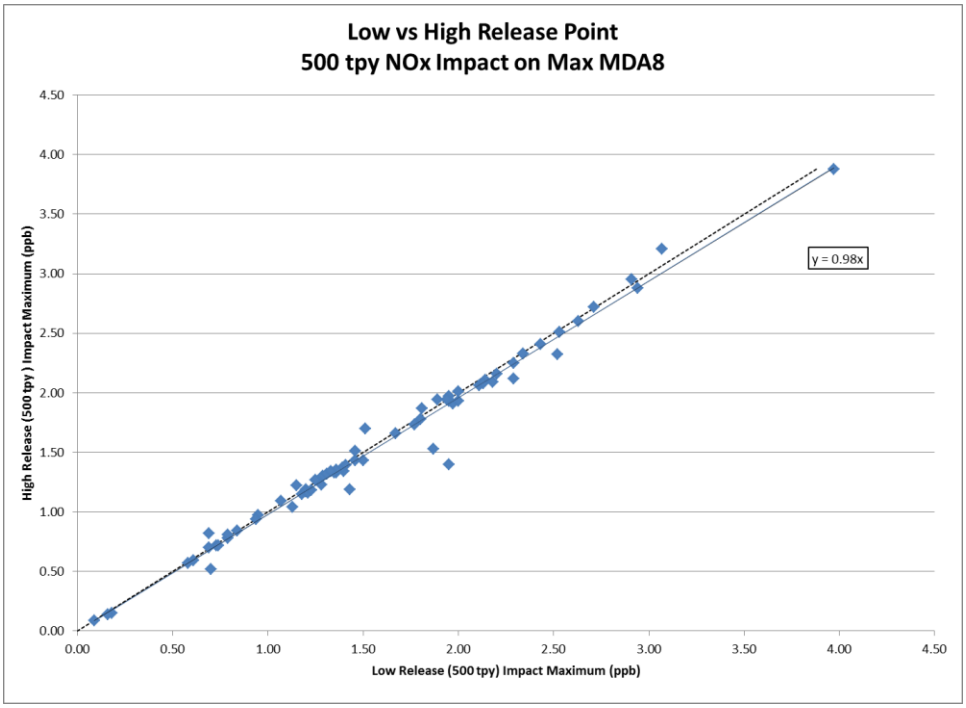
2.3.3 Other data useful for selecting representative $PM_{2.5}$ MERPs.

Particulate nitrate formation is sensitive to the amount of available ammonia in the local environment. Following similar arguments as above, EPA could report modeled 24-hour average total ammonia (NH_3+NH_4) on the day and around the locations of peak $PM_{2.5}$ impacts from each hypothetical NOx source, and for all grid cells across the US so that applicants may "look up" conditions for the locations of their proposed project. However, this information should not be used to add ammonium mass to sulfate and nitrate impacts when comparing to the SIL, to remain consistent with EPA MERP guidance.

2.4 EPA should provide further guidance and additional examples on the processes for matching a proposed source to a particular EPA modeled source.

Further guidance and clarification are needed on how an applicant should demonstrate that the proposed source is comparable to a particular EPA modeled source. It would be helpful for EPA to expand its example scenarios to include more detail; for example, for Scenario B in the draft guidance, EPA could describe how the permit applicant determined that EUS region hypothetical source 19 was representative of the applicant's project.

From our analysis of the EPA modeling data, the release height of NOx and VOC emissions does not significantly affect the predicted maximum ozone impact or the respective MERPs (Figure 4). This is an expected outcome since peak ozone usually occurs during summer midday and afternoon hours when vertical stratifications are quickly mixed away. However, the release height of NOx and SO_2 does affect predicted maximum $PM_{2.5}$ and respective MERPs, with low releases resulting in larger $PM_{2.5}$ impacts and lower MERPs (Figure 5). The maximum 24-hour $PM_{2.5}$ impacts most often occur during periods when there is vertical stratification (e.g., night and winter). This allows elevated releases to disperse well before the plume impinges on the surface, while surface releases are trapped near the surface for long periods. Such guidance would be useful to the applicant and help to ensure consistency among applications.



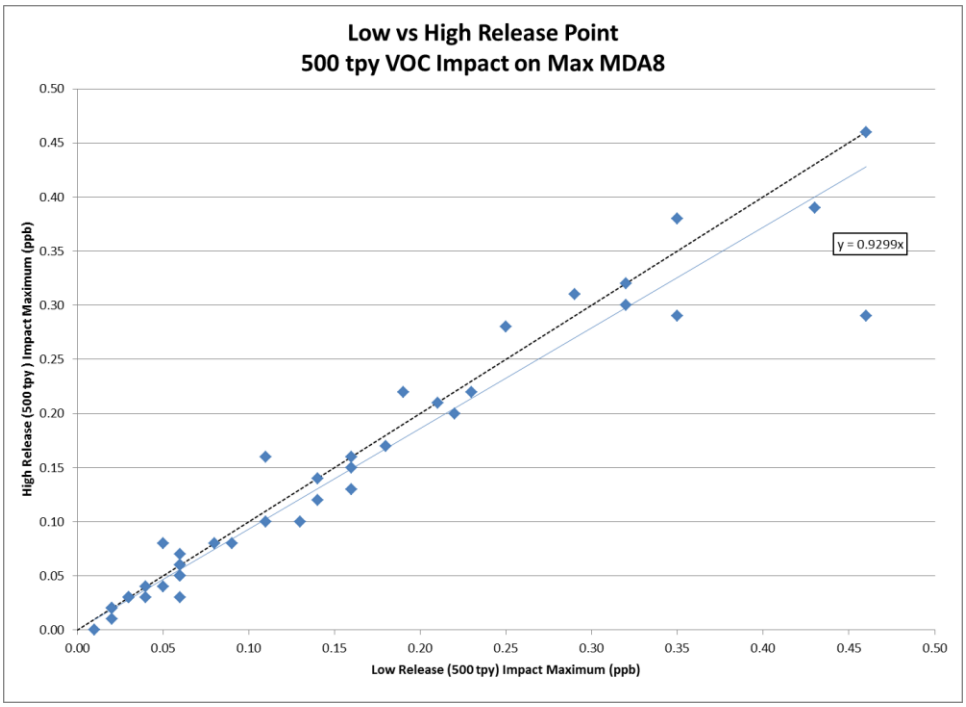
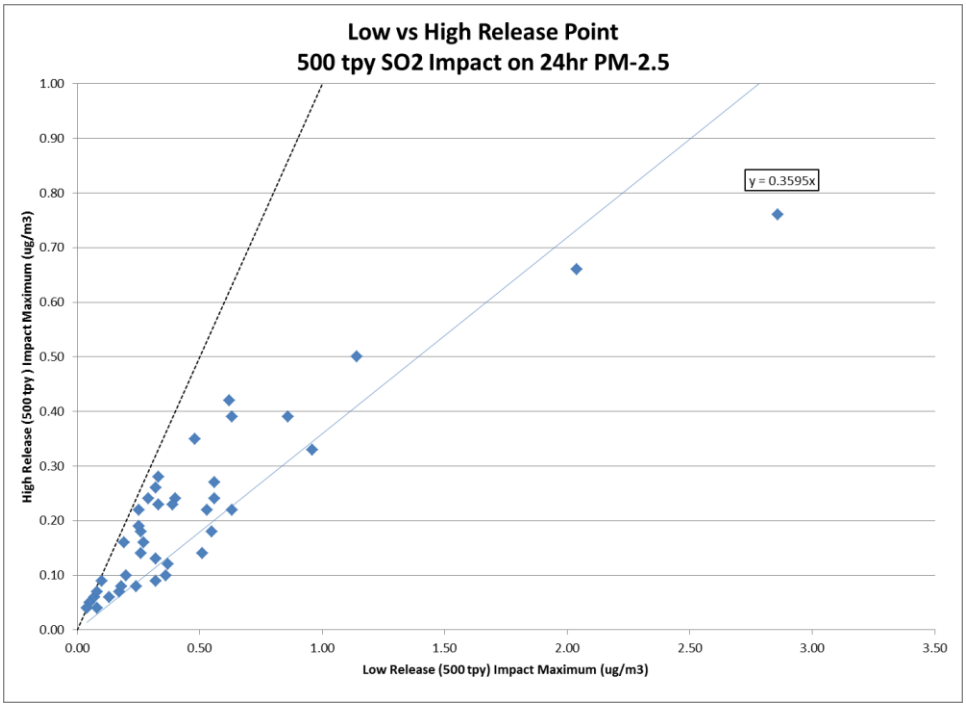


Figure 4. Comparison of high vs. low release of NOx (top) and VOC (bottom) on maximum MDA8 ozone impacts from EPA's modeling results for 500 TPY sources (Appendix A of the draft MERP guidance).



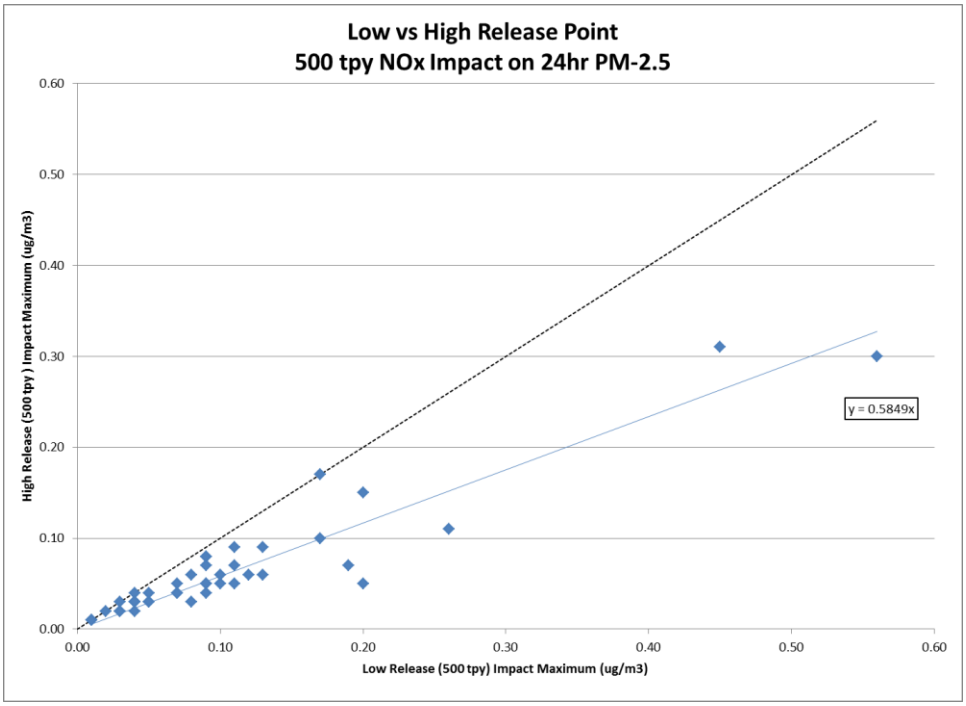


Figure 5. Comparison of high vs. low release of SO_2 (top) and NOx (bottom) on maximum 24-hour $PM_{2.5}$ impacts from EPA's modeling results for 500 TPY sources (Appendix A of the draft MERP guidance).

2.5 The proposed method of summing precursor impacts is overly conservative.

EPA proposes that the sum of estimated precursor impacts (NOx and VOC for ozone, NOx and SO_2 for $PM_{2.5}$) should be compared against the respective ozone and $PM_{2.5}$ SILs. Sections 6 and 7 of the Guidance describe how such estimates should be determined from fractions of the MERPS.

This approach assumes that the precursor impacts are interdependent, occur at the same time/location, and thus simply additive. In reality, nitrate tends to form in cool, humid conditions such as night and winter, and in environments with excess ammonia; SO_2 tends to form sulfate in warmer conditions such as daytime and summer when oxidation rates are higher, without regard to available ammonia. Ozone tends to form in VOC-sensitive conditions during mornings and in NOx-rich/urban environments, whereas it forms in NOx-sensitive conditions during midday and afternoon hours in VOC-rich/rural environments. Peak ozone and $PM_{2.5}$ impacts from the different precursors occur at distinctly different times and locations.

EPA's guidance is even more conservative by specifying that precursor $PM_{2.5}$ impacts and primary $PM_{2.5}$ impacts should be added and compared to the SIL. The highest primary $PM_{2.5}$ impacts are likely to occur near facility fence lines, while secondary $PM_{2.5}$ impacts tend to reach much farther distances depending on the compensating rates between chemical production and dispersive decay. Figure 4-3 in the Guidance shows that modeled secondary $PM_{2.5}$ peak impacts most commonly occur 10-20 km downwind of the sources, which is far beyond expected primary peak impacts.

We suggest an alternative approach for 24-hour $PM_{2.5}$ MERPs, whereby SO_2 and NOx MERPs are reported for each of the 4 seasons to distinguish between winter proclivity for NOx/nitrate peaks and summer proclivity for SO_2/sulfate peaks. Additionally, we suggest that EPA allow for a separate comparison of primary and secondary $PM_{2.5}$ to the SIL instead of adding those components together. To do this, EPA could indicate that for the $PM_{2.5}$ SIL test, two concentrations should be determined: 1) the primary $PM_{2.5}$ peak concentration without secondary $PM_{2.5}$ added (likely to be very close to the source where secondary $PM_{2.5}$ is negligible), and 2) the peak secondary $PM_{2.5}$ predicted concentration, to which is added the peak primary $PM_{2.5}$ <u>at the location of the peak secondary prediction</u>. The higher of those two concentrations would be compared to the SIL to determine whether any further modeling is needed.

Whether or not to add NOx and VOC precursor impacts is less clear for ozone. Ozone is NOx-sensitive at most locations, as indicated by the much larger ozone impacts, larger response to emission changes, and much lower MERPs than for VOC. This is related to the fact that maximum daily 8-hour ozone occurs late in the day when conditions are more typically NOx-limited and the fact that most sources are located in rural areas that are relatively NOx-scarce and VOC-rich (biogenics). Since NOx MERPs for ozone tend to be typically one order of magnitude smaller than for VOC, it would be sufficient to limit the ozone MERP analysis to just the NOx component in NOx-limited cases (as determined by VOC:NOx ratio – see comments under 2.3.2). The original guidance would be necessary under conditions where the calculated MERPs for a project indicate more equivalent sensitivity to both NOx and VOC.

3.0 ADDITIONAL MERP MODELING AND CLEARINGHOUSE FOR TIER 1 DEMONSTRATIONS.

3.1 EPA should establish a website that includes links to existing modeling results and modeling platform data available for use in Tier 1 demonstrations.

In addition to the EPA modeling, other modeling analyses will likely be conducted that could be considered for the MERPs. It would be helpful to have EPA retain a "clearinghouse" of modeling results for use by the regulated community. The clearinghouse could also provide information on modeling

platforms[2] and other data available for use in Tier 1 demonstrations. Although the public may need to send a hard drive to EPA to obtain a copy of data, having an inventory of the available databases would be very helpful.

3.2 EPA needs to provide MERP modeling for future years.

The results in Appendix A are based on the 2011 Modeling Platform. EPA should conduct additional MERP modeling using a future projected inventory that more appropriately describes conditions expected for future projects. Modeling emissions data are available for 2018 and 2025 from older versions of this platform, and for 2023 from the most current version of this platform.

3.3 EPA needs to establish a system for providing periodic modeling updates.

EPA should update the MERP modeling periodically to account for temporal changes to the mix of background precursors, for example, when an updated NEI is released every 3 years. EPA could use the new 2014 platform datasets with 2023 future year emissions when they become available.

In addition, EPA should consider certain modifications to the MERP modeling methodology. For example, EPA's approach is based on a source apportionment analysis. Brute Force or sensitivity tools (e.g., decoupled direct method) are more appropriate for non-linear sensitivity-type analyses such as this. Whereas source apportionment provides information about contributions from sources in a given chemical environment, it does not explicitly provide information about how air quality responds as sources are added. Therefore, when using source apportionment results, one must implicitly assume a linear response between base and modified scenarios. Because the actual responses are non-linear, we would expect that sensitivity approaches would give slightly lower ozone impacts and thus increase MERPs.

Also, EPA should expand the number of locations modeled in any updated runs. To minimize the additional modeling burden, the current source configurations could be pared back. As stated above, ozone responses were not sensitive to EPA's delineation between high and low releases, but only to the emission strengths. Additionally, we question whether 3000 TPY emissions are relevant as PSD sources. Therefore, elevated VOC and 3000 TPY sources could be removed from future MERP modeling.

[2] We note that in its February 23, 2017 memorandum EPA provides information on how to obtain the modeling data used for the draft Guidance.

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BARR

March 31, 2017

Submitted via electronic mail

Mr. George Bridgers
U.S. Environmental Protection Agency
109 T.W. Alexander Drive
Mail Code C439-01
Research Triangle Park, NC 27711

Re: Comments on "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program"

Dear Mr. Bridgers:

Barr Engineering Company (Barr) is pleased to submit these comments in response the above highlighted guidance document. Generally, Barr does not believe that the modeling analyses contemplated by EPA are necessary except for projects with very large precursor emissions. This sentiment appeared to be consistent with EPA as part of the Appendix W rulemaking language that suggested that refined analyses for secondary formation would be rare. Now, based on this proposed guidance, it appears that EPA may consider refined analyses for project emission increases less than PSD major source thresholds for unnamed sources (i.e., less than 250 tons per year). Barr would like to encourage EPA to re-consider this guidance and allow sources to use the previous qualitative approach for evaluation of secondary formation of ozone and $PM_{2.5}$.

Barr provides engineering and environmental consulting services to clients across the Midwest, throughout the Americas, and around the world. Working together, our 700 engineers and scientists help clients develop, manage, process, and restore natural resources. As part of our environmental management services, we have completed hundreds of air quality modeling projects ranging from screening analyses to photochemical grid modeling. Our air quality modeling staff have completed projects in a wide range of jurisdictions supporting PSD permitting, non-PSD permitting, attainment demonstrations, and state/federal rulemaking comment development. The comments contained here are designed to provide perspective from our work as air quality modelers in support of our clients (i.e., project proposers).

Barr is headquartered in Minneapolis, and we have offices in Duluth and Hibbing, Minnesota; Ann Arbor and Grand Rapids, Michigan; Jefferson City, Missouri; and Bismarck, North Dakota. In 2010, we launched Barr Engineering and Environmental Science Canada, Ltd. with an office in Calgary, Alberta.

Our specific technical and implementation comments are provided in the appendix to this document. Each comment contains text from the guidance and our position requested by EPA on specific issues (i.e., EPA requests comment), a recommended change, or a request to provide additional information necessary to provide meaningful comment on this proposed guidance.

Submitted via electronic mail

If you have any questions regarding Barr's comments, please feel free to contact me at jbennett@barr.com or (573) 638-5000.

Sincerely,

Jeffry D. Bennett, PE
Senior Air Quality Engineer
Air Quality Modeling Practice Group Coordinator

Barr Engineering Comments

These specific comments are provided in the following format: page number of the guidance receiving comment, the guidance text, and the comment.

Memorandum, page 2 – *"In the preamble of the Appendix W proposed rulemaking, the EPA briefly discussed plans to develop one such Tier 1 demonstration tool for ozone and $PM_{2.5}$ precursors called Modeled Emission Rates for Precursors (MERPs). The MERPs may be used to describe an emission rate of a precursor that is expected to result in a change in ambient ozone (O_3) or fine particulate matter ($PM_{2.5}$) that would be less than a specific air quality concentration threshold for O_3 or $PM_{2.5}$ that a permitting authority chooses to use to determine whether an impact causes or contributes to a violation of the National Ambient Air Quality Standards (NAAQS) for O_3 or $PM_{2.5}$. We had initially planned to establish generally-applicable MERPs through a future rulemaking. However, after further consideration, we believe it is preferable for permit applicants and permitting authorities to consider site-specific conditions when deriving MERPs and to obtain experience with the development and application of locally and regionally appropriate values in the permitting process. Thus, we are providing this draft guidance document for consideration and use by permitting applicants and permit authorities on a case-by-case basis under the PSD program in assessing the effects of precursors of O_3 or $PM_{2.5}$ for purposes of that program."*

<u>COMMENT #1</u> – Based on the language in this paragraph, EPA has correctly decided not to pursue national MERPs as the site-specific conditions within different areas of the country (existing precursor emission magnitude and location with respect to the proposed source, meteorological patterns influencing elevated ozone/$PM_{2.5}$ concentrations, topography, and many other variables) have a dramatic impact on the overall modeled predictions that are used to establish whether a new source would "cause or contribute" to a violation of the NAAQS.

However, with the modeling used to support the proposed guidance, EPA has established MERPs that do not reflect a "cause or contribute" condition. One of the traditional uses for Significant Impact Levels (SILs) is the initial modeling evaluation which includes only emission increases from the project to compare with the SIL to determine if cumulative modeling is required for that pollutant. The second use for SILs is to verify that the project emissions do not "cause or contribute" to predicted NAAQS violations (i.e., predicted concentrations below the SIL). For pollutants that are non-reactive, both these evaluations are fairly straightforward because the amount of the emission increase is directly related to the downwind concentration. This allows the project emission impacts to be isolated from external factors like nearby sources.

Modeling for secondary formation of ozone and $PM_{2.5}$ (specifically the modeling used by EPA to generate the MERPs) is necessarily a cumulative modeling analysis that is not well suited for the first SIL use component. We recommend that EPA extend the analyses of the modeled outputs to be used directly for the second component of the SIL evaluation. <u>Simply put, the evaluation could be conducted to include only grid cells in the SIL evaluation with predicted concentrations over the NAAQS (currently 70 ppb) or with a safety factor (65 ppb for ozone).</u> This would allow sources with emissions much greater than the proposed MERPs to bypass a detailed evaluation (i.e., photochemical modeling) when they are located in areas with no threat of contributing to NAAQS violations. Further, it is recommended that EPA adjust the

modeled predictions in areas with sufficient monitoring data to better illustrate the actual air quality within those areas (i.e., conduct a model performance evaluation).

Guidance, page 5, Section 1 – *"Where project sources emit multiple precursors, the impacts should be estimated in a relative sense in comparison to the critical air quality threshold such that the sum of precursor impacts would need to be lower than the critical air quality threshold for a sufficient demonstration of compliance. Examples of combining precursor impacts are provided in section 7 of this document. Further, where project sources emit both primary $PM_{2.5}$ and precursors of secondary $PM_{2.5}$, the EPA expects that applicants will need to combine the primary and secondary impacts to determine total $PM_{2.5}$ impacts as part of the PSD compliance demonstration."*

COMMENT #2 – First, as pointed out in Section 2 of the Guidance document, ozone is formed in areas that are primarily VOC-limited or NOx-limited and the impacts of VOC sources in a NOx-limited area and NOx sources in a VOC-limited area are very small. As part of the Guidance, EPA should indicate that the air agency making a decision about the significance of a precursor should exercise judgement with respect to the MERP Tier 1 evaluation. In particular, each agency should first identify whether an area is VOC- or NOx-limited and then have the discretion to not consider the applicable pollutant after that determination is made (e.g., VOCs excluded for NOx-limited areas). There are some circumstances when an area can be VOC-limited on certain days/hours and NOx-limited on certain days/hours with elevated ozone concentrations, this is not typical and should be well known to the relevant air quality agency.

Second, for $PM_{2.5}$, the combination of secondary and primary impacts within any type of air quality analyses conducted by two different models is not technically appropriate.

As part of its current proposed approach to modeling primary and secondary $PM_{2.5}$, EPA has chosen to suggest that the use of two different models (Gaussian - AERMOD and Eulerian photochemical – CMAQ or CAMx) may be appropriate. This type of approach will unnecessarily complicate the permitting path for sources required to use the combination of two models for a Significant Impact Level (SIL) analysis. In particular, the different formulations of the models used will provide different results from exactly the same source. Any geographic overlap between same source modeled impacts from primarily emitted $PM_{2.5}$ and secondarily formed $PM_{2.5}$ is unlikely. One of the reasons for the lack of overlap is the impact for secondarily formed $PM_{2.5}$ will take time to convert from precursor emissions to particulates. To alleviate these concern for $PM_{2.5}$, EPA should consider the approach used by the state of Wisconsin that does not rely on modeling for primary $PM_{2.5}$. The Wisconsin Department of Natural Resources (WDNR) determined "it is not appropriate or informative to perform air quality modelling for direct emissions of $PM_{2.5}$ from individual sources and, instead, makes a finding using a weight of evidence approach, that direct emissions of $PM_{2.5}$ do not cause or exacerbate a violation of the ambient air quality standards or increment." [1] Further, "Dispersion modeling of direct $PM_{2.5}$ emissions is ineffective as a means for meeting the obligations of the Statutes and Code. This analysis shows that air quality dispersion modeling of an

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[1] Guidance for Including PM2.5 in Air Pollution Control Permit Applications, Wisconsin Department of Natural Resources, 2015 http://dnr.wi.gov/news/input/documents/guidance/EmissionsApplicantsGuidance.pdf (link checked March 31, 2017).

industrial source of direct emission of $PM_{2.5}$ does not provide information useful to understanding the impact of the source on ambient air quality. Direct, industrial stationary source emissions of $PM_{2.5}$ do not correlate with ambient concentrations of $PM_{2.5}$ in the atmosphere. For these reasons, the WDNR approach to determine whether a direct $PM_{2.5}$ source causes or exacerbates violation of an air standard or increment, and thus can be issued an air permit, will be consistent with the determination used for other pollutants such as ozone. Wisconsin is committed to regulating $PM_{2.5}$ and its precursors consistent with federal requirements.[2]" To the extent that the federal requirements are modified consistent with the WDNR approach, this would eliminate the need for modeling of primary $PM_{2.5}$ in circumstances where direct $PM_{2.5}$ is not a concern for the NAAQS.

As an alternative to the WDNR approach, EPA could also consider the use of comprehensive modeling analyses for both direct and secondary $PM_{2.5}$ (i.e., photochemical modeling for both) instead of complicating the analyses by using the combination of two different modeling systems.

Guidance, page 6, Section 1 – *"Based on the EPA modeling conducted to inform these illustrative MERPs, it is clear that such values will vary across the nation reflecting different sensitivities of an area's air quality level to precursor emissions thereby providing an appropriate basis for evaluating the impacts of these precursors to O_3 and $PM_{2.5}$ formation because they reflect the regional or local atmospheric conditions for particular situations."*

<u>COMMENT #3</u> – Again, the conclusion regarding the need for "local scale" analyses (not necessarily air quality modeling) to allow for an evaluation is supported by Barr. However, the modeling conducted by EPA was not provided for review in a timely manner and was not described in sufficient detail as part of this guidance development to provide substantive comment. The modeling data was requested on multiple occasions by Barr staff in December 2016, January 2017, February 2017, and March 2017 and still has not been received for review. The lack of available data is not helpful for interested parties and does not allow for meaningful public review.

Upon receipt of the modeling information and review, Barr would like to provide additional comments on the specific approach used by EPA to develop the MERPs.

Guidance, page 9, Section 4 – "*Source release type 'L' refers to low-level sources modeled with surface level emissions releases: stack height of 1 meter(m), stack diameter of 5 m, exit temperature of 311 Kelvin (K), exit velocity of 27 meters per second (m/s), and flow rate of 537 cubic meters per second (m^3/s). Source release type 'H' refers to high elevation sources modeled with elevated emissions releases: stack height of 90 m, stack diameter of 5 m, exit temperature of 311 K, exit velocity of 27 m/s, and flow rate of 537 m^3/s. Hypothetical sources included in this assessment type are then modeled at multiple emission rates: 100, 300, 500, 1000, and 3000 tons per year (tpy)."*

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[2] Pages 56-57, Draft Wisconsin Air Dispersion Modeling Guidelines ,June 2015, http://dnr.wi.gov/news/input/documents/guidance/AM528Draft.pdf (link checked March 31, 2017).

Guidance, page 11, Section 4 – *"The relationships shown here for these hypothetical sources are not intended to provide an exhaustive representation of all combinations of source type, chemical, and physical source environments but is rather illustrative of secondary pollutant impacts from single sources in different parts of the U.S."*

COMMENT #4 – The information provided by EPA in terms of stack parameters do not really correspond to traditional sources that may have to go through this type of MERP evaluation (e.g., large combustion sources - boilers, engines, turbines, furnaces for NOx and/or SO_2). These source types are the most predominant in the EPA RACT/BACT/LAER Clearinghouse for permit issued in the last five years.

For the "L" source type, Barr modelers have never seen a source with emissions of 100 tpy or greater modeled with a stack height of 3 feet (1 meter) especially with a diameter of over 15 feet. In addition, for a source of this type and height, an exit flowrate of over 1,000,000 acfm would be extremely unusual. Ultimately, the release parameter choices seem somewhat illogical as does the consistent use of the same parameters for sources with 100, 300, 500, 1,000, and 3,000 tons per year of emissions. In most situations, sources with larger emissions will have taller stacks and more exit velocity. Also, the temperature chosen for the sources was 100 degrees F and that seems to be quite low for nearly all large combustion sources even those with some type of heat recovery (i.e., large NOx or SO_2 sources).

For the "H" source type, the choice of 90m stack is quite high (over 300 feet) as the default Good Engineering Practice stack height used for permitting is 65m (nearly 200 feet). Also, using the same velocity, diameter, and temperature for both types of source is not logical.

To the extent that these parameters were used to develop the "illustrative MERPs", the overall comment is that these source parameters do not represent potential sources that may have to go through permitting that would require the use of MERPs. The choice of the release parameters provides significant concern to the overall efficacy of the analyses conducted by EPA as it may not be applicable to potentially permitted sources. Without any justification (i.e., modeling), it may be difficult for a source with 500 tons per year of NOx, with a stack height of 175 feet, an exit temperature of 300 degrees F, an exit velocity of 30 feet/second, and a diameter of 5 feet to suggest that the information provided by EPA in the MERP modeling is representative of this source. Barr recommends that EPA use the approach outlined in Section 7 of the guidance to use the list of sources that have been permitted in the last five years to arrive at a set of "real" stack parameters to include in a revised modeling analysis to support this guidance. Alternatively, EPA should provide specific guidance to state agencies regarding the approvability of these analyses for a wide-ranging potential source population (e.g., across multiple states). This could be helped by providing emission inventory plots for precursor pollutants in each modeling domain that could be used by sources to compare the overall emissions around the proposed source with the EPA modeled MERP source locations.

Guidance, Page 25, Section 5.2 – *"Consistent with EPA's draft SILs guidance, a critical air quality threshold of 1.0 ppb is used for this illustrative example. The illustrative VOC MERPs are based on single-source VOC impacts on downwind daily maximum 8-hour O_3, while the illustrative NO_X MERPs are based on single-source NO_X impacts on downwind daily maximum 8-hour O_3. The illustrative MERPs for NO_X to daily*

maximum 8-hour O_3 range from 107 to 5,573, while the illustrative MERPs for VOC to daily maximum 8-hour O_3 range from 814 to approximately 145,000 for the hypothetical sources presented here based on the selected critical air quality threshold."

COMMENT #5 – The statements in this section illustrate several questions/concerns with EPA's approach to the use of the newly proposed SIL for ozone. Notwithstanding the lack of a strong technical basis regarding the use of monitor variability to distinguish a significant impact on air concentrations, the use of the SIL compared against the maximum daily concentration is difficult to understand without reviewing all the applicable guidance on this subject.

According to the USEPA, Guidance on the use of models for assessing the impact from single sources on secondarily formed pollutants ozone and PM2.5, EPA 454/P-15-1, EPA suggests calculation of the maximum daily concentration for each grid cell downwind of the source and then determine the modeled impact from the MERP source for each day in that grid cell and set of hours in the original calculation. However, as part of the illustrative MERPs did EPA use brute force or source apportionment techniques? In any case, EPA could easily include only grid cells with predicted concentrations higher than some threshold (e.g., 60 or 65 ppb). Some explanation of the specific methods used by EPA to calculate the differences in 8-hour ozone would be very beneficial including the hours used to calculate the daily maximum 8-hour concentration for each day.

The obvious problem with including low concentration grid cells in the evaluation is the lack of real concern for ozone concentrations increasing from 20 to 21 ppb as compared to 85 to 86 ppb. In particular, the consequences of requiring a cumulative photochemical analysis for sources is far more labor intensive and costly than a simple AERMOD dispersion analyses. Also, there is still the concern with using only predicted concentrations for this type of evaluation in areas with monitored concentrations that could be used to verify the modeled concentrations (i.e., model performance evaluations).

In addition, the incredibly small tonnage for the illustrative NOx MERP (107 tons per year) is obviously problematic for implementation as new, unnamed sources below 250 tons per year would not be required to obtain a PSD permit. This would make that source acquire, at most, a state only permit. Does EPA intend to make states evaluate secondary formation as part of minor source permitting? At this point, some of Barr's specific concerns regarding the ozone MERPs provided as comments as part of the Appendix W rulemaking have been confirmed.

Guidance, page 30, Section 7 – *"In this scenario, a facility with a proposed increase in emissions of 0 tpy of primary PM2.5, 130 tpy of VOC, 72 tpy of NO_X, and 0 tpy of SO_2 located in the upper midwest region. Only VOC and NO_X emissions are above the level of the Significant Emission Rate (SER) and therefore require a PSD compliance demonstration.*

***O_3 Analysis**: The NO_X and VOC emissions from the project source are well below the lowest (most conservative) O_3 MERP value shown in Table 7-1 of any source modeled by the EPA in the central or any other region in the continental U.S. In this case, air quality impacts of O_3 from this project source would be expected to be below the critical air quality threshold.*

However, the NO_X and VOC precursor contributions to 8-hour daily maximum O_3 are considered together to determine if the source's air quality impact would exceed the critical air quality threshold. In such a case, the proposed emissions increase can be expressed as a percent of the lowest MERP for each precursor and then summed. A value less than 100% indicates that the critical air quality threshold will not be exceeded when considering the combined impacts of these precursors on 8-hour daily maximum O_3."

<u>COMMENT #6</u> – As described in a previous comment, the proposed use of a combined ozone impact from both the NOx and VOC precursors is not scientifically sound. Even if there are some days in the project source area where ozone formation is VOC-limited and some days where formation is NOx-limited, the maximum concentration from both precursors are very unlikely to occur on the same day. Therefore, the use of the "combined" impact from both precursors is not meaningful and artificially increases the impact from the proposed source. Barr recommends that the guidance be revised to exclude this combination of VOC and NOx.

COMMENTS OF THE CLASS OF '85
REGULATORY RESPONSE GROUP

ON THE DRAFT "GUIDANCE ON THE DEVELOPMENT OF MODELED EMISSION RATES FOR PRECURSORS (MERPS) AS A TIER 1 DEMONSTRATION TOOL FOR OZONE AND $PM_{2.5}$ UNDER THE PSD PERMITTING PROGRAM"

I. INTRODUCTION

On December 2, 2016, the U.S. Environmental Protection Agency ("EPA" or "Agency") issued a draft guidance document: *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program* ("Draft Guidance"). The Draft Guidance reflects EPA's recommendations for how state and local air agencies may conduct air quality modeling and related technical analyses to satisfy compliance demonstration requirements for ozone and secondary fine particulate matter ("$PM_{2.5}$") for permit-related assessments under the Prevention of Significant Deterioration ("PSD") program. The MERPs would be used to describe an emission rate of a precursor that is expected to result in a change in ambient ozone or $PM_{2.5}$ that would be less than a specific air quality concentration threshold for ozone or $PM_{2.5}$ that a permitting authority chooses to use to determine whether an impact causes or contributes to a violation of the National Ambient Air Quality Standards ("NAAQS") for ozone or $PM_{2.5}$. The Draft Guidance is designed for use by permit applicants and permitting authorities on a case-by-case basis in assessing the effects of precursors of ozone or $PM_{2.5}$.

The Class of '85 Regulatory Response Group ("Class of '85" or "Group") respectfully submits these comments on the Draft Guidance.[1] The Class of '85 is a voluntary ad hoc coalition of approximately 30 electric generating companies from around the country that has been actively involved in the development of Clean Air Act rules and guidance affecting the electric generating industry for over 25 years. Members of the Class of '85 own and operate electric generating units ("EGUs") that may be subject to PSD permitting in approximately 35 states throughout the country, and will be directly affected by any final guidance document promulgated by EPA.

II. COMMENTS

The Class of '85 supports EPA's efforts to provide guidance on air quality modeling and related technical analyses for permit-related assessments under the PSD program. The Group submits the following comments on the Draft Guidance which, if adopted, would increase regulatory certainty for permit applicants and provide necessary clarifications regarding the proper modeling techniques.

A. EPA Should Establish Presumptively Approvable MERPs.

The Class of '85 urges EPA to include presumptively approvable MERP values in the final guidance document, while providing sources with flexibility by allowing them to use case-by-case specific MERPs should they so choose. EPA initially planned to establish generally

[1] Attached is a list of the Class of '85 members who support these comments.

applicable MERPs through a rulemaking, but now believes "it is preferable for permit applicants and permitting authorities to consider site-specific conditions when deriving MERPs and to obtain experience with the development and application of locally and regionally appropriate values in the permitting process." Draft Guidance at 2. The Group disagrees, and urges EPA to include presumptively approvable MERPs in its final guidance. As discussed below, the Group also urges EPA to undertake a rulemaking on the issues included in the Draft Guidance to provide greater regulatory certainty; presumptive MERP values should be included in such a rulemaking.

Establishing presumptively approvable MERPs would provide clarity and streamline the permitting process. As EPA has acknowledged when developing Significant Impact Levels ("SILs"), codifying thresholds for use in PSD permitting modeling can reduce the need for case-by-case justifications by permitting authorities.[2] Establishing set MERP values similarly would reduce the need for case-by-case justifications and provide greater certainty for permit applicants with respect to when additional modeling must be performed.

Establishing presumptively approvable MERP values also would decrease the administrative burden on permitting authorities and permit applicants. Without presumptively approvable MERP values, permit applicants will face uncertainty about what modeling protocols will be accepted by permitting authorities. This uncertainty likely would lead to longer permitting timelines and increased costs, as well as allow for baseless challenges to permit applications. Local permitting authorities already have limited resources, especially in the area of air dispersion modeling. Requiring local permitting authorities to derive MERP values for specific areas or regions will require significant data gathering and analysis that will likely be time consuming and resource intensive. EPA can reduce this burden by setting presumptive MERP values so that the local authorities will not have to conduct independent modeling. Presumptive MERP values also would alleviate burdens on permit applicants. Industrial sources are often on tight permitting schedules and require near certainty for internal and external stakeholders regarding project timelines. Without certainty in the PSD permitting process, project delays will add potentially significant costs to business. The delay will be even more significant for the applicants who first go through PSD permitting under the new MERP guidance because local authorities will not yet have modeling protocols nor presumptively approvable MERP values to guide them. These applicants will likely have to invest extensive time in working with permitting authorities to derive initial area-specific values since states will likely not yet have MERPs modeled, approved, and adequately demonstrated or tested.

Although the Class of '85 supports the establishment of presumptive MERP values, EPA should not simply add MERP values to the final guidance without first proposing such values. The Agency should release a revised draft guidance document that includes draft presumptive MERP values and provide the opportunity for public comment on these values. This will allow the general public, permit applicants, permitting authorities, and other interested parties to review the proposed values before they become part of a final guidance document. This input will provide useful insight into setting the specific values for MERPs.

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[2] Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program, at 2 (Aug. 1, 2016), available at https://www.epa.gov/sites/production/files/2016-08/documents/pm2_5_sils_and_ozone_draft_guidance.pdf.

B. EPA Should Clarify the Modeling Recommendations in its Guidance.

The Class of '85 urges EPA to provide more clarity in the final guidance and eliminate internal inconsistencies that currently exist in the Draft Guidance. This will make it easier for permit applicants and permitting authorities to understand and comply with the recommendations.

- **Tier 1 Assessments**: The Draft Guidance does not make clear when additional modeling is required to perform a Tier 1 assessment. The Draft Guidance states that for "Tier 1 assessments, the EPA generally expects that applicants would use *existing* empirical relationships between precursors and secondary impacts based on modeling systems appropriate for this purpose," Draft Guidance at 4, but later states, "MERPs can be viewed as a type of Tier 1 demonstration tool." *Id.* at 5. It is unclear whether EPA generally expects that permit applicants would use existing data for their Tier 1 assessment, or whether EPA expects applicants or permitting agencies to develop MERPs for use in Tier 1 assessments. EPA should clarify when regulated parties should rely on existing data and when they should utilize MERPs during the Tier 1 assessment process.

- **Modeling Burden**: It is unclear whether the permit applicant or the permitting authority carries the burden of deriving MERPs for a specific area or region. In Section 6 of the Guidance, EPA discusses the permit applicant's development of a Tier 1 modeling protocol that should be shared with the EPA Regional Office. However, in Section 6.1, EPA allows modeling to be conducted by either the permit applicant, government agency, or some other entity. The Draft Guidance does not outline a clear process for who should conduct the modeling to establish Tier 1 MERPs, or whether any approval of the modeling protocol is required. To provide clarity in the PSD permitting process for secondary pollutants, the Class of '85 believes EPA and/or the permitting authority should be the "primary" responsible party for conducting source sensitivity simulations and modeling to determine MERPs for specific areas or regions. This would be consistent with the existing regulatory process for the development of SILs. It is important to note that permit applicants should be an integral contributor to this process and should help determine final MERPs.

- **Process for Developing Area-Specific MERPs**: EPA should revise the Draft Guidance to expand on the process for developing area-specific MERPs. As written, the Draft Guidance fails to provide sufficient details on how a source or agency is to perform a sensitivity run in "Step Two," as described in Section 6.1.

- **Case-by-case MERP Guidance**: EPA should provide a presumptively approvable, detailed modeling approach for the modeling of case-by-case MERPs. The approach should identify which screening models, settings, and receptor placements should be used. This information would provide entities with better guidance on how to develop case-specific MERPs and would reduce the amount of time needed to develop those values.

- **Critical Air Quality Threshold**: In Section 5 of the Draft Guidance, EPA provides an example using draft SILs to determine the "critical air quality threshold," which is used in the MERP calculation. However, EPA notes that the Draft Guidance does not require the use of SILs as the threshold, but allows a permitting authority to elect to use SILs or other means to quantify impacts that contributed to a violation of a NAAQS and/or PSD increment. The Class of '85 urges EPA to provide more guidance on how to establish a critical threshold. Without more guidance, permit applicants will need to spend considerable time during the permitting process determining how to calculate the critical air quality threshold. A lack of clear guidance also could facilitate permit challenges addressing the appropriateness of the permitting authority's selected threshold.

- **Definitions**: EPA fails to clearly define numerous terms under "Step Four," including "quality-assurance," "interpretation," and "appropriateness." It is unclear how EPA will ensure that MERPs are "quality assured" and how a source or agency can evaluate the interpretation and appropriateness of the MERP values. The Group requests that EPA clarify these essential details in any final guidance document.

C. After Finalizing the MERP Guidance, EPA Should Undertake a Rulemaking to Promulgate Presumptively Approvable MERPs.

The Class of '85 recommends that, after finalizing the Draft Guidance, EPA should initiate a rulemaking that establishes both presumptively approvable MERPs and a binding process for developing site-specific MERP values on a case-by-case basis. The final guidance will provide, on a relatively short time frame, critical instructions on how to perform air quality modeling and is key to providing necessary direction to states and industry. Modeling ozone and $PM_{2.5}$ can be a lengthy and complicated process, and the final guidance will establish procedures that address when and how to conduct this modeling, reducing confusion and disputes about the proper methodology, as well as ensuring the process runs smoothly. However, instructions in the Final Guidance would be non-binding and would provide little regulatory certainty in the PSD permitting process for secondary pollutants. A final rule that establishes binding procedures, even after the release of a final guidance document, would provide this certainty for both permit applicants and permitting authorities. Binding procedures also would reduce permitting delays because no individual modeling procedures would need to be approved, nor would data need to be examined on an individual level.

EPA already has adopted this two-step process with the development of $PM_{2.5}$ SILs. Specifically, EPA first provided non-binding guidance on $PM_{2.5}$ SILs so that the Agency "may gain valuable experience and information as permitting authorities use their discretion to apply and justify the application of the SIL values . . . on a case-by-case basis in the context of individual permitting decisions."[3] EPA intends to 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."[4] This approach allows EPA to provide immediate, incremental clarity to sources through a final guidance document and then provide regulatory certainty

[3] *Id.* at 3.
[4] *Id.*

through a rulemaking. As EPA noted in the $PM_{2.5}$ SIL guidance, this two-step approach also allows for refinement of the modeling and permitting process in the subsequent rulemaking, based on experience gained from the implementation of the procedures outlined in the guidance document. This same approach should be followed here for the MERPs.

III. CONCLUSION

The Class of '85 appreciates the opportunity to comment on the Draft Guidance. The Group urges EPA to take steps to increase regulatory certainty and reduce the administrative burdens associated with PSD permitting involving precursors of ozone and $PM_{2.5}$. As addressed in these comments, EPA should provide further clarity on the modeling process and eliminate internal inconsistencies in the final MERP guidance. Revised guidance that incorporates these changes is critical to facilitate streamlined permitting. EPA should then initiate a rulemaking to establish presumptively approvable MERPs and identify a binding process for developing site-specific MERPs values on a case-by-case basis.

Dated: March 31, 2017

Respectfully submitted,

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Entergy Services, Inc.
Florida Municipal Electric Association
Florida Municipal Power Agency
Gainesville Regional Utilities
Great River Energy
Hawaiian Electric Company, Inc.
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Lakeland Electric
Louisville Gas & Electric/Kentucky Utilities
National Grid
NextEra Energy, Inc.
OGE Energy Corp.
Orlando Utilities Commission
Portland General Electric
PowerSouth Energy Cooperative
Public Service Company of New Mexico
Salt River Project
Talen Energy
Tampa Electric Company
Westar Energy
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EARTHJUSTICE

March 31, 2017

George Bridgers
Bridgers.george@epa.gov
BY EMAIL

Re: Draft Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program

To Whom It May Concern:

On behalf of itself and Sierra Club, Earthjustice submits the following comments, as well as the attached technical comments, on the aforementioned draft guidance about modeled emission rates for precursors ("MERPs").

MERPs are illegal and arbitrary. Per EPA, they rely on significant impact levels ("SILs"), as their basic concept is that if a source's emissions of precursors are below the relevant MERPs (combined as needed), the source's ambient impact is below the relevant SIL,[1] meaning it purportedly satisfies § 165(a)(3)'s requirement. *See, e.g.*, Draft Guidance 6. For the reasons given in the attached comments on EPA's draft guidance about SILs and on the Appendix W air modeling rule,[2] SILs are illegal and arbitrary. Contrary to EPA's shifting rationales, § 165(a)(3) is unambiguous: major sources that will cause or contribute to any violation of any NAAQS or increment cannot receive a construction permit, regardless of how small the contribution is. Because a source that complies with MERPs only demonstrates compliance with SILs, and SILs are illegal and arbitrary tools for evading § 165(a)(3), MERPs are themselves illegal and arbitrary tools for evading § 165(a)(3). That section unambiguously requires a permit applicant to demonstrate that it will not cause or contribute to noncompliance with NAAQS and increments, a requirement that is not met by demonstrating compliance with a MERP.

The draft guidance is illegal and arbitrary beyond this basic failing. If EPA persists in its preferred approach, it must address the issues discussed below.

The guidance's language is weak about ensuring that air quality is protected. EPA says that "where project sources emit both primary $PM_{2.5}$ and precursors of secondary $PM_{2.5}$, EPA

[1] The source must also account for any direct emissions of the NAAQS pollutant.

[2] These comments and all other documents cited in these comments and the attached technical comments are incorporated by reference into these comments.

expects that applicants will need to combine the primary and secondary impacts to determine total $PM_{2.5}$ impacts as part of the PSD compliance demonstration." Draft Guidance 6. This is weaker than a prior sentence, which says that "Where project sources emit multiple precursors, …the sum of precursor impacts would need to be lower than the critical air quality threshold for a sufficient demonstration of compliance," *id.*, and it's weaker than what is legally required: sources must consider all the air pollution resulting from their emissions.

By EPA's own admission, the modeling in the draft guidance is not fully conservative. In describing (at 12-13) modeling it did to assess hypothetical source impacts for $PM_{2.5}$, EPA includes several warnings that the assessment (apparently for both $PM_{2.5}$ and ozone) may not have determined the maximum impacts of precursor emissions. Indeed, from examining monitoring data available from EPA, it appears that 2012 was, at least in certain areas, a higher ozone year than 2011. EPA should make these caveats still more apparent by warning that relying on the data in the guidance is not conservative and thus not appropriate for Tier 1 analysis.

Moreover, again, EPA alludes to the limited information it has on meteorology and the possibility that its analysis in this guidance is not conservative. Draft Guidance 21. This provides further basis for making clearer that EPA's analysis is illustrative and should not be copied.

For the ozone and daily $PM_{2.5}$ standards/increments, there is a fundamental disconnect between these <u>daily</u> (or sub-daily) NAAQS and the MERPs, which are expressed as tons per <u>year</u>. Even assuming this hurdle can be overcome, EPA must make clear that the modeling needs to be highly conservative, including worst-case short-term emissions. EPA must ensure that sources cannot game the modeling in a way that lowers predictions of short-term ambient increases beyond a truly conservative modeling test.

EPA also fails to explain certain assumptions. In positing how to consider impacts from two precursors for comparison against a MERP (at 31), EPA seems simply to assume that there is a linear relationship between emissions of a precursor and formation of the pollutant of interest. What is the basis for that assumption?

Moreover, the MERP development process EPA proposes invites abuse that can result in dangerous levels of air pollution. One avenue is how EPA proposes to allow sources to take advantage of the varying MERP levels throughout the country, *id.* 7; *see also id.* 23-24 figs.5-1, 5-2, 27 fig.5-4 (showing huge range of variability for both $PM_{2.5}$ and ozone MERPs). If an area has a very favorable MERP (*i.e.*, there is not much secondary formation), the guidance apparently would allow a source to use it without looking at whether local conditions are different in some

material way. If the opposite, a source may seek to twist modeling to develop a more favorable MERP. *See id.* 32 (suggesting sources may shop for modeling). If MERPs were lawful, EPA would need to provide limits on the manipulability of the models. Areas would need to do modeling under worst-case scenarios for formation of secondary pollutants (*i.e.*, maximum emissions, meteorology maximally conducive to secondary formation, etc.)

EPA must also explain limits on just how much flexibility sources would have to shop around for more favorable MERPs. The agency suggests two options for using MERPs: (1) using "conservative" (though, as discussed above, they are not in fact conservative) MERPs from Table 7.1; and (2) using a MERP derived from "certain hypothetical sources modeled as part of the EPA's assessment presented in Chapter 5," where "the project source is more similar" to those sources. Draft Guidance 35. What goes into such a showing? EPA must explain that it should be more than just height, emission rate, and region—a geographical, topographical, and meteorological fit is also required. At the very least, EPA must explain the relevant factors.

The "quality assurance" step EPA proposes (at 29-30) for MERP development also opens the door to manipulation of modeling results to obtain a desired result. EPA must provide firmer guidance and checks against doing this.

The guidance also must take a more cautious approach when MERP analysis shows that a source's emissions will be very close to a level that EPA agrees can cause or contribute to a violation of a standard or increment. *Cf.* 75 Fed. Reg. 64,864, 64,892/1 (2010) ("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."). For example, EPA describes a daily $PM_{2.5}$ analysis that comes out (before the errata) to very close to the MERP—95% of it. Draft Guidance 34. Under a conservative, air quality-protective approach, this would be a situation where a permitting authority would look beyond mere compliance with MERPs.

Finally, the guidance must call for public involvement in any future MERP development. EPA clearly wants MERPs to factor into future air permitting decisions. The public has the right to participate in those permitting decisions. 42 U.S.C. § 7475(a)(2), (e). It would be illegal and arbitrary not to provide the public the same right to participate in the development of tools that are likely to play a role in those air permitting decisions.

Sincerely,

Seth L. Johnson
Attorney

TO: Seth Johnson; Staff Attorney – Earthjustice

FROM: Howard Gebhart

SUBJECT: Technical Comments on EPA's *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM-2.5 under the PSD Permitting Program*

DATE: March 31, 2017

This report gives technical comments on the DRAFT US Environmental Protection Agency (USEPA) document *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM-2.5 under the PSD Permitting Program.*

Background

On December 2, 2016, USEPA released a draft document - *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM-2.5 under the PSD Permitting Program (*herein called the *Draft MERPs Guidance).* According to USEPA, the *Draft MERPs Guidance* reflects the Agency's recommendation on how regulatory agencies may conduct air quality modeling for ozone and secondary PM-2.5 for permit assessments required under the Prevention of Significant Deterioration (PSD) program. The guidance builds upon the "Tier 1" approach described in the USEPA *Guideline on Air Quality Models* published in 40 CFR 51 Appendix W.

According to USEPA, MERPs are intended to represent the emission rates for precursors to ozone and PM-2.5 that would be expected to generate an increase of those pollutants of less than a specified concentration threshold. Under the *Draft MERPs Guidance*, MERPs are to be developed using existing empirical relationships between precursor emissions and their resulting impacts on ambient air quality based on more detailed modeling conducted for ozone and PM-2.5 precursor emissions.

The proposed approach is described as a "Tier 1" demonstration tool. The alternative "Tier 2" approach would likely involve a detailed dispersion modeling exercise using an appropriate dispersion model such as CAMx or CMAQ that directly simulates the atmospheric chemistry involved with ozone and secondary PM-2.5 formation. The "Tier 1" MERP process described by USEPA essentially grants an exemption from conducting the detailed Tier 2 air quality modeling analysis for ozone and secondary PM-2.5 impacts that would otherwise be required for major PSD sources and major modifications.

Summary of Comments

Based on my review of the proposed *Draft MERPs Guidance*, the main concerns are that the proposed guidance is vague when trying to apply the draft guidance for specific permit actions and that USEPA has developed candidate MERPs for different regions across the United States that are prone to misuse. Furthermore, based on comparison of the Tier 1 demonstration tool with actual CAMx modeling at a real-world PSD source, the MERPs do not appear to accurately reflect near-field formation of secondary pollutants, especially PM-2.5. As a result, the candidate MERPs provided by USEPA in the *Draft MERPs Guidance* are likely substantially overstated.

The candidate MERPs in each region (Eastern US, Central US, and Western US) were derived from modeling of a single hypothetical emission source, although two different emission release heights were considered by USEPA. The tendency among users will be to apply the candidate MERPs across the board without regards to whether or not the hypothetical source modeling supporting the MERPs accurately represents emission releases from the new/modified source being permitted. Also, the hypothetical emission source used in the USEPA model simulations may not actually bear any resemblance to reasonably anticipated "real-world" emission sources. Although USEPA in several cases cautions users against applying the Tier 1 *Draft MERPs Guidance* in situations outside of the intended range, USEPA has not provided any definitive criteria that users can apply in making the required assessment as to whether the new/modified emission source matches the emission characteristics used in the supporting modeling simulations. Without clearly defined criteria that define the boundaries under which the MERPs can be applied, the *Draft MERPs Guidance* is open to abuse by application of MERPs beyond the limits of the supporting dispersion models.

In addition, the *Draft MERPs Guidance* lacks any discussion of the possible cumulative effects on ambient ozone and PM-2.5 concentrations from multiple facilities that might locate in the same airshed. Under the *Draft MERP Guidance*, MERPs are to be applied to each specific PSD permit and could allow emission increases from multiple new/modified sources to cumulative levels that would potentially exceed a given MERP. Ambient air quality impacts due to emissions of ozone and secondary PM-2.5 precursors are regional in nature and adverse impacts on air quality may occur if multiple sources in close geographic proximity are granted permits under the *Draft MERPs Guidance*. In order to protect against such an outcome, the MERP threshold must be set by USEPA using an ambient concentration level which is less than the "significant impact level" (SIL) currently employed in the *Draft MERPs Guidance*. USEPA needs to anticipate that multiple emission sources in the same geographic airshed are likely to use the Tier 1 demonstration tool, and the MERP thresholds must be established to protect public health and welfare from air quality degradation caused by multiple smaller emission sources. For the same reason, USEPA would also be justified in setting more restrictive MERPs or barring their use altogether in situations where the baseline ambient air quality currently approaches the National Ambient Air Quality Standard (NAAQS) and/or PSD increment levels where further degradation in air quality levels could force an area into non-attainment or an increment violation.

As a "real-world" check of the proposed MERP concept for a specific individual PSD source, I reviewed source-specific CAMx modeling conducted for an actual PSD permit against the Tier 1 demonstration tool. In this instance, the specific source is Plant Washington, a 930 MW coal-fired electrical generating station in Georgia that was granted a PSD permit, but never constructed. Using data in the *Draft MERPs Guidance*, Appendix A, the closest hypothetical emissions source is EUS #14, located in Allendale County, South Carolina. Following the recommended approach in the *Draft MERPs Guidance*, the combined SO_2 and NOx emissions-to-MERP ratio is 0.82, and the proposed guidance indicates that a ratio of less than 1.0 means that PM-2.5 impacts should be less than the significant impact level (SIL). However, the Plant Washington site-specific CAMx modeling showed a much larger response in the 24-hour secondary PM-2.5 impacts, in the range of 4.0 to 4.3 micrograms per cubic meter, or more than three times the SIL. The maximum CAMx impact location at Plant Washington occurred in the near-field close to the emissions stack. My professional opinion is that the larger source-specific response is attributable to two factors, both highlighting serious deficiencies in the hypothetical modeling conducted by USEPA to support the MERPs. First, the source-specific modeling used a high density receptor grid in the near-field of the source whereas USEPA's MERP modeling lacked such a close-in receptor grid. Secondly, the Plant Washington CAMx modeling included other important precursor emissions, such as sulfuric acid mist, which resulted in more rapid conversion of SO_2 and H_2SO_4 to secondary PM-2.5 in the near-field. This simple example comparing the Tier 1 demonstration tool to a real-world PSD permit action shows that the MERP concept is seriously flawed or at best, the data presented by USEPA in the *Draft MERPs Guidance* is significantly limited in its general applicability to real-world emission sources.

Similar near-field modeling issues may exist at other modern well-controlled emission sources. For example, many large fuel combustion sources now employ selective catalytic reduction (SCR) or similar technologies to reduce NOx emissions. With SCR and similar pollution control technologies, the emissions generally contain "ammonia slip", or excess ammonia from the NOx reduction reactions. It is unclear from the USEPA support modeling if "ammonia slip" or precursor emissions other than NOx, SO_2, and VOC were accounted for in the hypothetical source modeling used to support the MERPs. Direct emissions of ammonia can be very important in the secondary PM-2.5 formation as ammonia is one of the key factors in conversion of SO_2 and NOx emissions to ammonium sulfate and ammonium nitrate. Also, when ammonia is directly emitted through the stack emissions, the atmospheric chemistry reactions can be very rapid and the peak formation of secondary PM-2.5 is likely to occur in close proximity to the emissions source. The USEPA hypothetical source modeling does not appear to have adequately captured any near-field secondary PM-2.5 impacts close to the source. Given the inadequate near-field receptor density and the lack of treatment for direct source precursor emissions, like ammonia and sulfuric acid mist, the resulting PM-2.5 MERPs based on USEPA's modeling are likely overstated by a substantial margin.

Lastly, the *Draft MERPs Guidance* anticipates that MERPs in a given geographic region may be established by future application of regional air quality models. However, there appears to be no opportunity for the public and other interested stakeholders outside of the permittee to review and provide comments on the proposed action when new area-specific MERPs are under consideration. USEPA gives itself a role in reviewing modeling conducted to support future MERPs, but no role is

described for other stakeholders. Future efforts for development of area-specific MERPs needs to be open to all interested stakeholders and USEPA's *Draft MERPs Guidance* should require that state/local agencies carry out a clear and open public review process in the development and implementation of new MERPs specific to a particular airshed. Stakeholders may have an opportunity to comment on future permit actions that rely on MERPs, but there will likely be a tendency to ignore any such comments in situations where considerable resources have already been spent developing MERPs. The proper place for public and stakeholder involvement is up-front during the development of any new MERPs and USEPA needs to ensure that interested stakeholders are provided with the opportunity to participate and influence the development of new area-specific MERPs.

Specific Technical Comments

Section 1 (Background): "*Where existing technical information is based on chemical and physical information less similar to the project source and key receptors, a more conservative estimate of impacts using demonstration tools may be necessary*." The *Draft MERPs Guidance* appropriately recognizes that limitations exist in the USEPA modeling tools used to develop the MERPs contained in Appendix A of the Guidance as well as any modeling that may be conducted to develop future MERPs. However, what is seriously lacking is any definitive USEPA guidance on how to assess whether the emissions and air modeling data supporting the MERPs is "less similar" to the proposed new/modified emission source. USEPA needs to set clear and identifiable boundaries that users, and especially state/local agencies, can use in making a determination of whether air quality modeling used to support MERPs is properly based on emission sources similar to those involved under the specific permit action. EPA should consider setting specific limits on important factors such as geographic location, local and regional topography, emissions magnitude, stack heights, emissions release characteristics (i.e, stack vs. fugitive releases), VOC speciation profiles, and the presence of other precursor emissions such as ammonia and sulfuric acid mist, among others. Without such clear guidance and clearly established boundaries for the applicability of any supporting modeling studies, the tendency will be for users to attempt to apply the MERPs well beyond the scientific limitations of the supporting modeling studies. The *Draft MERPs Guidance* should err on the side of caution and require that the Tier 1 demonstration tool can only be used when there are clear commonalities between the new/modified source and the supporting MERP modeling in each of the critical areas listed above.

Section 1 (Background): "*It is preferable for permit applicants and permitting authorities to consider site-specific conditions when deriving MERPs and to obtain experience with the development and application of locally and regionally appropriate values in the permitting process*." While the technical principles expressed above by USEPA are valid in concept, I am concerned regarding the necessary follow-through to actually implement these principles in practice. Given that USEPA has already developed candidate MERPs for potential use across different geographic regions (See Appendix A of the *Draft MERPs Guidance*), there will be a tendency for users to try to make these already existing Appendix A MERPs fit any proposed new/modified emission source as opposed to conducting the recommended area-specific analysis applicable to the specific source in question. As already discussed above, USEPA's principles will only be followed if the *Draft MERPs Guidance* contains clear procedures that stakeholders and state/local agencies are expected to apply in making a

determination as to whether supporting modeling information adequately represents the proposed new/modified source and geographic region in question. EPA could properly incentivize stakeholders to create the desired local and source-specific analyses by otherwise establishing very conservative general MERPs for use where the desired project-specific data is not present. USEPA has already identified the "most conservative" MERPs in Table 7-1 of the document which could form a starting place for such an approach, once the other deficiencies listed in these comments are addressed by USEPA.

Section 4 (Single Source Precursor Emissions and Downwind O_3 and Secondary PM-2.5 Impacts): In this section, USEPA lists the emission characteristics for the single hypothetical source considered in the developing the candidate MERPs listed in Appendix A. The hypothetical source has the following stack characteristics: stack diameter (5 meters), stack exhaust velocity (27 meters/sec), and stack exhaust temperature (311 degrees K), although the modeling did apply two different emission release heights. The "low" (L) source was modeled using a one meter stack height and the "high" (H) source was modeled using a 90 meter stack height. The "L" source was also modeled using only the 500 tpy emissions rate. However, USEPA offers no advice within the *Draft MERPs Guidance* on how one should apply these hypothetical releases and the resulting candidate MERPs to a real-world permitting situation, or what limits should be applied to extrapolating the hypothetical release results to other real-world emission sources. In the real-world, actual stack releases are likely to be between 1 and 90 meters above the ground. Also, the hypothetical stack releases used by USEPA to support the candidate MERPs may not be representative of commonly-found emission sources. A stack diameter of 5 meters suggests that a large combustion source was modeled, but most real-world permit situations involve emission stacks with diameters of less than 5 meters (and oftentimes considerably less). The large hypothetical combustion source with a 1 meter stack height is totally unrealistic and the "L" model simulations do not actually represent any reasonable low-level emissions source. Also, fugitive emission sources are not considered in any of the hypothetical USEPA modeling evaluations. Fugitive emission sources such as refinery equipment leaks, volatile liquids storage tanks, etc. may constitute a significant fraction of the potential VOC emissions at any new/modified source. USEPA would have been better served by modeling a fugitive emissions source for the "L" model simulations. Lastly, USEPA needs to clearly state in the *Draft MERPs Guidance* any limitations imposed by the hypothetical emission sources modeled for the candidate MERPs in order to avoid the user's tendency to apply these data beyond their limitations.

Figure 4-1: This figure depicts the geographic location for the hypothetical emission sources modeled by USEPA to develop the candidate MERPs for different areas of the Continental United States (See Appendix A). Based on Figure 4-1, the following states, among others, have no modeled hypothetical emission sources: Wisconsin, Minnesota, South Dakota, Wyoming, Idaho, and West Virginia. There were also no modeled hypothetical sources in south Florida, northern interior New England, eastern North Carolina, the Chesapeake Bay area (e.g., MD, DE, Washington DC), or in Oregon and Washington outside of the Columbia River Valley and far northwest Washington. The lack of precursor modeling data for these locations would suggest that the candidate MERPs listed in Appendix A may not be applicable for certain specific geographic areas and perhaps other locations. USEPA should specifically comment on the geographical limitation of the Appendix A candidate MERPs.

Section 4.1 (Annual and Daily PM-2.5): "*It is possible that the maximum impacts from each of these hypothetical sources may not have been realized during this specific year of meteorology and that another year with more conducive meteorology for secondary formation of O_3 and/or PM-2.5 might be more appropriate*." Again, USEPA recognizes that the supporting air quality modeling for the MERPs listed in Appendix A has limitations and may not represent worst-case conditions resulting in additional generation of ozone and/or PM-2.5. I would agree with USEPA's general assessment about these limitations. However, USEPA needs to go further within the *Draft MERPs Guidance* and: 1) suggest specific methods that users can apply to determine if other meteorological years would be more appropriate for the MERP modeling, and 2) recommend a course of action for users if the analysis suggests that alternative meteorological years or other data would have been more appropriate for the development of MERPs. In other words, what is recommended by USEPA to overcome the technical shortcomings that are recognized to exist in the supporting modeling analyses?

Figures 4-2 through 4-7: These figures depict the response of the USEPA air dispersion modeling for ozone and PM-2.5 to variations in the hypothetical source data, including variations in the model response caused by changes in emissions magnitude, geographic location, and other data. The data presented by USEPA indicate that the model response is highly variable to changes in source location and other model inputs such as emissions magnitude. This variability by itself suggests that any type of general MERP likely does not capture the true physical response to changes in precursor emissions at a specific individual project. In light of this finding, the appropriate path would be for USEPA to use worst-case MERPs or to require that any location choosing the Tier 1 approach develop MERPs specific to that location in lieu of the Appendix A candidate MERPs. The variability in model response also seems to widen with increased emissions magnitude. In fact, my reading of the data in indicate that the model response to changes in precursor emissions is non-linear (See Figures 4-2, 4-4, and 4-5). However, the proposed USEPA MERP equation shows a linear response between precursor emissions and the resulting air quality impacts (See Section 5 and the example calculations in Section 7 of the *Draft MERPs Guidance*). Given that the Section 5 MERPs equation assumes a linear response to changes in precursor emissions, USEPA must provide further documentation supporting the linear response assumption or adjust the MERPs equation to better follow the non-linear response in the data presented.

Figure 4-6: This figure depicts the model response for hypothetical VOC emission sources based on the assumed VOC speciation of the precursor emissions and shows that VOC speciation is an important variable in the model response. The data presented show that the model response is stronger (i.e., larger ozone concentration increases) when the VOCs are presumed to be 100% formaldehyde versus the "standard" VOC speciation profile typical of industrial emission sources. USEPA reports that the model ozone response could be as much as 2 times higher when using the formaldehyde-only VOC speciation profile. Although EPA cautions users about these findings and recommends that MERPs be developed using source-specific information on the VOC speciation profile, there is uncertainty about whether users will actually follow-through on this recommendation. It is very likely that many users will ignore or minimize the model shortcomings stated by USEPA and instead apply the candidate MERPs from Appendix A, even where the source-specific VOC profile does not match the

supporting modeling. A better approach for USEPA would be to adjust the candidate MERPs by assuming a worst-case condition (e.g., 100% formaldehyde for the VOC formulation). This same conservative approach should also be applied elsewhere where other modeling uncertainty exists. If USEPA only allowed the use of conservative MERPs until representative source-specific data has been properly developed, it would incentivize users to do the necessary work to develop MERPs which are applicable to the specific source and/or location of interest. This appears to be the ultimate desire of USEPA when reading the various caveats placed throughout the document.

Section 5 (Framework for Developing MERPs as a Tier 1 Demonstration Tool): "*Permit applicants should provide a narrative explanation describing how project source post-construction emissions relate to the information provided as part of the Tier 1 demonstration tool*." I agree with USEPA that the permit applicant must have the burden of showing that the Tier 1 demonstration tool is appropriate for the specific new/modified source in question. However, beyond the general statement above, no further USEPA guidance is given as to how the users, and more importantly the regulatory authority, will make the determination that the air quality modeling supporting the Tier 1 demonstration tool is sufficiently representative of the new/modified PSD source in question. A more detailed discussion of this topic has already been covered elsewhere in my comments.

Section 5 (Framework for Developing MERPs as a Tier 1 Demonstration Tool): USEPA states that the MERPs are to be evaluated as the annual emissions total. However, comparing only the annual emissions against the MERP neglects the potential air quality impacts from sources that may have elevated short-term emissions, but where annual emissions might be otherwise restricted by voluntary permit limits on operation. An example of such an emissions unit would be a combustion turbine used only for power generation during peak demand times. The source may have relatively low annual emissions due to its limited operation, but would release much higher emissions that contribute negatively to ozone and/or PM-2.5 formation when the source does in fact operate. Both ozone and PM-2.5 have short-term NAAQS and ignoring periods of high short-term emissions will significantly underestimate the real air quality impacts of such emission units. USEPA must require that MERPs be evaluated based on the peak short-term emissions of ozone precursors and not just on the annual emissions total.

Section 5 (Framework for Developing MERPs as a Tier 1 Demonstration Tool): USEPA identified the critical air quality thresholds used in the development of the candidate MERPs as 1.0 ppb for the 8-hour ozone concentration and 1.2 micrograms per cubic meter for the 24-hr PM-2.5 concentration. It is further stated that these thresholds equate to the draft Significant Impact Limits (SILs) developed separately by USEPA. Whether the draft USEPA SILs are in fact legal and/or technically appropriate is a significant question that is covered in other dockets. However, given that the *Draft MERPs Guidance* relies on the draft EPA SIL proposal (and the SILs are questionable in their own right), there are serious questions about the overall credibility of the MERPs in general. In addition, the use of the SILs as appropriate thresholds for MERPs has other significant issues, especially when applied to areas where existing air quality concentrations already approach the NAAQS. Consider a geographic area where the ozone concentration design value is currently 1 ppb under the NAAQS. If any new/modified PSD source can increase the ozone concentration by up to 1 ppb, what happens when

another similar source is added in the same airshed? Theoretically, the second new/modified PSD source in that same airshed could also increase the ozone concentration by another 1.0 ppb and push the area into non-attainment. The USEPA *Draft MERPs Guidance* is lacking in its consideration of the cumulative impact of multiple new/modified PSD sources and application of the guidance in areas where baseline concentrations approach the NAAQS. In particular, for those geographic areas where the current ozone and/or PM-2.5 design value already approaches the NAAQS, the selection of the critical air quality threshold needs to be set at a level substantially more stringent that the draft SIL. The Tier 1 demonstration tool also needs to consider the effects of precursor emissions increases from multiple PSD permits for the same area (as well as new/modified sources that increase precursor emissions, but are not subject to PSD review). Unless this oversight is corrected, the *Draft MERPs Guidance* will not be protective of the NAAQS for certain locations.

Section 5 (Framework for Developing MERPs as a Tier 1 Demonstration Tool): For PM-2.5, the MERPs are based on the modeled precursor emissions which may lead to an increase of up to 1.2 micrograms per cubic meter in the secondary PM-2.5 concentration. The Class II PSD increment for 24-hour PM-2.5 is 9 micrograms per cubic meter and the Class I PSD Increment for 24-hour PM-2.5 is only 2 micrograms per cubic meter. So, the Draft MERPs Guidance would allow a new/modified emissions source to contribute up to 13% of the available Class II PSD increment and up to 65% of the available Class I PSD increment without performing a detailed Tier 2 modeling analysis. Such an allowance is excessive and may lead to future situations where the PM-2.5 increment is consumed or exceeded by new/modified sources. Consistent with previous comments, the PM-2.5 PSD increment consumption analysis is another valid reason for USEPA to set MERPs using concentrations levels that are more stringent than the draft SILs. Also, USEPA should not allow the Tier 1 demonstration tool to be used for situations where the projected PM-2.5 increment exceeds 80% of the available PSD increment (e.g., 7.2 micrograms per cubic meter, Class II areas, 24-hour average). A full and complete Tier 2 modeling analysis is warranted when the basic permit modeling shows that the Class I or II PSD increments are almost fully consumed.

Table 7-1: In this table, USEPA lists the most conservative MERPs based on the modeling analyses conducted for the document. How are these geographic areas to be defined, i.e., Eastern US vs. Central US vs. Western US? Even using what USEPA describes as the "most conservative" modeling, some of the resulting MERPs are extremely large (exceeding 1,000 tpy at times). EPA should consider placing a maximum cap on MERP emissions allowed under Tier 1 (perhaps in the range of 500 tpy). The public would be better served by requiring projects with very large increases in precursor emissions to undergo a comprehensive site-specific ozone and/or PM-2.5 modeling evaluation in lieu of the Tier 1 MERPs. Placing a maximum cap on MERPs would not likely affect very many PSD permits as most PSD projects have smaller increases which are only slightly above the PSD significant emission rates. A 500 tpy MERP cap would set this limit at more than 10 times the PSD significant emissions rate for the ozone and PM-2.5 precursors (NOx, SO_2, and VOC). Also, for very large emissions sources, the burden of a more comprehensive modeling analysis anticipated under Tier 2 should not be overwhelming given the scope of the expected capital expenditure for such a major project.

Section 7 - Example C: In this example, the NOx emissions exceed the PSD significance levels, but the VOC emissions increase is not significant (i.e., less than 40 tons per year). However, in the example calculation, only the NOx emissions increase is considered with respect to the MERPs. Why wouldn't the VOC emissions increase also be considered? Once a project becomes subject to PSD, the MERPs calculation should include all ozone and PM-2.5 emission precursors, irrespective of whether any specific pollutant triggers a formal PSD review.

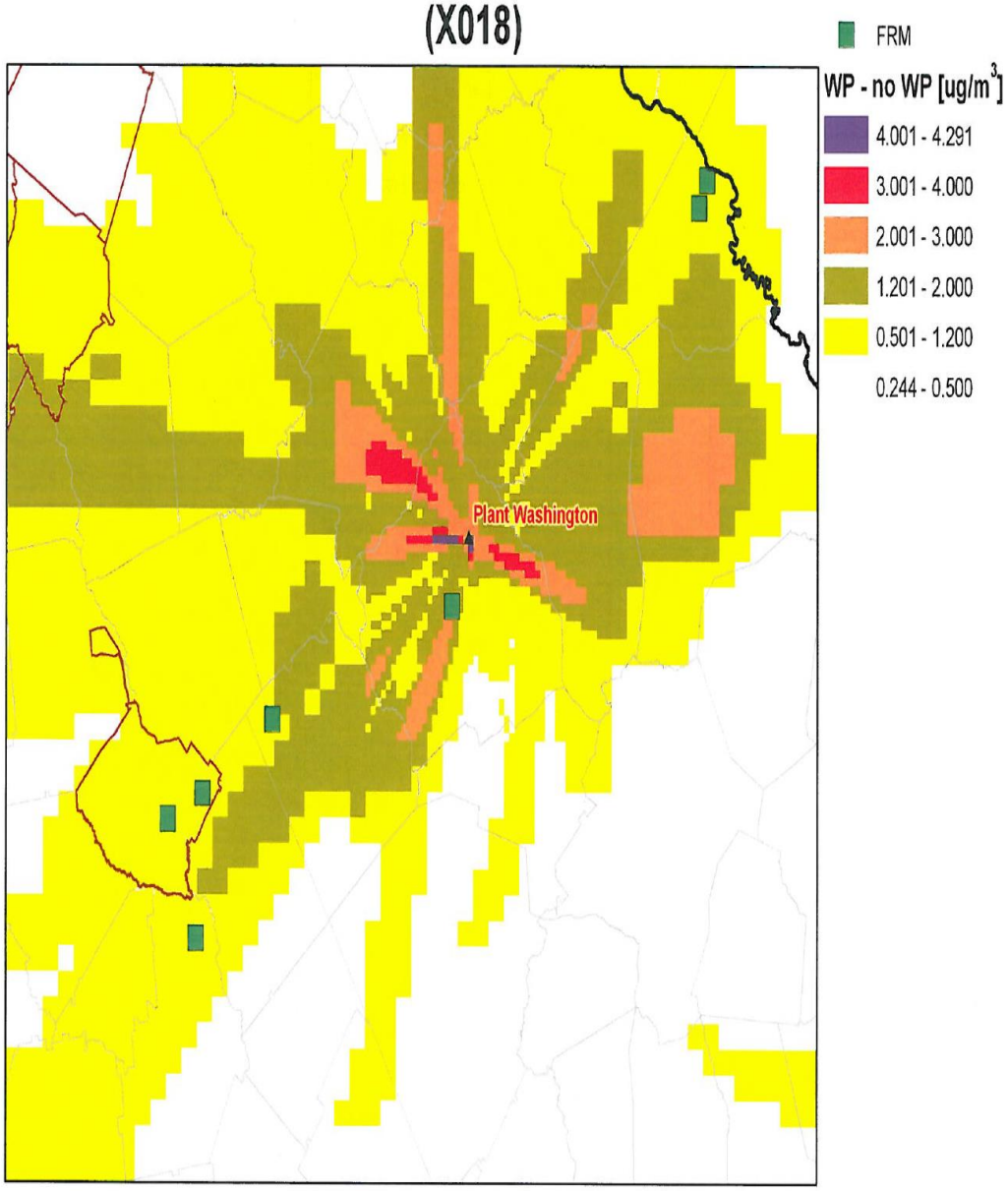
Appendix A: In the various tables for hypothetical emission sources reviewed by USEPA for the candidate MERPs, an emission rate of 500 tons per year appears to be the lowest modeled emissions level for any individual source. However, for NOx and VOCs, the significant emissions rate that triggers PSD review is as low as 40 tpy. Most emission sources are likely to release ozone and PM-2.5 precursors at rates significantly below 500 tpy. USEPA should have also analyzed hypothetical sources with lower emission rates (i.e., 100 tpy) to better represent the likely inventory of new/modified sources seeking PSD permits.

Appendix A: As a "real-world" check of the proposed MERP concept for a specific individual source, I have reviewed source-specific CAMx modeling conducted for an actual PSD permit against the Tier 1 demonstration tool. In this instance, the CAMx modeling is for Plant Washington, a 930 MW coal-fired electrical generating station in Georgia. My understanding is that although a PSD permit was granted, Plant Washington was never constructed. Plant Washington had proposed NOx emissions of 1,818 tpy and SO_2 emissions were modeled in CAMx using the maximum daily emissions rate of 4,200 tpy. Using data in the *Draft MERPs Guidance*, Appendix A, the closest hypothetical emissions source is EUS #14, located in Allendale County, South Carolina near the Georgia border. For the hypothetical SO_2 source modeling, Appendix A Table A-2 shows a maximum 24-hour average PM-2.5 response of 0.63 micrograms per cubic meter using an SO_2 emissions rate of 3,000 tpy. Similarly for NOx, the maximum 24-hour average PM-2.5 response using a NOx emissions rate of 3,000 tpy is 0.16 micrograms per cubic meter. Using the 24-hr PM-2.5 SIL as recommended by USEPA (1.2 micrograms per cubic meter), the MERPs equation would then generate a calculated SO_2 MERP of 5,714 tpy [3,000 * (1.2/0.63) = 5,714] and a NOx MERP of 22,500 tpy [3,000 * (1.2/0.16) = 22,500]. Following the recommended approach for consideration of the combined SO_2 and NOx precursor emissions, the calculated ratio is 0.82 [(4,200/5,714) + (1,818/22,500) = 0.82]. So, presumably, the Plant Washington project would pass the Tier 1 demonstration tool for PM-2.5 as proposed by the *Draft MERPs Guidance*. However, the Plant Washington site-specific CAMx modeling shows secondary PM-2.5 impacts in the range of 4.0 to 4.3 micrograms per cubic meter in the near-field of the emissions stack (See attached figure from the Plant Washington Permit Docket, Georgia Department of Environmental Protection). So, the source-specific Plant Washington CAMx modeling showed a much larger response in secondary PM-2.5 compared to the supporting MERPs modeling. My professional opinion is that the larger source-specific response is likely attributable to two factors, both highlighting serious deficiencies in the hypothetical modeling conducted by USEPA to support the MERPs. First, the source-specific modeling at Plant Washington used a high density receptor grid in the near-field of the source whereas USEPA's MERP modeling lacked a close-in receptor grid in the immediate vicinity of the hypothetical emissions point. Secondly, the Plant Washington modeling included sulfuric acid mist emissions as a model input, which resulted in more rapid conversion of SO_2 and H_2SO_4 to

secondary PM-2.5. This simple example comparing the Tier 1 demonstration tool to a real-world PSD permit action shows that the MERP concept is seriously flawed or at best, the data presented by USEPA in the *Draft MERPs Guidance* is significantly limited in its general applicability to real-world sources.

Impact of Washington Power Plant on Daily Secondary $PM_{2.5}$

3-/24-hr SO_2 emission (X018)



EARTHJUSTICE

September 30, 2016

SILguidance@epa.gov
BY EMAIL

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

To Whom It May Concern:

On behalf of itself and Sierra Club, Earthjustice submits the following comments on the aforementioned draft guidance about significant impact levels ("SILs").

SILs are illegal, regardless of EPA's shifting legal and analytical attempts to justify them. *See* EPA-HQ-OAR-2015-0310-0152 at 1-5; Sierra Club Opening Brief 20-32, Sierra Club v. EPA, No. 10-1413 (D.C. Cir. June 26, 2012); Sierra Club Reply Brief 1, 4-11, 14-19, Sierra Club, No. 10-1413 (D.C. Cir. June 26, 2012).[1] EPA apparently seeks to shield its new approach from judicial review by promulgating it through purportedly non-final guidance, yet even if such an approach is truly non-final (and we do not concede that it is), it would promote illegal state actions. EPA suggests that states use SILs on a "case-by-case basis" "when the SIL value has not been adopted in the state's EPA-approved PSD SIP rules (or the federal PSD rules, as applicable)." [Draft] Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program 1 n.5 ("Memo"). Yet if a SIP makes no provision for the use of SILs or forecloses their use, any state use of SILs would be contrary to the SIP—binding federal law. EPA appears not to have considered how a state that lacks authority under its SIP to use SILs can lawfully use SILs on some sort of trial basis.[2]

I. EPA'S NEW LEGAL JUSTIFICATION FOR SILS IS MERITLESS.

EPA's new legal basis for SILs is no more lawful than its prior one. Now it claims that Clean Air Act § 165(a)(3) is ambiguous. But in its sole past final action on this type of SIL—the

[1] All documents cited herein are incorporated by reference.

[2] EPA says that permitting authorities "retain the discretion not to use SILs as described here, either in specific cases or programmatically," Memo 13, but EPA is unclear about whether it itself retains such discretion when it is the permitting authority, *see id.* 3 ("EPA intends to obtain…information [about using SILs] through its own PSD permitting activities in states that do not have SIP-approved PSD programs….").

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2010 $PM_{2.5}$ SILs, 75 FR 64,864 (Oct. 20, 2010)—EPA relied solely on D.C. Circuit dicta about *de minimis* exemptions, not on any purported ambiguity in § 165(a)(3). 75 FR 64,891/2-3; EPA-HQ-OAR-2006-0605-0059 at 59-60. EPA claims its new interpretation is consistent with views it "has previously communicated," but points only to a proposed rule, a guidance memo, and the 2012 Rocky Mountain Steel Order. Legal Support Memorandum, Application of Significant Impact Levels in the Air Quality Demonstration for Prevention of Significant Deterioration Permitting Under the Clean Air Act 8-9 ("Legal Memo"). The proposed rule is not a final rule, the guidance was not binding (like a rule), and EPA leaves out part of the quotation from the Order (at 17, emphasis added), where it said "as used by CDPHE for this Permit, the interim SIL was a means of demonstrating through modeling that the source's impact at the time and place of a predicted NAAQS violation will be sufficiently low that such impact will not contribute to that violation." EPA appears to be taking a broader view here. Moreover, that quotation says nothing about "cause." So, this is truly a new position.

EPA's arguments for ambiguity in § 165(a)(3) are meritless. EPA says, correctly but irrelevantly, that the Act doesn't define "the phrase 'cause, or contribute to' and the included terms 'cause' and 'contribute.'" Legal Memo 2; *accord* Memo 4. Contrary to EPA's contention, this does not render § 165(a)(3) ambiguous. It is well established that the lack of a statutory definition of a term does not render that term ambiguous: all it means is that the term's ordinary meaning governs. *E.g.*, *Petit v. Dep't of Education*, 675 F.3d 769, 781 (D.C. Cir. 2012) ("In the absence of an express definition, we must give a term its ordinary meaning."); *NRDC v. EPA*, 489 F.3d 1250, 1258 (D.C. Cir. 2007) (rejecting EPA argument that "Congress's failure to provide a statutory definition" created ambiguity: "There is no such rule of law").

Notably, EPA provides no analysis at all of the ordinary meaning of "cause," instead exclusively analyzing the word "contribute." *See* Legal Memo 2-4; Memo 7. It thus provides no reason at all to conclude that the word "cause" is ambiguous. EPA did not approve of the use of SILs in the "cause" context, where additional pollution would, for the first time, tilt an area into violation, but now it embraces such use. Legal Memo 1; EPA Brief at 32-34, *Sierra Club v. EPA*, No. 10-1413 (D.C. Cir. June 26, 2012). EPA previously proposed to change its position. 80 FR 45,340, 45,378/1 (July 29, 2015). There was no basis for doing so before, *see* EPA-HQ-OAR-2015-0310-0152 at 4, and there's no basis for doing so now.

Nor is EPA correct that "contribute" is ambiguous. There is no "significance" qualifier in § 165(a)(3). The statute requires a showing that the source will "not cause, or contribute to," violations of NAAQS or increments: it does not say "cause, or contribute significantly to," violations. EPA cannot rationally import a "significance" requirement into the word "contribute." As the D.C. Circuit held in *Bluewater Network v. EPA*, "the term ['contribute'] has

no inherent connotation as to the magnitude or importance of the relevant 'share' in the effect; certainly it does not incorporate any 'significance' requirement." 370 F.3d 1, 13 (D.C. Cir. 2004) (emphasis added; citations omitted). The provision at issue in *Bluewater* provided for limits on emissions that "cause, or contribute to," certain types of air pollution, *id.* 13-14 (quoting 42 U.S.C. § 7547(a)(3))—almost identical to § 165(a)(3)'s "cause, or contribute to, air pollution in excess" of NAAQS or increments, 42 U.S.C. § 7475(a)(3).

There, Congress further showed its intent by omitting the word "significant" from the provision at issue, but including it in another related provision. *Bluewater*, 370 F.3d at 13-14. So too here: Where Congress has meant to target only "significant" contributions to NAAQS violations, as opposed to any contributions, it has said so explicitly. *E.g.*, 42 U.S.C. § 7410(a)(2)(D)(i) (requiring SIPs to prohibit emissions "in amounts which will…contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any [NAAQS]"); *id.* § 7426 (requiring notice to nearby states of emissions increases that "may significantly contribute to levels of air pollution in excess of" the NAAQS in any area outside the state); *see also, e.g.*, *id.* § 7407(d)(4)(A)(v) (when sources in part of area otherwise designated as badly out of attainment for ozone or carbon monoxide "do not contribute significantly to violation of the [NAAQS]," part must be excluded from nonattainment area). Congress's omission of "significantly" from § 165(a)(3) was thus purposeful and must be given effect. *See, e.g.*, *Barnhart v. Sigmon Coal Co.*, 534 U.S. 438, 452-53 (2002). EPA cannot rewrite the statute to include "significantly" here or render its use superfluous where Congress chose to include it.

EPA wrongly relies extensively on *Catawba County v. EPA*, 571 F.3d 20, 38-39 (D.C. Cir. 2009), for the proposition that "contribute" is ambiguous. But the provision at issue in *Catawba* addressed a markedly different statutory scheme governing the drawing of nonattainment area boundaries, a scheme the Court found left some discretion to EPA rather than (as here) dictating a precise outcome (namely, compliance with NAAQS and increments). *Id.* 35 (noting that statute allowed EPA to, *inter alia*, alter the boundaries as it "'deems'…'necessary'") (quoting 42 U.S.C. § 7407(d)(1)(A)(i)). *Catawba* further recognized that the statutory context was key, as "a statute may foreclose an agency's preferred interpretation despite…textual ambiguities if its structure, legislative history, or purpose makes clear what its text leaves opaque." *Id.* Indeed, *Catawba* ultimately rejected reading "contribute to" as excluding exacerbation of a violation, holding that "[w]e may not interpret 'contribute' in a way that does such violence to section 107(d)'s very purpose." *Id.* 39. So too here: compliance with NAAQS is central to the Act, and § 165(a)(3) directly serves that central purpose.

EPA is also wrong in claiming that the phrase "cause, or contribute to," as a whole is ambiguous. For the reasons above, EPA has not shown that the individual words "cause" or

"contribute" are ambiguous (and they are not ambiguous). Taken together, too, the phrase comprehensively covers any triggering or worsening of a violation. *See North Carolina v. EPA*, 531 F.3d 896, 910 (D.C. Cir. 2008) ("EPA must give effect to both provisions in … statute" "written in the disjunctive"). Focusing on cutting away at the scope of the word "contribute," EPA misses the breadth of Congress's intent to prevent violations of the NAAQS or increment. *See NRDC v. EPA*, 489 F.3d 1364, 1373 (D.C. Cir. 2007) ("The words of the statute should be read in context…and the problem Congress sought to solve should be taken into account to determine whether Congress has foreclosed the agency's interpretation.") (internal quotation marks omitted).

Indeed, the notion that EPA can authorize any violation of the NAAQS is contrary to the Act's directive that EPA set the NAAQS at a level that is "requisite to protect the public health," with "an adequate margin of safety." 42 U.S.C. § 7409(b)(1). The Supreme Court has construed this mandate as requiring NAAQS to be set at levels "not lower or higher than is necessary—to protect the public health with an adequate margin of safety." *Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 476 (2001). Because by law the NAAQS must already reflect the absolute pollution limit requisite to protect health, EPA cannot specify that pollution levels higher than the NAAQS are permissible. But that is precisely what EPA proposes here with SILs that allow pollution levels to increase to levels "higher" than the absolute maximum the agency has previously determined to be requisite to protect public health and welfare.

Further, there is no room for the agency to claim that violations that have made it through the multiple screens that are already part of the NAAQS itself are still "trivial" or "insignificant." The form of the $PM_{2.5}$ NAAQS itself already specifies in great detail precisely how compliance is to be determined, including provisions that average out transitory or isolated exceedances, and provisions that address levels that are slightly above or below the standard level. The same holds for the ozone NAAQS. That is, as part of the NAAQS-setting process, EPA has already built into the standards provisions that define in detail the leeway deemed requisite: There is no room for the agency to claim that violations that have already escaped these multiple screens are somehow "trivial."

Moreover, Congress itself has already exercised its judgment as to which sources have sufficient impact to be subjected to the permitting scheme, including the core PSD permitting requirement that the proposed source not cause or contribute to violation of a NAAQS or increment. Only a "major emitting facility," defined as, for certain listed types of sources, one that emits or has the potential to emit at least 100 tons per year "of any air pollutant" or, in general, "any other source with the potential to emit two hundred and fifty tons per year or more of any air pollutant," must obtain a PSD permit and make the required showing. 42 U.S.C.

§§ 7475(a), 7479(1). By contrast, Congress did not subject minor sources to preconstruction permitting. *See Alabama Power Co. v. EPA*, 636 F.2d 323, 362 (D.C. Cir. 1979). Even in its definition of "major emitting facility," Congress allowed for states to provide one specific exemption, for "nonprofit health or education institutions." 42 U.S.C. § 7479(1). Thus, the very terms of the Act specify Congress's judgment of what sources are not worth putting through PSD permitting and the requirement that they not cause, or contribute to, NAAQS or increment violations. *See Alaska Dep't of Envtl. Conserv. v. EPA*, 540 U.S. 461, 473 (2004).

EPA points to several "contextual" bases for claiming ambiguity in § 165(a)(3), but none supports EPA's claim. First, EPA irrelevantly explains that the Act doesn't bar all construction that would add new emissions. Legal Memo 3-4. But Congress specified what sources would be subject to PSD permitting and what such sources must to do receive permits. That Congress allowed some sources to receive permits under specified circumstances in no way supports EPA's claim that it can expand those circumstances.

Second, EPA says the PSD program "is specifically designed to prevent 'significant' deterioration of air quality, not all deterioration of air quality." Legal Memo 4. But that's the point of <u>increments</u>: they define significant deterioration, and they (as well as the NAAQS) cap it. *See* 75 FR 64,875/2 ("[A]n increment defines 'significant deterioration.'"). Emissions from PSD-covered sources that cause or contribute to a violation of either the NAAQS or increment thus impermissibly cause significant deterioration of air quality from clean levels, regardless of the specific ambient impact.

Third, EPA points to the third goal of the PSD program: "to 'insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources.'" Legal Memo 4 (quoting 42 U.S.C. § 7470(3)). But when there's a violation of the NAAQS or increment, there are no "existing clean air resources," and thus growth would not be consistent with preservation of existing clean air resources. Moreover, the cited goal refers to ensuring that economic growth is consistent with preservation of clean air, not the reverse.

Fourth, EPA claims that because Congress did not write that "a source must show that it has 'no impact' on a predicted violation," Congress meant permitting authorities to "exercis[e] discretion to determine the degree of impact that equals a contribution." Legal Memo 4. EPA simply makes up language it thinks Congress should have used (though it used it nowhere in the Act) and claims in essence that Congress should have been clearer. But the question isn't whether Congress could have been clearer, but whether Congress was clear. *See, e.g.*, *Friends of the Earth v. EPA*, 446 F.3d 140, 144 (D.C. Cir. 2006). The language Congress actually used is clear: if a source causes or contributes to a violation, it cannot receive a permit. Moreover, Congress knew how to direct the use of judgment, regularly prescribing tests that expressly call for

exercising "judgment" or "discretion." *E.g.*, 42 U.S.C. §§ 7408(a)(1)(A), 7410(k)(2), 7411(b)(1)(A), 7511a(c)(2)(A). Congress did not so prescribe here. Thus, rather than supporting it, EPA's argument refutes the approach proposed in the guidance.

Fifth, EPA claims that "for the 'cause or contribute' language in section 165(a)(3) to be implementable as a practical matter in permitting, there must be some point at which a projected air quality impact from a proposed new or modified source becomes so small that" permitting authorities can reasonably conclude that "such an impact does not cause, or contribute to, an existing or predicted violation of air quality standards." Legal Memo 4-5. But this argument speaks to practical concerns about modeling, not to whether the language of § 165(a)(3) is ambiguous. It seems to be a thinly veiled *de minimis* argument—a claim that models predict some small impacts, and permitting authorities can ignore them. But for all the reasons given in Sierra Club's briefs (cited above) in D.C. Circuit case No. 10-1413, the Act is extraordinarily rigid and leaves no room for a *de minimis* exemption that authorizes harmful levels of pollution. Moreover, the use of SILs to authorize additional pollution in areas that are already exceeding the NAAQS is flatly contrary to the Act's approach toward limiting additional pollution in nonattainment areas. Under § 173 of the Act, no new major source within a nonattainment area may add pollution to that area without ensuring greater than offsetting emissions cuts. 42 U.S.C. § 7503(a)(1). There is no exception based on the source's predicted ambient impact. It is wholly inconsistent with that scheme for EPA to allow the very same source to locate just outside the nonattainment area boundary and cause pollution increases inside the nonattainment area that do not have to be offset as long as they are below the SILs.

Sixth, EPA claims support from the structure of the Act. It says that § 110 requires states to have PSD programs to address new sources, "while other provisions under section 110(a)(2) require states to target emissions from existing sources." Legal Memo 5. "In this context, where existing sources have already caused air quality to very nearly approach or even exceed a NAAQS, it is not necessary to construe the PSD provisions to require a permit applicant to show that increased emissions will have absolutely no effect on air quality concentrations." *Id.* That is, EPA would allow violations to occur, then require cleanup. The D.C. Circuit has already rejected this position. *See Sierra Club*, 705 F.3d at 465 ("relying on permitting authorities to address violations, rather than to prevent violations by requiring demonstration that a proposed source or modification will not cause a violation, conflicts with [§ 165(a)(3)'s] statutory command."). EPA believes that SIPs would thus go after "existing sources that bear responsibility for high levels of air pollution in the area." Legal Memo 5. But Congress recognized the importance and good sense of preventing dirty air before it occurs. *See* Opening Brief of Public Health and Environmental Petitioners 60-62, Murray Energy Corp. v. EPA, No. 15-1385 (D.C. Cir. Sept. 22, 2016). EPA cannot override that judgment.

Finally, EPA points to its historical interpretation of the Act as allowing SILs, Legal Memo 5-7, which is irrelevant because that interpretation is inconsistent with the Act. *See Brown v. Gardner*, 513 U.S. 115, 122 (1994) ("A regulation's age is no antidote to clear inconsistency with a statute"); *New Jersey v. EPA*, 517 F.3d 574, 583 (D.C. Cir. 2008) ("[W]e do not see how merely applying an unreasonable statutory interpretation for several years can transform it into a reasonable interpretation.") (alteration in original; internal quotation marks omitted).

As an apparent alternative argument, EPA claims that § 165(e)'s direction to EPA to promulgate "regulations" that "specify with reasonable particularity each air quality model or models to be used under specified sets of conditions for purposes of [the PSD program]," 42 U.S.C. § 7475(e)(3)(D) (emphasis added), authorizes EPA to establish SILs. Legal Memo 1-2. EPA repeatedly claims not to have established any regulations here. *See, e.g.*, Memo 1-2 ("This memorandum and the supporting documents are not final agency actions…." (emphasis added)), 3-4 (similar), 13 (similar). EPA cannot have it both ways: either it must promulgate regulations or it must not claim authority to act in a way that's contingent on its promulgating regulations. In any event, § 165(e) cannot be rationally read to authorize violations by new or modified major sources of the NAAQS and increments—precisely the outcomes the PSD program was designed to prevent.

II. EPA'S NEW ANALYTICAL BASIS FOR SILS IS IRRATIONAL.

EPA's new "air quality variability approach" purports to derive a new value for SILs that reflects the "inherent variability in the area of a monitoring site," which EPA says stems from "fluctuating meteorological conditions and changes in day-to-day source operations." Memo 9. EPA says the SILs are a level of air quality change that's more than just random variability. *Id.* The approach and the resulting values are ill-explained and irrational.

EPA's approach depends on several key assumptions. First, EPA presumes that the monitoring network is well designed and well operated so that it accurately captures the true air quality in the relevant area. But monitoring network design is subject to changes that have nothing to do with the best location for a monitor.

Second, similarly, EPA irrationally calls all the observed variability "inherent," and ascribes it to meteorology, emissions, and atmospheric chemistry. It fails to discuss measurement or instrument variability. For example, there are different types of PM monitors, and monitor calibration may change over time. It is irrational to ascribe all variability to "natural" factors. EPA should review its data to determine how monitors' performance and accuracy may have changed over time, and factor these results into its analysis.

Third, EPA gives no demonstration that the data sets it has are sufficiently large for a meaningful statistical analysis. As EPA acknowledges, a smaller data set will have larger variability. *See* Technical Basis for the EPA's Development of Significant Impact Thresholds for PM2.5 and Ozone 34 ("Technical Memo"). EPA says that because variability over time "has been fairly stable," it believes that earlier, smaller data sets for $PM_{2.5}$ do not overly increase variability. *See id.* But EPA fails to consider other reasons, perhaps operating in conjunction, for why variability may have remained "fairly stable," such as changes in monitoring methods. EPA also does not demonstrate that the data sets it used were sufficiently large to support bootstrapping.

Fourth, EPA's selection of a 50% confidence interval is on its face arbitrary. *See id.* 15, 37-38. Though it discusses an upper bound for a confidence interval of 68% and discusses its concerns with a confidence interval close to 0%, it provides no coherent explanation for how it settled on 50%. Further, the agency concedes, as it must, that the selection of 50% is a policy judgment. Thus, the SILs resulting from the guidance's variability approach are themselves nothing more than thinly disguised, arbitrary policy judgments—not scientifically or technically derived values that are based on assuring compliance with the NAAQS and increments.

In addition, EPA fails to rationally explain how monitoring variability can be the sole relevant metric for assessing the significant of modeled impacts—or even a reasonable metric for such assessment. A model's accuracy in predicting violations of NAAQS and increments—and the significance of any increase—is dependent on multiple variables, not just monitored values.

Fifth, for increments, EPA "recommend[s] that the values of the NAAQS SILs also be used for PSD increment SILs" in Class II-III areas. Memo 11. EPA gives no explanation for why it so recommends.

Sixth, the SILs are based on a national average variability that has no rational relationship to variability at any one site or group of impacted sites. Though it would be irrational and ill-advised to allow locations to have particularly high SILs because of purportedly increased localized variability, as explained below, it is similarly disconnected from reality to allow a site with low variability to pretend it has higher variability. If EPA could lawfully authorize SILs and use its variability approach, it must cap SILs' size, and require that if an area has less variability than average, its SILs reflect that lower variability.

Seventh, EPA says that when air quality is well above the NAAQS, the area would not fall under the PSD program and as such no PSD demonstration would be conducted for the permitting process. Technical Memo 39. This is incorrect. EPA bases PSD applicability on the

designation of the area where the source proposes to locate—not whether that area's actual air quality meets the NAAQS. EPA often fails to redesignate areas to nonattainment even if they're violating the NAAQS. Moreover, even if the site of the proposed source is in an area meeting the standard, it may still impact a nonattainment area.

As for the SIL values themselves, EPA cannot dispute that the values can in fact be significant enough to tip an area into nonattainment or to worsen a violation. Indeed, at 1 ppb, the ozone SIL necessarily writes off an ambient impact that can increase a design value by a whole part per billion even after all the rounding and averaging screens inherent in the ozone NAAQS. One part per billion is hardly insignificant, and EPA cannot plausibly claim it is.

III. THE GUIDANCE IS VAGUE AND CONTAINS OTHER FLAWS.

Even assuming that SILs were lawful and the new analytical method rational, the draft guidance is vague. Most problematic, the new approach opens the door to still higher SILs for ozone. Permitting authorities can copy EPA's approach for ozone, but use a subset of data that results in a higher SIL. Indeed, EPA's approach incentivizes increasing variability in measurement. It is further untenable for EPA to set up an experiment here that could well be harmful to people's health and welfare.

EPA also hints at, but fails to explain, possible limits for use of the SILs here. EPA says it "believes" that the new SILs "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 PM2.5 NAAQS or PM2.5 PSD increment." Memo 3. Even if SILs were not unlawful and arbitrary, EPA should at least make clear circumstances in which using the SILs would not be sufficient.

Sincerely,

Seth L. Johnson
Attorney

October 27, 2015

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VIA REGULATIONS.GOV and EMAIL TO A-and-R-Docket@epa.gov

Re: Docket ID No. EPA-HQ-OAR-2015-0310

Dear Mr. Bridgers:

Earthjustice submits the following comments on the above-referenced EPA documents on behalf of Sierra Club.

EPA proposes to change the framework for NAAQS and increment compliance demonstrations away from positions it took in the flawed guidance it put out last year for $PM_{2.5}$ pollution. *E.g.*, 80 Fed. Reg. 45,340, 45,378/1-2 (July 29, 2015). These changes weaken protections and further open the door to NAAQS and increment violations occurring and being exacerbated, thus threatening public health and the environment.

For the reasons given below, EPA must revise its approach to ensure that major source permitting complies with the statutory requirement that a PSD permit issue only if the major source will not cause or contribute to exceedances. 42 U.S.C. §7475(a)(3). The "significant impact levels" and other unnamed measures of "significant impact" (collectively, "SILs") that EPA endorses are unlawful and arbitrary, *e.g.*, 80 Fed. Reg. 45,347/3-48/2, 45,378/1-2; DKT[1]-0002 at 5, 23-27 ("Draft Guidance on Models for Secondarily Formed Pollutants"). Also unlawful and arbitrary are the "modeled emissions rates of precursors" ("MERPs") that EPA discusses. 80 Fed. Reg. 45,347/3-48/2. At the very least, EPA must not weaken aspects of its current guidance that require major sources to analyze the ambient air quality to which they will be adding pollution as part of demonstrating they will not cause or contribute to NAAQS or increment

[1] For concision, we use "DKT" to stand for "EPA-HQ-OAR-2015-0310." Thus, for example, "DKT-0002" means "EPA-HQ-OAR-2015-0310-0002."

violations, and thus receive a construction permit. *See* EPA, EPA-454/B-14-001, *Guidance for $PM_{2.5}$ Modeling* 16-17 (May 20, 2014).

SIGNIFICANT IMPACT LEVELS

SILs unlawfully allow a proposed source to receive a permit without actually showing that its impacts will not cause or contribute to a violation of the NAAQS or increments. Section 165(a)(3) of the Act requires a permit applicant to "demonstrate[]…that emissions from construction or operation of [the proposed] facility will not cause, or contribute to, air pollution in excess of any" increment or NAAQS. 42 U.S.C. §7475(a)(3). This requirement is unambiguous and extraordinarily rigid. *See* Sierra Club Opening Brief 20-32, *Sierra Club v. EPA*, No. 10-1413 (D.C. Cir. June 26, 2012); Sierra Club Reply Brief 1, 4-11, 14-19, *Sierra Club*, No. 10-1413 (D.C. Cir. June 26, 2012).

To make the required showing for the NAAQS, a permit applicant must take (1) what the ambient air quality would be without the source, and add to it (2) the ambient impact of the source's emissions. EPA calls this process "cumulative impact analysis." The first value depends on existing pollution levels, as well as anticipated increases or decreases in emissions from other existing or proposed sources. Assuming the source's impacts are not so great that they will exceed the NAAQS even absent any other air pollution, the applicant must carry out the cumulative impact analysis. Otherwise, there is no rational way that it can satisfy the Act and show its emissions will not cause or contribute to an exceedance of the NAAQS.

Similarly, to make the showing for the increments, the applicant must determine the "baseline" concentration, assess how much of the increment has been consumed, and then add the proposed source's own ambient impact, as well as anticipated increases or decreases in impacts from other sources. 40 C.F.R. §§51.166(b)(13)-(15) (defining baseline concentration, major and minor source baseline dates, and baseline area), (c)(1) (establishing increments—"maximum allowable increases" over baseline concentrations), (f) (establishing exclusions from increment consumption), (k)(1) (requiring applicants demonstrate compliance with increments), 52.21(b)(13)-(15), (c), (k)(1) (same, except no exclusions are established). Unless the proposed source's impacts standing alone will exceed the relevant increment and no other source's emissions have changed since the baseline was established, this analysis is necessary to comply with the Act.

Thus, SILs cannot be lawfully or rationally used as a "screening tool" in a "single-source impact analysis" or "significant impact analysis" that allows sources to avoid actually showing whether they will cause or contribute to violation of the NAAQS or increments, *see* 80 Fed. Reg. 45,378/1-2; Draft Guidance on Models for Secondarily Formed Pollutants 23-27. To be a lawful and rational demonstration, any analysis must include "cumulative impact analysis," otherwise the demonstration bears no logical connection to whether the source's emissions will "cause, or contribute to, air pollution in excess of any" NAAQS or increment. 42 U.S.C. §7475(a)(3); *see also*

Massachusetts v. EPA, 549 U.S. 497, 535 (2007) (to avoid arbitrariness, "EPA must ground its reasons for action or inaction in the statute.").

The use of SILs in a single-source or significant impact analysis unlawfully short-circuits the process the Act requires. Demonstrating compliance with SILs is not the same thing as demonstrating compliance with increments or NAAQS: the mere fact that a source's impacts do not exceed the SILs does not suffice to show that it will not cause or contribute to exceedances. SILs allow proposed sources to receive construction permits even though they will cause or contribute to air pollution levels that exceed NAAQS and increments. *See* EPA-HQ-OAR-2006-0605-0040 at 17 (giving examples of proposed sources that complied with SO_2 SILs but not increments and still received permits). Because compliance with these clean air protections is central to the Act and the PSD provisions, SILs violate the Act. *See* Sierra Club Opening Brief 29-32, *Sierra Club*, No. 10-1413 (D.C. Cir.).

Nor can SILs be lawfully used in some culpability analysis of "the significance of the source's contribution, in a temporal and spatial sense, to any modeled violation," 80 Fed. Reg. 45,378/2; *see also* Draft Guidance on Models for Secondarily Formed Pollutants 24-27 (in cumulative impact analysis, always comparing impacts to SIL). Section 165(a)(3) of the Act lacks any "significance" qualifier, and that omission must be given effect. Where Congress has meant to target only "significant" contributions to NAAQS violations, as opposed to any contributions, it has said so explicitly. *E.g.*, 42 U.S.C. §§7410(a)(2)(D)(i), 7426; *see also, e.g.*, *id.* §7407(d)(4)(A)(v). Congress's omission of "significantly" from §165(a)(3) was thus purposeful. *See, e.g.*, *Barnhart v. Sigmon Coal Co.*, 534 U.S. 438, 452-53 (2002). EPA cannot rewrite the statute to include "significantly" here, thereby rendering its use superfluous where Congress chose to include it. *See North Carolina v. EPA*, 531 F.3d 896, 911-12 (D.C. Cir. 2008); *New York v. EPA*, 443 F.3d 880, 887 (D.C. Cir. 2006).

Culpability analysis is further unlawful and arbitrary for three reasons. First, §165(a)(3) simply does not leave any room for a source to receive a permit unless it shows that its emissions will not cause or contribute to a violation of NAAQS or increments. If a source cannot make that demonstration, there is no further question of "culpability" to investigate: it is statutorily barred from obtaining a PSD permit. It is axiomatic that EPA lacks authority to overturn Congress's plainly expressed policy judgments. *E.g.*, *Sierra Club v. EPA*, 705 F.3d 458, 469 (D.C. Cir. 2013) ("EPA may not substitute its policy for that of Congress.").

Second, the use of SILs to authorize additional pollution in areas that are already exceeding the NAAQS is flatly contrary to the Act's approach toward limiting additional pollution in nonattainment areas. Under §173 of the Act, no new major source within a nonattainment area may add pollution to that area without ensuring that offsetting emissions cuts exceed the new source's emissions. 42 U.S.C. §7503(a)(1). There is no exception based on the source's predicted ambient impact. It is wholly inconsistent with that scheme for EPA to allow the very same source to locate just outside the nonattainment area boundary and cause

pollution increases inside the nonattainment area that do not have to be offset as long as they are below the SILs.

Third, as a technical matter, as explained in the attached expert comments, models tend to underestimate $PM_{2.5}$. Thus, relying on such models to claim that a project's impacts will be below the SILs at a given place or time is arbitrary.

It is particularly troubling that EPA would encourage the use of SILs as exemptions from core permitting requirements, for EPA has never promulgated any such SILs that authorize such exemptions. EPA promulgated SILs for $PM_{2.5}$ that would have authorized sources to avoid cumulative impact analysis, but it agreed that the codified regulation was "flawed," and those SILs were vacated because of "EPA's lack of authority to exempt sources from the requirements of the Act." *Sierra Club*, 705 F.3d at 463, 465-66. EPA acknowledges here that *Sierra Club* vacated the $PM_{2.5}$ significant monitoring concentration, DKT-0005 at 4 n.12; it should also acknowledge and reiterate that *Sierra Club* vacated the $PM_{2.5}$ SILs for PSD permitting, and that no SILs exist under any PSD permitting provisions to authorize evading cumulative impact analysis.

Even if EPA persists in endorsing SILs, EPA should not depart in this action from its existing position that "where information exists demonstrating that a proposed source's impact would cause a NAAQS or increments violation, which violation would not exist <u>but for</u> the source's impact at any particular location, then EPA agrees it <u>would not</u> be appropriate to use the SILs." EPA Brief 32-34, *Sierra Club v. EPA*, No. 10-1413 (D.C. Cir. June 26, 2012) (emphasis in original). EPA agrees that is its current position. DKT-0005 at 6 fig.1. EPA here indicates that it intends to take a new position, where it <u>would</u> be appropriate to use SILs to authorize construction even when the source is the but for cause of a NAAQS or increment violation. *E.g.*, 80 Fed. Reg. 45,378/1; Draft Guidance on Models for Secondarily Formed Pollutants 5, 23-27; DKT-0005 at 8-9, 10 fig.3; DKT-0006 at 4, 6 fig.1. EPA provides no reason for weakening its existing position (nor any apparent awareness that it is changing positions, rendering a change arbitrary). Nor is there any reason for doing so: as EPA agrees, the Act "unambiguously requires all permit applicants to demonstrate that proposed construction will not cause or contribute to a violation of air quality standards." EPA Brief 32, *Sierra Club*, No. 10-1413 (D.C. Cir.). EPA incorporated that position into its existing guidance, at least for causation. *See* DKT-0005 at 6 fig.1. EPA's existing position is contrary to the bar on contributing to violations; EPA must not now extend its position to also be contrary to the bar on causing violations.

To the contrary, EPA should reverse its position that it can import a significance requirement into the word "contribute" in §165(a)(3) and thereby allow so-called culpability analysis. As the D.C. Circuit held in *Bluewater Network v. EPA*, "the term ['contribute'] has no inherent connotation as to the magnitude or importance of the relevant 'share' in the effect; <u>certainly it does not incorporate any 'significance' requirement</u>." 370 F.3d 1, 13 (D.C. Cir. 2004) (emphasis added; citations omitted). There, Congress clearly showed its intent by omitting the

word "significant" from the provision at issue, while including it in another related provision. *Id.* 13-14. So too here. The provision at issue in *Bluewater* provided for limits on emissions that "cause, or contribute to," certain types of air pollution, *id.* (quoting 42 U.S.C. §7547(a)(3))—language almost identical to §165(a)(3)'s "cause, or contribute to, air pollution in excess" of NAAQS or increments, 42 U.S.C. §7475(a)(3).

By using the phrase "cause, or contribute to," in §165(a)(3), Congress comprehensively covered <u>any</u> triggering or worsening of a violation. *See North Carolina*, 531 F.3d at 910 ("EPA must give effect to both provisions in…statute" "written in the disjunctive"). EPA itself has recognized that the phrase sweeps broadly. *See* 75 Fed. Reg. 64,864, 64,892/1 (Oct. 20, 2010) ("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"). Congress's intent not to incorporate a significance requirement into either term is apparent from reading the phrase in §165(a)(3), as well as the PSD provisions, as a whole. *See NRDC v. EPA*, 489 F.3d 1364, 1373 (D.C. Cir. 2007) ("The words of the statute should be read in context…and the problem Congress sought to solve should be taken into account to determine whether Congress has foreclosed the agency's interpretation." (internal quotation marks omitted)).

Even if there were some ambiguity about whether the Act authorizes SILs, it is arbitrary to use compliance with SILs as a proxy for compliance with increments and NAAQS. EPA has acknowledged that there are cases in which a source's compliance with SILs does <u>not</u> mean it complies with the NAAQS or increments. *E.g.*, *Guidance for $PM_{2.5}$ Modeling* 16 ("there can be circumstances where a showing that the air quality impact of a proposed source is less than a SIL value identified by the EPA is not sufficient by itself to demonstrate that a source will not cause or contribute to a violation of the NAAQS or increment."). EPA cannot lawfully or rationally allow permit applicants to use a methodology that it admits is not an accurate predictor of the compliance the statute requires. *See Massachusetts v. DOT*, 93 F.3d 890, 893 (D.C. Cir. 1996) ("Because the range of permissible interpretations of a statute is limited by the extent of its ambiguity, an agency cannot exploit some minor unclarity to put forth a reading that diverges from any realistic meaning of the statute lest the agency's action be held unreasonable.").

MODELED EMISSIONS RATES FOR PRECURSORS

EPA should halt any development of additional loopholes, including MERPs. MERPs would rely on SILs, for MERPs would measure the amount of precursors that EPA anticipates would result in $PM_{2.5}$ or ozone impacts below the level of the relevant SIL (which, as discussed above, doesn't exist yet). 80 Fed. Reg. 45,347/3-48/2. SILs are unlawful and arbitrary. Therefore, MERPs themselves would be unlawful and arbitrary.

It is mind-boggling that EPA is proposing to devote its resources to developing SILs and MERPs—both of which are illegal—for ozone and $PM_{2.5}$ when EPA has never even issued numerical increments for ozone.

Beyond their threshold illegality and the misappropriation of resources that they represent, EPA's conception of MERPs is flawed on EPA's own terms. First, as discussed above, EPA fails to account for a "causation" violation in its new discussion of SILs; it similarly fails to account for that in its discussion of MERPs. Second, EPA's conception of MERPs as "a level of emissions of precursors that is not expected to contribute significantly to concentrations of ozone," DKT-0006 at 4, is flawed because different areas may have different characteristics that lead to different precursors having greater or lesser impacts. For example, ozone levels in some areas may be more sensitive to changes in VOC emissions, whereas in other areas, NO_X emissions may be the dominant factor. As a result, if EPA were to continue with the MERPs concept, it would need to establish them based on the most conservative, most-ozone- or $PM_{2.5}$-forming circumstance.

Regardless of the existence of MERPs, EPA cannot allow a qualitative approach to secondary pollutants, and it certainly cannot encourage the qualitative (or a hybrid qualitative-quantitative) approach as the default. Because the NAAQS and increments (and SILs, which are unlawful) are all expressed numerically, compliance needs to be determined numerically, too.

MISCELLANEOUS OTHER ISSUES

- EPA must make sure that sources address both primary and secondary formation of $PM_{2.5}$. EPA's proposed approach would introduce new SILs and SIL-like tools for secondarily formed $PM_{2.5}$. EPA already endorses the use of SILs in analyzing primary $PM_{2.5}$. Taken together, EPA's existing approach to primary $PM_{2.5}$ and its proposed approach to secondarily formed $PM_{2.5}$ could allow a source to evade permitting requirements despite have ambient $PM_{2.5}$ impacts that EPA would agree are significant. Take a simplified example: assume the relevant SIL for primary $PM_{2.5}$ is 0.5 units. Assume that the MERPs equate to 0.5 units of secondarily formed $PM_{2.5}$. A source with primary $PM_{2.5}$ impacts just below the relevant SIL and $PM_{2.5}$ precursor emissions just below the relevant MERPs could easily have ambient combined $PM_{2.5}$ impacts well <u>above</u> 0.5 units, the level of the relevant SIL. If EPA persists in its course, it must ensure that sources do not escape the statutorily required protections by virtue of causing individually small $PM_{2.5}$ impacts through each of their primary and secondarily formed $PM_{2.5}$ that cumulatively are significant.
- EPA should adjust its description of the first tier of its proposed two-tier approach to secondary pollutants, 80 Fed. Reg. 45,347/3. EPA must ensure that the first tier is conservative and provides a meaningful assessment of whether a new source will cause or contribute to exceedances of the NAAQS or increments. EPA must also ensure that any first-tier assessments have meaningful links to the area, given that for secondarily formed pollutants,

different areas may have different characteristics that require different approaches to analysis. *See, e.g.*, *id.* 45,356/3 ("In all cases, the model or technique applied to a given situation should be the one that provides the most accurate representation of atmospheric transport, dispersion, and chemical transformations in the area of interest." (emphasis added)); DKT-0002 at 4 (first-tier information "include[s] air quality modeling for sources with similar or larger emissions in similar atmospheric environments" (emphasis added)).

- EPA's endorsement of starting air quality analyses with "simplified or conservative methods" is misplaced, 80 Fed. Reg. 45,358/1 (emphasis added); *accord id.* 45,358/2. The use of "or" suggests that the first cut doesn't need to be conservative, which would allow sources to use simplified analyses that are not conservative and that thus allow them to turn a blind eye to exceedances that a realistic—or conservative—analysis would catch. EPA must instead make clear that a conservative analysis is required.
- EPA wrongly suggests that sources can somehow disregard modeling results that show increment violations. EPA says that "the highest, second-highest increase in estimated concentrations for the short-term averages as determined by a model should be less than or equal to the permitted increment. The modeled annual averages should not exceed the increment." *Id.* 45,377/3 (emphasis added). It is not clear why EPA uses the word "should" instead of "must." Under §165(a)(3), a permit applicant cannot obtain a permit if its proposed source of pollutant would cause or contribute to increment exceedances. Modeling shows whether such exceedances will occur. To the extent EPA thinks there may be exceptions, where modeling shows an exceedance but for some reason the modeling is incorrect, the Act provides that the model may only be adjusted after notice and hearing and an EPA finding that "such adjustment is necessary to take into account unique terrain or meteorological characteristics of an area potentially affected by emissions from a source applying for a permit required under this part." 42 U.S.C. §7475(e)(3). EPA must not suggest there is some other, laxer test.
- Ammonia is a precursor to $PM_{2.5}$, and EPA must treat it as such in any guidance or regulations on secondarily formed $PM_{2.5}$. It is well-known that ammonia reacts with sulfates and nitrates to form ammonium nitrates and ammonium sulfates which are major components of $PM_{2.5}$. *See, e.g.*, 70 Fed. Reg. 65,984, 65,993 & tbl.2 (Nov. 1, 2005) (describing dominant species of $PM_{2.5}$ in various regions of country and concluding that ammonium compounds comprise significant percentage of $PM_{2.5}$). Some facilities such as coal-fired power plants emit large quantities of ammonia, which is used in NO_X emission control by selective catalytic converters. Under *NRDC v. EPA*, 706 F.3d 428, 435 n.7, 437 n.10 (D.C. Cir. 2013), ammonia is presumptively a $PM_{2.5}$ precursor.
- EPA appears to continue to fight against the statutory requirement that monitoring data be incorporated into PSD permitting analyses. It refers to the "rare" "regulatory application" of "air quality monitoring data." 80 Fed. Reg. 45,353/3. The precise import of its statement is not entirely clear, but to the extent it is suggesting that air quality

monitoring data serves no regulatory role in PSD permitting, it is incorrect. The Act requires monitoring data to go into PSD permitting analysis. 42 U.S.C. §7475(e)(3); *see Sierra Club*, 705 F.3d at 467-69 (rejecting EPA effort to allow sources to provide monitoring data as part of PSD application); *Alabama Power Co. v. Costle*, 636 F.2d 323, 372 (D.C. Cir. 1979) (same).

Sincerely,

Seth Johnson
Attorney

Edison Electric
INSTITUTE

Quinlan J. Shea, III
Vice President, Environment

February 16, 2017

George Bridgers
U.S. Environmental Protection Agency
Air Quality Modeling Group
109 T.W. Alexander Drive
Durham, NC 27709

[Submitted Electronically]

RE: Guidance on the Development of Modeled Emission Rate Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the Prevention of Significant Deterioration Permitting Program

Dear Mr. Bridgers:

The Edison Electric Institute (EEI) appreciates the opportunity to comment on the Environmental Protection Agency's (EPA or Agency) draft memorandum, *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the Prevention of Significant Deterioration Permitting Program* (Dec. 2, 2016) (Draft Guidance).

EEI is the association that represents all U.S. investor-owned electric companies, international affiliates and industry associates worldwide. Our members provide electricity for more than 220 million Americans, operate in all 50 states and the District of Columbia, and directly employ nearly 500,000 workers. Investing more than $100 billion, on average, in annual capital expenditures, the electric power industry is responsible for millions of additional jobs. Safe, reliable, affordable, and clean electricity powers the economy and enhances the lives of all Americans.

As the owners and operators of electric generating units, EEI members are subject to a variety of requirements under the Clean Air Act—including individual source permitting—where air quality modeling plays a central role. Accordingly, EEI and its members have a significant interest in the Draft Guidance. EEI appreciates and supports EPA's attempts to streamline and clarify the use of modeling within the NAAQS implementation process, such as with the development of MERPs. However, the Draft Guidance lacks sufficient clarity for state permitting authorities and applicants to fully

utilize and take advantage of the new permitting framework. EEI requests that EPA clarify and finalize this guidance expeditiously, and consider pursuing rulemaking to codify the nationwide Significant Impact Levels (SILs) and regional MERPs as presumptively approvable values, while also codifying the process for permitting authorities to derive source-specific values where appropriate.

Additionally, we note that the effective date of EPA's *Revision to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter* (82 *Fed. Reg.* 5182 (Jan. 17, 2017)) (final Revision to Appendix W) has been delayed until March 21, 2017 as a result of the January 20 memorandum titled *Regulatory Freeze Pending Review* (82 *Fed. Reg.* 8,499, January 26, 2017). Given the importance to EEI members of the final Revision to Appendix W, EEI supports interagency efforts to make the final revision effective as soon as practical. This will allow EEI's members to utilize it during individual source permitting processes, thereby further enhancing the industry's ability to provide safe, reliable, affordable and clean electricity for all Americans.

If you have any questions concerning EEI's comments, please contact Riaz Mohammed (rmohammed@eei.org or 202-508-5036), Alex Bond (abond@eei.org or 202-508-5523) or John Kinsman (jkinsman@eei.org or 202-508-5711).

Sincerely,

Quinlan J. Shea, III

cc: Steve Page, OAQPS
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Emily Fisher, EEI
Chuck Barlow, Entergy
Lenny Dupuis, Dominion
Steve Whitworth, Ameren

COMMENTS OF THE EDISON ELECTRIC INSTITUTE ON DRAFT GUIDANCE ON THE DEVELOPMENT OF MODELED EMISSION RATES FOR PRECURSORS (MERPS) AS A TIER 1 DEMONSTRATION TOOL FOR OZONE AND $PM_{2.5}$ UNDER THE PREVENTION OF SIGNIFICANT DETERIORATION PERMITTING PROGRAM

February 16, 2017

The Edison Electric Institute (EEI) appreciates the opportunity to comment on the Environmental Protection Agency's (EPA or Agency) draft memorandum *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the Prevention of Significant Deterioration Permitting Program* (Dec. 2, 2016) (Draft MERPs Guidance or Guidance). EEI is the association that represents all U.S. investor-owned electric companies, international affiliates and industry associates worldwide. Our members provide electricity for 220 million Americans, operate in all 50 states and the District of Columbia, and directly employ more than 500,000 workers. Investing more than $100 billion, on average, in annual capital expenditures, the electric power industry is responsible for millions of additional jobs. Safe, reliable, affordable, and clean electricity powers the economy and enhances the lives of all Americans.

EEI's members are subject to a variety of requirements under the Clean Air Act (CAA or Act)—including individual source permitting —where air quality modeling plays a central role. The results of modeling performed to plan for and ensure compliance with the CAA, including screening approaches like MERPs, and the process of obtaining approval for attainment demonstrations can dictate the types of investments EEI's members make in both existing and

new generation capacity. Consequently, EEI and its members have a significant interest in EPA's Draft MERPs Guidance.

I. Introduction and Executive Summary

The electric sector has been subject to numerous rulemakings that have and will continue to significantly impact the ongoing transition of the generating fleet over the next decade and beyond. Concurrent with this transition, EEI's member companies are making significant investments to make the energy grid more innovative, dynamic, flexible, and secure in order to integrate and deliver a mix of both central and distributed energy resources to customers. In order for this transition to be successful, EEI supports public policies and a streamlined approach to regulation that will continue, in a cost-effective manner, the transformation of the electric grid and our industry.

As part of the fleet's transition, many electric generating units (EGUs) will be subject to requirements for individual source permitting and requirements imposed as part of the State Implementation Plan (SIP) process to help attain and maintain the National Ambient Air Quality Standards (NAAQS), including permitting under the Prevention of Significant Deterioration (PSD) program.[1] The results of modeling performed to plan for and ensure compliance with the CAA, including screening approaches like MERPs, and the process of obtaining approval for attainment demonstrations can dictate the types of investments EEI's members make in both existing and new generation capacity. Consequently, EEI and its members have a significant interest in EPA's Draft MERPs Guidance, and it is critical that the implementation tools

[1] The permitting process is complicated and should not be made more so. For example, the design and construction of new generation in large areas of the country are subject to aggressive schedule requirements set by the regional transmission organization as part of the capacity auction process, which can conflict with the schedule for permitting.

provided by EPA are capable of providing the needed flexibility and accuracy that helps the power sector provide safe, reliable, affordable and clean electricity for all Americans. Consistent with these objectives, EEI has been actively engaged in reviewing and commenting on EPA's proposals to update the approaches to air quality modeling required under the CAA.

EEI's comments on EPA's Draft MERPs Guidance take into account EPA's *Revision to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter* (82 *Fed. Reg.* 5182 (Jan. 17, 2017)) (final Revision to Appendix W); *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program* (Aug. 18, 2016) (Draft SILs Guidance); *Model Clearinghouse: Operational Plan* (Dec. 2016) (MCH Operational Plan); and the *Guidance on the Use of Models for Assessing the Impacts of Emissions from Single Sources on the Secondarily Formed Pollutants: Ozone and* $PM_{2.5}$ (Dec. 2016) (the Single Source Guidance) (collectively, Modeling Guidance Documents). As articulated below, there is substantial uncertainty about whether PSD applicants and permitting authorities will utilize MERPs in their current form as guidance, particularly given the lack of detail regarding the process offered by EPA for deriving and approving MERPs values in the Draft MERPs Guidance. EPA should therefore clarify and finalize this Guidance expeditiously, and consider pursuing rulemaking to codify the nationwide Significant Impact Levels (SILs) and regional MERPs as presumptively approvable values, while also codifying the process for permitting authorities to derive source-specific values where appropriate.

EPA Should Provide Greater Clarity Regarding the Relationship Between the Initial Uses of MERPs and the Revised Appendix W and Model Clearinghouse Processes

EEI appreciates EPA's attempts to streamline and clarify the use of modeling within the NAAQS implementation process; however, the Draft MERPs Guidance lacks sufficient clarity for state permitting authorities and applicants to fully utilize and take advantage of the new permitting framework. For example, EPA appears to expect sources and permitting authorities that wish to apply MERPs to undertake substantial modeling exercises to derive the MERPs values while providing no guidance on whether review of those modeling exercises is required, and by whom such a review should be conducted. While it is likely that this process will require case-by-case approval from the Model Clearinghouse, this lack of clarity only provides procedural uncertainty. This will lead to Tier 1 screening approaches that present little benefit or incentive for sources to utilize them given the significant time and resource investment needed to achieve specific case-by-case approvals for alternative models—including both time and resources expended by states and sources both before and after approval of an alternative model. Therefore, EPA should provide clarity regarding the relationship between the initial uses of MERPs and the Revised Appendix W and oversight through the Model Clearinghouse**.**

EPA Should Provide Greater and More Specific Detail to its Recommended Method for Developing MERPs, Which is Needed to Avoid Undermining the Opportunity for MERPs to Improve the Implementation and Permitting Process

Use of MERPs as screening tools is intended to streamline or limit the need for extra technical consultations that do not improve model performance or lend themselves to improved permits or greater air quality protection. However, EPA did not set forth sufficient details regarding the process to derive site-specific MERPs, which undermines and limits the functionality and utility of MERPs as a screening tool. EPA should provide additional specific detail to its recommended method in the Guidance in order to allow MERPs to function as tools that help improve the NAAQS implementation and permitting process.

In Order to Make MERPs and SILs a Useful Screening Tool, EPA Should First Clarify the Guidance and Then Pursue Rulemaking Promulgating Presumptively Approvable SILs and MERPs

Even with substantial clarifications, the processes for case-by-case derivation of MERPs and SILs are still likely to be extremely cumbersome and may not provide the efficiency gains that EPA seeks and permitting authorities require. As a result, EPA should revise and finalize the relevant guidance documents in an expeditious fashion to provide additional appropriate clarity. Once these guidance documents have been finalized, EPA should then consider pursuing rulemaking to codify the nationwide SILs and regional MERPs contained in its guidance documents as presumptively approvable values, while also codifying the process for permitting authorities to derive source-specific values where appropriate. As is, the Draft MERPs Guidance likely does not provide enough incentive to permitting authorities and applicants to invest potentially significant resources in developing and applying area-specific MERPs. Finalizing these documents and pursuing a rulemaking would support development of area-specific MERPs.

EPA Has Clear Legal Authority to Issue SILs and MERPs, and Should Issue an Independent Legal Memorandum Explaining the Sources of this Authority

EPA possesses clear authority under section 165 of the CAA to fashion mechanisms that aid PSD permitting authorities and applicants in determining if a project's impacts cause or contribute to a NAAQS exceedence. It would be appropriate for EPA to issue an independent legal memorandum explaining the sources of legal authority to issue MERPs under the CAA in order to help permitting authorities to compile complete, appropriate records to support their initial MERPs decisions. For these same reasons, EPA also should issue a technical memorandum explaining in more detail how EPA's own calculations implement its authority under the CAA.

II. The Lack of Clarity Regarding the Relationship Between Initial Uses of MERPs and the Revised Appendix W and Model Clearinghouse Processes is a Significant Obstacle to the Use of MERPs

EEI appreciates EPA's attempts to streamline and clarify the use of modeling within the NAAQS implementation process as part of the Agency's efforts to provide the needed flexibility and accuracy states and regulated sources need in the permitting process. This effort also should allow the Agency, states and sources to appropriately allocate modeling and implementation resources where they can be most impactful. This certainly includes, as discussed below, EPA's attempts to streamline alternative model approvals and screening approaches. However, the Draft MERPs Guidance lacks clarity that state permitting authorities and applicants need in order to fully utilize and take advantage of the new permitting framework. Without further clarity and targeted improvements to the Modeling Guidance Documents, it is not evident that permitting authorities or EEI's members will be able to fully and effectively utilize these necessary implementation improvements.

In the Draft MERPs Guidance, EPA explains that MERPs are intended to be a Tier 1 screening approach for secondarily-formed pollutants. Draft MERPs Guidance at 4-5. When EPA promulgated its revisions to Appendix W, the Agency explained that its decision to not define a preferred model for ozone and $PM_{2.5}$ would not create an undue burden on regulators or the regulated community because EPA envisions that most permit applicants will qualify to use screening approaches and will not have to undertake full photochemical grid modeling. Final Revision to Appendix W at 44-45. While EEI appreciates EPA's attempt to promulgate screening approaches and concentrate modeling resources where they are most needed, neither the Draft SILs Guidance nor the Draft MERPs Guidance provides the necessary process clarity needed to deliver on EPA's vision. As EEI pointed out in its comments on the Draft SILs

Guidance, EPA clearly contemplates that modeling will be required to compare facility impacts to the SILs, and the lack of clarity regarding preferred single source models for ozone and $PM_{2.5}$ means that modeling for SILs still will require case-by-case EPA headquarters [i.e., Model Clearinghouse (MCH)] approval, and as a result, does not provide a meaningful screening tool.[2]

This problem is compounded with respect to the Draft MERPs Guidance—as set forth in more detail in Part III of these comments— as EPA appears to expect sources and permitting authorities that wish to apply MERPs to undertake substantial modeling exercises to derive the MERPs values. However, EPA provides no guidance on whether review of those modeling exercises is required, and by whom such a review should be conducted. Given the nature of the modeling exercises that will be required to derive MERPs for early applications by permitting agencies and applicants, it is therefore likely that MCH approval will be necessary. Without further clarity on this point, the Draft MERPs Guidance is a source of significant procedural uncertainty, which will lead to Tier 1 screening approaches that present little benefit or incentive for sources to utilize them, and therefore do not fulfill EPA's intended purpose of providing straightforward and useful implementation screening approaches.

EEI commends EPA for setting a relatively short timeline for approving alternative models submitted to the MCH. Indeed, the MCH Operational Plan includes an ambitious four-week turnaround for alternative models submitted to the MCH. However, the plan only accounts for the time after an EPA regional office sends out a formal concurrence request memorandum to the MCH, and not the significant effort it takes to make an alternative approach ready for

[2] *EEI Comments on Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Program* (Sept. 30, 2016) (EEI Comments on Draft SILs Guidance).

approval. Indeed, EPA seems to note this, as the MCH Operational Plan anticipates that a great deal of the work in developing and analyzing an alternative model will need to be done at the regional level. In addition, as EEI has noted in comments to EPA on both the Agency's proposed Revisions to Appendix W and on the Draft SILs Guidance, states and sources expend significant time and resources in developing potential alternative modeling approaches, inputs and source characteristics before any alternative approach is even sent to the region. Further, once the approach is with the region, alternative approaches and the unique situations that require them often lead to significant back-and forth between the regional office, the state and source, which also can involve the need to get headquarters feedback on particularly difficult issues. This entire process adds significant time (and occasionally leads to extra expenditure of resources) that the MCH Operational Plan and the Draft MERPs Guidance do not account for.

Specifically, according to the chart outlining the process of obtaining approval for alternative models, of the potential 11 or 12 steps in the process of obtaining approval, only three occur within the MCH. MCH Operational Plan at C-1, C-2. The MCH Operational Plan anticipates that the regional office will "develop a position on the proposed application of the alternative model or analytical technique and substantiate that position with its own thorough appropriate analysis before formally requesting review by the MCH." MCH Operational Plan at 18. After the MCH approves the model, the regional office also must draft and send a "formal concurrence request memorandum or an attached technical report to this memorandum." MCH Operational Plan at 19. The MCH Operational Plan also notes that the regional office and the MCH may be involved in informal discussion regarding an alternative model long before a formal concurrence request memorandum is sent to the MCH: "The MCH is not formally engaged in the review of a case-specific situation until the regional office has formally transmitted a concurrence request

memorandum to the MCH stating the Region's position on proposed use of an alternative model or analytical technique or other deviation from the modeling guidance for technical soundness and national consistency." MCH Operational Plan at 17. The MCH Operational Plan also notes that in certain cases an alternative model will need a "consensus opinion of all the ROs," a step which even further strains regional office resources and creates a risk of significant delay. MCH Operational Plan at 21.

In summary, although EEI commends the EPA for setting an ambitious timeline for approving alternative models in the MCH, this timeline does not account for the time and resources a regional office will be expending before and after approval of an alternative model—and for the time consulting with EPA headquarters throughout the steps of this process. These significant efforts will be even more difficult in the context of MERPs, where EPA has not explained what kinds of approvals may be required and how a regional office may conclude that there is a sufficiently robust body of precedent to rely on pre-existing modeling efforts to select MERPs for use as a screening tool.

III. The Process for Implementing EPA's Recommended Method for Developing MERPs in Section 6 of the Draft MERPs Guidance Lacks Sufficient Detail so that MERPs can be Effective for Permit Applicants and Permitting Authorities

Section 6 of the Draft MERPs Guidance ("Recommended Method for Developing MERPs as a Tier 1 Demonstration Tool") defines the process for developing area-specific MERPs. EPA instructs that the "framework" for developing area-specific MERPs should "include the following steps":

(1) define the geographic area(a);

(2) conduct a series of source sensitivity simulations with "appropriate air quality models";

(3) extract the highest average modeled impact anywhere in the modeling domain;

(4) calculate the MERP using the equation provided in Section 5 of the *MERPs Guidance*; and

(5) conduct quality assurance of the resulting MERP and evaluate the "interpretation and appropriateness" of the MERP estimate(s).

Draft MERPs Guidance at 27-29. The Guidance then simply states for each of the three frameworks (8-hour ozone, daily $PM_{2.5}$ and annual $PM_{2.5}$) that "[i]f there are questions about what steps are appropriate in a given instance or how to apply to steps described above, air agencies should contact their EPA Regional Office modeling contact for further technical consultation." Draft MERPs Guidance at 28-29. EPA's failure to set forth sufficient details regarding the process to derive site-specific MERPs leaves many unanswered questions that will be raised by the regulated community, permitting authorities, and regional offices as the permitting process moves forward. One of the greatest benefits of a useful screening tool, such as the MERPs, is to streamline or limit the need for these extra technical consultations that do not improve model performance or lend themselves to improved permits or greater air quality protection. Should EPA fail to provide additional clarification, as requested below, any attempts to derive and apply MERPs will be inevitably delayed by the need for repeated consultations involving not only the regional offices but also EPA headquarters, undermining the opportunity for MERPs to improve the NAAQS implementation and permitting processes.

Neither the process outlined by EPA in Section 6 of the Draft MERPS Guidance nor the equation and sample calculations provided in Section 7 are set forth in sufficient detail to provide permit

applicants and permitting authorities reasonable certainty regarding the level of analysis that is required to derive a MERP. In particular, steps 2, 4, and 5 of the process outlined in Section 6 for developing area-specific MERPs should include additional, detailed explanation to make the Guidance more useful in practice to applicants and the regulators. After revisions to clarify the portions of steps 2 and 4 discussed below, EPA should consider whether further clarification to the evaluation of the appropriateness of the MERPs under step 5 is necessary.

Furthermore, by indicating merely that the above framework "should include" these five steps, uncertainty remains as to whether applicants will face other steps and measures not known in advance of permitting proceedings and that could entail additional burdens. EPA also should provide further clarifying information on what additional steps (beyond Steps 1-5 enumerated in the guidance) could or should entail.

a. The Draft MERPs Guidance Fails to Include Sufficient Detail in Step 2 of its Recommended Method for Developing MERPS — Conducting Source Sensitivity Simulations with Appropriate Air Quality Models

EPA leaves several aspects of Step 2, in which parties are to conduct source sensitivity simulations using appropriate air quality models, vague and undefined. For example, the Agency does not provide essential details on the fundamental elements of Step 2, such as the number of, and how specifically to perform, sensitivity runs. The other sections of the Draft MERPs Guidance, although offered to illuminate how the MERPs should function in practice, do not provide sufficient and definitive detail for entities wishing to pursue MERPs to understand and follow the specific steps EPA has taken in deriving its "illustrative MERPs." In addition, no explanation is provided of what additional approaches to deriving the MERPs may be acceptable. The current version of the Draft MERPs Guidance fails to adequately explain which models could be utilized for developing MERPs. Therefore, at a minimum, EPA should provide

additional technical support to explain fully how it derived the "illustrative MERPs" in the Draft MERPs Guidance so that permit applicants and permitting authorities can evaluate and begin to utilize a process to calculate their own MERPs that may be acceptable to the Agency.

b. Step 4 in EPA's Framework for Developing MERPs (Calculating the MERPs Estimates) Suffers from a Number of Vague and Undefined Terms, Which will Further Disincentivize the use of MERPs

i. Several Key Terms in the Proposed Framework and Equation for Developing MERPs are Not Adequately Explained or Defined

Step 4 in EPA's recommended method for developing MERPs calls for deriving the MERPs estimate using the calculation provided in the Draft MERPs Guidance's Section 5 ("Framework for Developing MERPs as a Tier 1 Demonstration Tool"). But several key terms in the Section 5 equation and accompanying discussion are insufficiently defined, leaving questions about how applicants and permitting authorities should complete the calculation for deriving estimates for area-specific MERPs for ozone and $PM_{2.5}$ per the Draft MERPs Guidance.

For example, Section 5 (setting forth the equation for deriving MERPs) states that "[a] Tier 1 demonstration tool as described in . . . [the Revision to Appendix W] . . . consists of **technically credible air quality modeling** done to relate precursor emissions and peak secondary pollutant impacts . . . ." Draft MERPs Guidance at 20 (emphasis added). The Draft MERPs Guidance points to the following as potentially meeting the standard of "credible technical information": (1) "air quality modeling conducted for the relevant geographic area reflecting emissions changes for similar source types as part of a State Implementation Plan (SIP) demonstration," (2) "other permit action, or similar policy assessment," and (3) "air quality modeling of hypothetical industrial sources with similar source characteristics and emission rates of precursors that are located in similar atmospheric environments and for time periods that are conducive to the

formation of O_3 or secondary $PM_{2.5}$." Draft MERPs Guidance at 4. As noted above, Section 3 of the Draft MERPs Guidance, which is intended to offer more detailed guidance on appropriate models, does not include sufficient detail on which modeling approaches may be acceptable. Importantly, the Draft MERPs Guidance does not spell out what would constitute "similar source types," "similar policy assessments" or "similar source characteristics."

The equation involved in completing Step 4 of the MERPs framework also requires the permitting authority to describe how the chemical and physical areas modeled "as part of an existing set of information included in the Tier 1 demonstration tool are relevant to the geographic area of the source and key receptors." Draft MERPs Guidance at 20. The Guidance lists a number of factors that permitting authorities are to use to describe how existing modeling reflects the formation of ozone or $PM_{2.5}$ in a source's particular area and the comparability of two different geographic areas, such as "average and peak temperatures, humidity, terrain, rural or urban nature of the area, nearby regional sources of pollutants (e.g., biogenics, other industry), and ambient concentrations of relevant pollutants where available." Draft MERPs Guidance at 4. However, the Draft MERPS Guidance then provides no insight as to how similar a condition must be—between existing modeling and the formation of ozone and $PM_{2.5}$—for the planned source to rely upon existing modeling in deriving a MERP. The Draft MERPs Guidance also does not address whether any of these factors should be given more weight, or whether all factors should be weighed equally by the permitting authority. It merely states, "Where the existing technical information is based on chemical and physical conditions less similar to the project source and key receptors, a more conservative estimate of impacts using demonstration tools may be necessary," but it does not provide any insight into how the permitting authority should determine whether "chemical and physical condition are less similar to the project" or

explain how conservative an alternative estimate must be. Draft MERPs Guidance at 4. This lack of clarity, at a minimum, lends itself to further technical consultations and decreases the usefulness of applying screening approaches, and could result in permitting authorities forgoing use of the screening approach.

ii. The Draft MERPs Guidance Perpetuates the Lack of Clarity in the Draft SILs Guidance, Leaving the Relationship between MERPs and SILs Uncertain

The Draft MERPs Guidance requires the use of a "critical air quality threshold" in order to derive the MERP value. In Section 5 of the Draft MERPs Guidance, EPA indicates that SILs may be used as a basis for developing critical air quality thresholds and EPA's "illustrative MERPs" are derived using the values from the Agency's Draft SILs Guidance. However, the Draft MERPs Guidance also notes that "[n]othing in this guidance requires the use" of SILs as critical air quality thresholds. Draft MERPs Guidance at 20-21. EPA continues, noting that, "[c]onsistent with EPA's draft guidance containing these SIL values, to the extent a permitting authority elects to use a SIL to quantify a level of impact that causes or contributes to a violation of the NAAQS or PSD increment(s), such values will need to be identified and justified on a case-by-case basis." Draft MERPs Guidance at 20. This means that any entity attempting to rely on a MERP will first have to provide technical justification for a SIL, even if it relies on the SIL values from EPA's own Draft SILs Guidance, and then provide additional technical evaluation for the MERPs.

As in its Draft SILs Guidance, EPA provides no further explanation of the process for identifying and justifying use of a SIL or other appropriate value "on a case-by case basis." Draft MERPs Guidance at 21. EPA has thus perpetuated one of the key process uncertainties from the Draft SILs Guidance through to the Draft MERPs Guidance. Without additional clarification on how

SILs or other critical air quality thresholds are to be justified, it is unlikely that sources and permitting authorities will find SILs and MERPs to be fully useful screening tools.

c. The 2016 *Single Source Guidance* Fails to Illustrate how MERPS Will Work in Practice and Does Not Cure the Deficiencies Discussed Above with EPA's Recommended Method for Developing MERPs

As EEI emphasized in its comments on the Draft SILs Guidance, EPA's failure to clearly specify a preferred (or set of) presumptively approvable modeling approaches in the Single Source Guidance substantially complicates the process of obtaining approval for the required technical analysis to gain approval of a SIL. EEI Comments on Draft SILs Guidance at 20-22.[3] Because the Draft MERPs Guidance contemplates that the same sort of modeling efforts may be necessary in early applications of MERPs, the ambiguities in the Single Source Guidance are yet another example of a process point where additional clarity will be required so that EPA's set of modeling and screening tools can function as EPA intends.

The process of developing MERPs becomes more problematic if there is no existing empirical information for an area. The one example provided by the Single Source Guidance—of an applicant relying on "existing empirical relationships" to conduct a Tier 1 analysis—raises questions about whether any permitting authority or applicant will in practice be able to navigate this process. The Single Source Guidance provides the example of a hypothetical source emitting 600 tons per year (tpy) of SO_2 emissions from a new facility in the Atlanta metropolitan area. In this example, "[e]mpirical relationships between single sources of SO_2 emissions in the Atlanta area and downwind impacts have been published, [but] the published impacts are the result of the addition of 100 and 300 tpy emissions in that area." Single Source Guidance at 12.

[3] EEI acknowledges that EPA issued a new version of the *Single Source Guidance* in December 2016. Having reviewed this new version of the *Single Source Guidance*, the concerns EEI expressed in its SILs comments remain.

The Single Source Guidance notes that "[i]mpacts could be extrapolated by increasing the downwind $PM_{2.5}$ sulfate ion impacts from the published 300 tpy hypothetical source by a factor of 2 to estimate the post-construction impacts of source seeking a permit" and "[i]f those impacts are well below the applicable air quality threshold, then the Tier 1 demonstration based on this information may be sufficient." Single Source Guidance at 12. The Single Source Guidance notably does not explain what is meant by "well below the applicable air quality threshold." Single Source Guidance at 12.

The Single Source Guidance also notes that "the applicant could present the most conservative estimate of impacts from sources previously modeled in areas with generally similar meteorology and air quality" without explaining what the "most conservative estimate of impacts" is, or how to determine whether an area has "generally similar meteorology and air quality." Single Source Guidance at 12. The Single Source Guidance then states that the burden is on the applicant to "provide detailed descriptions for the project source to corroborate the appropriateness and relevancy of the existing information for the anticipated conditions at the project source and at key receptors" but fails to provide any guidance to permitting authorities or applicants regarding what "the appropriateness and relevancy of the existing information" would be. Single Source Guidance at 12. This failure to clearly specify a single preferred, or set of, presumptively approvable, modeling approaches in the Single Source Guidance substantially complicates the process of obtaining approval for the required technical analysis to gain approval of a SIL. And, because the Draft MERPs Guidance contemplates the same sort of modeling, substantial efforts would be necessary in early MERPs applications by permitting agencies and applicants. EPA's continued ambiguity leaves unanswered questions that create substantial uncertainty about how the MERPs will work in permitting actions.

IV. To Be Useful as a Screening Tool, EPA Should First Clarify the SILs and MERPs Guidance and Then Pursue Rulemaking To Promulgate Presumptively Approvable SIL and MERPs and a Process by Which Permitting Authorities Can Develop Site-specific Values

As explained above, substantial clarifications to the technical approaches for deriving SILs and MERPs on a case-by-case basis are needed to increase the likelihood that they can be successfully used as screening tools. While EEI strongly supports EPA's aim to streamline PSD permitting by providing technically robust screening tools, the current Modeling Guidance Documents do not achieve these goals. Even with substantial clarifications, the processes for case-by-case derivation of MERPs and SILs are still likely to be extremely cumbersome and may not provide the efficiency gains that EPA seeks and permitting authorities require. As a result, EPA should revise and finalize the relevant Modeling Guidance Documents in an expeditious fashion to provide additional appropriate clarity. Once these Modeling Guidance Documents have been finalized, EPA then should consider pursuing rulemaking to codify the nationwide SILs and regional MERPs contained in its guidance documents as presumptively approvable values, while also codifying the process for permitting authorities to derive source-specific values where appropriate.

The Draft MERPs Guidance provides examples of emission rates of precursors that can be used by permitting authorities, but EPA's decision to issue this as a guidance document effectively limits applicants and authorities from relying on them in PSD permitting actions. EPA caveats that the Draft MERPs Guidance "does not require the use, nor does it require acceptance of the use, of this framework or any result using this framework by a permit applicant or a permitting authority." Draft MERPs Guidance at 4. While MERPs and SILs are conceptually useful, EPA has constrained their utility by not promulgating MERPs as a rule that contains presumptively

approvable regional values and a process by which permitting authorities can develop site-specific values. By not establishing "any binding requirements on the EPA, permitting authorities, permit applicants, or the public" even after an extensive data gathering and synthesis processes, EPA provides little assurance that permitting authorities, with fewer resources, will be able to compile data sufficient to establish area-specific MERPs. Draft MERPs Guidance at 4.

EPA's explanation for issuing MERPs as non-binding guidance is that it "it is preferable for permit applicants and permitting authorities to consider site-specific conditions when deriving MERPs and to obtain experience with the development and application of locally and regionally appropriate values in the permitting process." Draft MERPs Guidance at 2. With no assurance that EPA will in fact decide to promulgate a rule for MERPs after that experience is gained, however, the Draft MERPs Guidance likely does not provide enough incentive to permitting authorities and applicants to invest potentially significant resources in developing and applying area-specific MERPs.

V. EPA Should Provide Additional Legal and Technical Support for MERPs

While EPA offered an independent legal memorandum explaining its sources of legal authority to promulgate SILs, the Agency does not offer a similar independent analysis of its legal authority for issuing MERPs with the Draft MERPs Guidance. Like SILs, MERPs are a tool to assist applicants and permitting authorities in assessing whether a proposed source's emissions in an attainment area cause or contribute to NAAQS exceedances. The same legal authorities that grant EPA the ability to define SILs also authorize the Agency to define MERPs based on a determination that a project's emissions will not result in levels of air pollution that cause or contribute to a NAAQS exceedance. This authority comes from the plain text, structure and

purpose of the PSD permitting scheme of the CAA. Moreover, there is nothing inherent in EPA's proposal for MERPs that would diminish EPA's authority under the CAA in these regards.

As articulated in EEI's comments on the Draft SILs Guidance, EPA possesses authority under section 165 of the CAA to fashion mechanisms that aid PSD permitting authorities and applicants in determining if a project's impacts cause or contribute to a NAAQS violation. EEI Comments on Draft SILs Guidance at 4-13, attached as Appendix A. Moreover, it is clear that such authority extends to precursor pollutants, the focus of Draft MERPs Guidance. Section 165(a)(3) of the CAA provides that 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. 42 U.S.C. § 7475(a)(3). Section 165 applies to "major emitting facilit[ies]," which the CAA defines as certain "stationary sources of air pollutants." 42 U.S.C. § 7479. The CAA in turn defines "air pollutant" as including "any **precursors** to the formation of any air pollutant, to the extent the Administrator has identified such precursor or precursors for the particular purpose for which the term 'air pollutant' is used." *Id.* § 7602 (emphasis added). EPA's authority under section 165(a)(3) to regulate "emissions," therefore, clearly includes regulation of precursors of air pollutants.

For these reasons, and as elaborated in EEI's attached comments on the Draft SILs Guidance, inAppendix A, EPA's broad power and discretion under CAA section 165 embodies the use of mechanisms such as MERPs to aid PSD permitting applicants and authorities in assessing precursor impacts and determining if a project's emissions cause or contribute to an O_3 or $PM_{2.5}$ NAAQS violation.

As EPA did with its Draft SILs Guidance, it would be appropriate for EPA to issue an independent legal memorandum explaining the sources of legal authority to issue MERPs under the CAA, as well as a technical memorandum explaining in more detail how EPA's own calculations implement its authority under the CAA. In issuing guidance, EPA expects individual permitting authorities to proceed on a case-by-case basis to build independent, legally and technically defensible records for each application of the MERPs. Memoranda explaining EPA's positions on these issues would be an important tool to help permitting authorities compile complete, appropriate records to support their initial MERPs decisions. In addition, were EPA to pursue rulemaking for SILs and MERPs at a later date, these memoranda would provide an important foundation for future rulemaking activities.

VI. Conclusion

EEI supports the use of MERPs in connection with SILs and the related Modeling Guidance Documents as an important screening tool for the CAA PSD permitting program in attainment areas to focus air quality modeling resources where they are most needed. The lack of clarity in the Draft MERPS Guidance disincentivizes permitting authorities and applicants from developing MERPs. To be useful as a screening tool, EPA should clarify the ambiguities by supplying substantial additional details in the Draft MERPs Guidance and subsequently promulgate both the SILs and the MERPs as a rule that contains presumptively approvable values, and a process by which permitting authorities can develop site-specific values.

The modifications and clarifications requested in these comments can significantly enhance the utility of MERPs as a Tier 1 screening tool and the likelihood that applicants and agencies will

seek to employ them in permitting proceedings. Furthermore, such clarifications are necessary for Appendix W and EPA's suite of Modeling Guidance Documents to function together as EPA intends to concentrate modeling efforts on those sources that are most likely to impact ambient air quality.

Attachment A

Edison Electric INSTITUTE

Power by Association℠

September 30, 2016

Stephen D. Page
United States Environmental Protection Agency
Director, Office of Air Quality Planning and Standards
109 T.W. Alexander Drive
Durham, NC 27709

[Submitted Electronically to SILguidance@epa.gov]

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

Dear Mr. Page:

The Edison Electric Institute (EEI) appreciates the opportunity to comment on the U.S. Environmental Protection Agency's August 18, 2016 draft memorandum, "Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program" (*Draft Guidance*).

EEI is the association that represents all U.S. investor-owned electric companies, international affiliates and industry associates worldwide. Our members provide electricity for more than 220 million Americans, operate in all 50 states and the District of Columbia, and directly employ nearly 500,000 workers. Investing more than $100 billion, on average, in annual capital expenditures, the electric power industry is responsible for millions of additional jobs. Safe, reliable, affordable, and clean electricity powers the economy and enhances the lives of all Americans.

As the owners and operators of electric generating units, EEI member companies are subject to a variety of requirements under the Clean Air Act where modeling plays a central role, such as individual source permitting requirements. The results of modeling performed to plan for and ensure compliance with the Act—which includes the use of screening approaches such as significant impact levels (SILs), and the process of obtaining approval for demonstrations of attainment—can dictate the types of investments EEI's members make in both existing and new generation capacity. As such, EEI and its members have a significant interest in the draft guidance.

EEI appreciates EPA's effort to develop SILs for the Prevention of Significant Deterioration permitting program and supports the use of SILs as an important screening tool for stationary sources in attainment areas. EPA has a clear legal basis to develop and employ SILs. However, numerous issues need to be addressed before SILs and the *Draft Guidance* can serve as a useful screening tool.

If you have any questions concerning EEI's comments, please contact John Kinsman (jkinsman@eei.org or 202-508-5711) or Riaz Mohammed (rmohammed@eei.org or 202-508-5036).

Sincerely,

John D. Kinsman
Senior Director, Environment

cc: Raj Rao, EPA Office of Air Quality Planning and Standards
Tyler Fox, EPA Office of Air Quality Planning and Standards
Brian Doster, EPA Office of General Counsel
Richard Wayland, EPA Office of Air Quality Planning and Standards
Chuck Barlow, Entergy
Lenny Dupuis, Dominion
Emily Fisher, EEI
Quin Shea, EEI
Steve Whitworth, Ameren

COMMENTS OF THE EDISON ELECTRIC INSTITUTE

ON DRAFT GUIDANCE ON SIGNIFICANT IMPACT LEVELS FOR OZONE AND FINE PARTICLES IN THE PREVENTION OF SIGNIFICANT DETERIORATION PERMITTING PROGRAM

September 30, 2016

The Edison Electric Institute (EEI) submits these comments on the U.S. Environmental Protection Agency's (EPA or Agency) draft memorandum, *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program* (Aug. 18, 2016) ("the *Draft Guidance*"). EEI is the association that represents all U.S. investor-owned electric companies, international affiliates and industry associates worldwide. Our members provide electricity for more than 220 million Americans, operate in all 50 states and the District of Columbia, and directly employ nearly 500,000 workers. Investing more than $100 billion, on average, in annual capital expenditures, the electric power industry is responsible for millions of additional jobs. Safe, reliable, affordable and clean electricity powers the economy and enhances the lives of all Americans.

EEI's members are subject to a variety of requirements under the Clean Air Act (CAA or Act)—including individual source permitting requirements—where modeling plays a central role. The results of modeling performed to plan for and ensure compliance with the CAA, which include the use of screening approaches such as significant impact levels (SILs), and the process of obtaining approval for demonstrations of attainment, can dictate the types of investments EEI's members make in both existing and new generation capacity. As such, EEI and its members have a significant interest in EPA's proposed *Draft Guidance*.

I. Executive Summary.

The electric sector is subject to numerous rulemakings that will significantly impact the ongoing transition of the fleet over the next decade and beyond. As part of this transition, many electric generating units will be subject to new individual source permitting requirements and requirements imposed as part of the State Implementation Plan process.[1] Accordingly, it is critical that the implementation tools provided by EPA are capable of providing the needed flexibility and accuracy that helps the power sector provide safe, reliable, affordable and clean electricity for all Americans. Consistent with these objectives, EEI has been actively engaged in reviewing and commenting on EPA's proposals to update the approaches to air quality modeling required under the Act. These comments provide EEI's views on EPA's *Draft Guidance*.

EEI Supports the Use of SILs as a Screening Approach to Focus Modeling Resources Where They are Most Needed.

As a general matter, EEI supports the use of SILs as an important screening tool for the CAA Prevention of Significant Deterioration (PSD) permitting program in attainment areas to focus air quality modeling resources where they are most needed. EEI acknowledges that EPA has exercised its discretion under the CAA to develop a compliance demonstration tool for stationary sources subject to the PSD program with the goal of potentially streamlining the permitting process while at the same time protecting air quality and ensuring that the statutory purposes of the PSD program are met.

[1] The permitting process is complicated and should not be made more so. For example, the design and construction of new generation in large areas of the country are subject to aggressive schedule requirements set by the regional transmission organization as part of the capacity auction process which greatly limits the available schedule for permitting.

The Guidance Can be Strengthened by Clarifying EPA's Legal Authority for SILs.

EEI appreciates the legal foundation that the Agency has offered for the utilization of SILs in the "Legal Support Memorandum" accompanying the *Draft Guidance*, but believes that the Guidance can be further strengthened by clarifying the full legal authority the Agency and states have to employ SILs. To that end, EEI offers a supplemental discussion of the legal basis for SILs that clarifies EPA's authority to establish SILs.

While EEI Supports the EPA's Air Quality Variability Approach, EEI has Concerns About Some of the Implementation Choices EPA has Made.

EEI supports the air quality variability approach articulated in the *Draft Guidance* as a basis for the proposed SIL values, and acknowledges the Agency's effort to incorporate inherent variability in air quality monitoring data. However, EPA has not provided sufficient justification for its decision to set the SIL based on the 50% confidence interval without evaluating other levels between the 50% confidence interval and the threshold for statistical significance. In addition, there is not sufficient information provided with the *Draft Guidance* to evaluate the impacts of regional variability and the overall validity of a decision to set single, nationwide SILs for ozone and fine particulate matter ($PM_{2.5}$). EPA should evaluate SIL values based on confidence intervals greater than 50%. Additionally, EPA should develop approaches that account for regional variability in secondary pollutant formation.

When Read in Combination With EPA's Appendix W Proposal and Other Guidance, There is Substantial Uncertainty Regarding Whether the SILs can Actually be Used as a Screening Approach.

The *Draft Guidance* needs to be considered within the context of EPA's Appendix W proposal and related Agency modeling guidance to assess the full extent to which the SILs can be

employed in permitting decisions as a practical matter. EEI is concerned that the *Draft Guidance* fails to provide meaningful direction to permitting authorities and applicants regarding the specific modeling approaches that would be acceptable in a SILs screening process, and raises a central question about whether there are in fact any current approaches to modeling for SILs screening that could be relied upon without the need for further review by EPA's Model Clearinghouse. To the extent that Clearinghouse involvement will be required for modeling for SILs screening, the Agency fails to provide a useful screening approach that addresses the concerns raised in EEI's prior comments on the Appendix W Proposal. The streamlining objective of the SILs could be easily frustrated through case-by-case requirements and consultations. EPA should clarify the procedures and models that sources should use when developing values for comparison to the SILs. EPA also should clarify the role of the Model Clearinghouse in the review of permitting approaches applying SILs.

II. EPA's Guidance can be Improved by Clarifying the Legal Authority to Promulgate SILs.

EEI has reviewed the Legal Support Memorandum accompanying the *Draft Guidance* and appreciates the Agency's treatment of the legal foundation for SILs. EEI offers the discussion below to supplement the Agency's legal memorandum and expand the support for the *Draft Guidance* and EPA's and State's authority to employ SILs. As explained below, this authority comes from the plain text, structure, and purpose of the PSD permitting scheme of the CAA.

A. EPA has discretion under Subpart I of the PSD provisions of the CAA to employ SILs.

i. The plain text of section 165 supports EPA's legal authority to employ SILs.

EPA's authority to employ SILs is rooted in the plain language of section 165(a)(3) of the CAA, which provides that 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" National Ambient Air Quality Standard (NAAQS) or PSD increment. 42 U.S.C. § 7475(a)(3). The phrase "cause, or contribute to," however, is not defined anywhere in the CAA, including section 165 or any of the sections of Subpart I of the PSD provisions. Congress' use of the phrase "cause, or contribute to" in section 165, together with the legislative history, caselaw, and statutory purposes of the PSD program, demonstrate that EPA has discretion to determine the level at which emissions may be considered not to cause or contribute to violations of a NAAQS or PSD increment. Included within the authority to construe the term "contribute to" is EPA's authority to not require more extensive and time-consuming cumulative modeling and analysis when initial analysis shows emissions will be insignificant and not rise above a SIL.

1. Courts have held that "contribute to" is an ambiguous term.

The United States Court of Appeals for the District of Columbia Circuit ("D.C. Circuit") has recognized in multiple decisions that the phrase "contribute to" as used in the CAA is ambiguous. In *Catawba City, North Carolina v. EPA*, the D.C. Circuit concluded that the term "contribute to" as used in section 107 of the CAA has at least two meanings as defined in dictionaries: "Although petitioners cite one dictionary that supports the claim that the adverb 'significantly' is implicit in the verb 'contribute,' EPA cites other dictionaries that define 'contribute' without reference to any threshold level of significance." 571 F.3d 20, 39 (D.C. Cir.

2009). Acknowledging that the CAA does not define "contribute to" and that the term itself could either implicitly include the adverb "significant" in its ordinary meaning or mean any additional amount without reference to any threshold level of significance, the court determined the phrase was ambiguous. *Id.* And, because the phrase was ambiguous, the court granted EPA deference to determine the term's meaning: "This alone suggests an ambiguity that fatally undermines petitioners' *Chevron* step one argument" that "contribute to" has only one meaning. *Id.*

Similarly, in *Environmental Defense Fund, Inc. v. EPA*, the D.C. Circuit concluded "contribute to" in section 176(c) of the CAA was ambiguous, meaning that EPA had discretion to define the phrase: "The Agency has demonstrated, however, that the 'contribute to' language of the statute—particularly in combination with the 'consistent with' language—is ambiguous." 82 F.3d 451, 459 (D.C. Cir.), *amended sub nom. Envtl. Def. Fund v. EPA*, 92 F.3d 1209 (D.C. Cir. 1996). As the court noted, section 176(c) requires EPA to ascertain if plans "contribute to . . . emission reductions." *Id.* at 458. The court observed "the language leaves wide open the question of how large a reduction in emissions must be to constitute a contribution." *Id.* at 459. The court concluded that the language gave EPA the ability to determine the level at which a reduction in emissions would be considered to "contribute to emission reductions."

Section 165, too, "leaves wide open the question" of the level at which sources may demonstrate that they do not "contribute to" a violation of a NAAQS or PSD increment, reflecting Congressional intent to allow EPA to define this term. By employing SILs, EPA defines

"contribute to" in a way that is in harmony with the plain text of section 165(a)(3) and the broader purposes of the PSD permitting program.

2. Silence in the text and legislative history of the CAA shows Congress' use of the term "cause, or contribute to" was intended to provide EPA discretion.

In addition to the plain language of section 165, Congress was also conspicuously silent in the legislative history: the record for Subpart I of the PSD permitting program under the CAA does not provide any discussion of the phrase "cause, or contribute to." This term, in fact, is never defined at any point in the text or legislative history of PSD provisions or any other part of the CAA. The U.S. Supreme Court's reasoning in *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208 (2009), where Congress was similarly silent, instructs that EPA's utilization of SILs is a proper interpretation of "cause, or contribute to" in the PSD permitting scheme.

In *Entergy*, the Supreme Court considered whether EPA's interpretation of statutory language requiring it to set standards for "the best technology available for minimizing adverse environmental impact" under the Clean Water Act was reasonable. The Court noted the terms "best technology" and "minimize" were susceptible to different meanings and did not necessarily mean to "reduce to the greatest extent possible," allowing EPA some discretion to decide what factors it would consider in making the required determination. *Id.* at 218-19. Further, although costs and benefits were specifically listed in other provisions as a factor EPA should consider, the silence in § 1326(b) was "nothing more than a refusal to tie the agency's hands as to whether cost-benefit analysis should be used, and if so to what degree." *Id.* at 222. The Court was persuaded by § 1326 being "silent not only with respect to cost-benefit analysis but with respect

to all potentially relevant factors. If silence here implies prohibition, then the EPA could not consider *any* factors in implementing § 1326(b)—an obvious logical impossibility." *Id.*

Just as Congress' reticence concerning the terms "best technology" and "minimize" allowed EPA to define these terms in such a way that did not mean "reduce to the greatest extent possible," Congress' silence as to the term "contribute to" in the PSD program permits EPA discretion to define that term in section 165 of the CAA as not including certain emissions increases where the effects of those increases would be insignificant.

ii. The structure and purpose of Subpart I of the PSD provisions support EPA's discretion to employ SILs.

The statutory objectives of the PSD program reveal that Congress anticipated a definition of "contribute to" that allows for more than zero emissions, and necessarily includes the ability to determine the threshold at which emissions contribute to the violation of a NAAQS or PSD increment.

Section 160 of the CAA sets forth the central purposes of the PSD permitting scheme, which include:

> (1) to protect public health and welfare from any actual or potential adverse effect which in the Administrator's judgment may reasonably be anticipate [sic] to occur from air pollution or from exposures to pollutants in other media, which pollutants originate as emissions to the ambient air) [sic], notwithstanding attainment and maintenance of all national ambient air quality standards; . . .
>
> (3) to insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources; . . . and
>
> (5) to assure that any decision to permit **increased air pollution** in any area to which this section applies is made only after careful

> evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decision making process.

42 U.S.C. § 7470 (emphasis added).

Section 160(5) explicitly states one of the purposes of the PSD provisions is for EPA to consider whether to allow "increased air pollution," in an attainment area, showing Congress intended to give EPA discretion to decide whether to allow emissions that are above zero. If section 165(a)(3) is interpreted to preclude EPA from considering the amount at which emissions "contribute to" violation of a NAAQS or PSD increment because "contribute to" means "any amount of emissions at all," then this purpose would be frustrated. EPA could not consider whether to allow "increased air pollution" because any additional amount of emissions would automatically "contribute to" violation of a NAAQS or PSD increment. In addition, EPA's duty to ensure economic growth and balance this growth with preventing deterioration of air quality in attainment areas reinforces that the Agency must be allowed to provide for a certain amount of emissions from stationary sources in an attainment area.

In *Natural Resources Defense Council v. EPA*, the D.C. Circuit affirmed that Congress intended for EPA to balance these competing statutory purposes in permitting actions under the PSD program. *See* 937 F.2d 641, 645-46 (1991). The court pronounced, "Nothing in the legislative history undermines the inference that Congress believed that its PSD provisions should balance the values of clean air, on the one hand, and economic development and productivity, on the other, and much confirms it." *Id.* The D.C. Circuit found clear Congressional intent for this balancing entailed by the PSD program in a house committee report: "The committee proposal

represents a balanced approach which simultaneously protects clear air resources and provides for present and future economic growth." H. Rep. No. 294, 95th Cong., 1st Sess. 4 (1977), U.S. Code Cong. & Admin. News 1977, p. 1242, 4 Leg. Hist. at 2630; *see also* S. Rep. No. 127, 95th Cong., 1st Sess. 29 (1977), 3 Leg. Hist. at 1403.

This legislative declaration and the D.C. Circuit's holding underscore EPA's authority to consider several factors when deciding to allow increased air emissions in an attainment area, including future economic growth. To fulfill this mandate, EPA must be allowed to define "cause, or contribute to" in a way that allows some amount of contribution of emissions to air quality. Otherwise, there would be no reason for EPA to consider economic development and productivity or any other factors because any amount of emissions would be impermissible.

In these regards, the PSD program stands in contrast to the Nonattainment New Source Review provisions applicable to stationary sources in *nonattainment* areas, which impose the "lowest achievable emission rate" standard and emission offsets for sources. 42 U.S.C. §§ 7501-7503. Alternatively, for *attainment* areas, the PSD scheme affords permitting authorities latitude in setting a threshold for a quantum of emissions that does not cause or contribute to a violation of a NAAQS or PSD increment. Furthermore, it should be noted that any source that is subject to PSD permitting will be required to implement the best available control technology to limit its emissions.

B. EPA has consistently recognized that "contribute to" in section 165 is an ambiguous term and has utilized a consistent definition in the PSD program.

Since the inception of the PSD program, EPA has consistently recognized that "contribute to" in section 165(a)(3) is an ambiguous term that allows the Agency to set insignificant levels of emissions, expressed in SILs, as a threshold for whether a source may contribute to a NAAQS or PSD increment violation. In 1978, EPA promulgated its first regulations after Congress enacted the PSD provisions in 1977. In these regulations, EPA interpreted its authority under the CAA as not requiring consideration of insignificant emissions, explaining that, "since the air quality impacts of many sources falls off rapidly to insignificant levels, EPA does not intend to analyze the impact of a source beyond the point where the concentrations from the source fall below certain levels." Prevention of Significant Air Quality Deterioration, 43 Fed. Reg. 26,379, 26,398 (June 19, 1978).

In 1980, EPA issued a guidance memorandum, explaining that a source will not be viewed as causing or contributing to a violation if the source's impact is lower than the SILs at the location and time of the violation. Memorandum from Richard Rhoads, EPA, to Alexandra Smith, EPA, Interpretation of "Significant Contribution" (Dec. 16, 1980). In a subsequent guidance from 1988, EPA recognized there were at least two approaches to defining the term "contribute to": "The first is where a proposed source would automatically be considered or contribute to any modeled violation that would occur within its impact area." Memorandum from Gerald Emison, EPA, to Thomas Maslany, EPA, Air Quality Analysis for Prevention of Significant Deterioration (PSD) (July 5, 1988). "The second approach similarly projects air quality concentrations throughout the proposed source's impact area, but does not automatically assume that the proposed source would cause or contribute to a predicted NAAQS or increment violation.

Instead, the analysis is carried one step further in the event that a modeled violation is predicted. The additional step determines whether the emissions from the proposed source will have a significant ambient impact at the point of the modeled NAAQS or increment violation when the violation is predicted to occur. If it can be demonstrated that the proposed source's impact is not 'significant' in a spatial and temporal sense, then the source may receive a PSD permit." *Id.*

EPA rejected the first approach and chose the second after examining "the history and precedents which have been set concerning this issue," explaining "the most appropriate course of action to follow is the second approach which considers the significant impact of the source in a way that is spatially and temporally consistent with the predicted violations." *Id.*

EPA reaffirmed its 1988 position in a 2010 guidance memorandum regarding implementation of the 1-hour nitrogen dioxide (NO_2) NAAQS, stating, "[a]s provided in the July 5, 1988, guidance memo, in such instances, because of the proposed source's *de minimis* contribution to any modeled violation, the source's impact will not be considered to cause or contribute to such modeled violations, and the permit could be issued. This concept continues to apply, and the significant impact level (described further below) may be used as part of this analysis." EPA, Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program 6 (June 2010).

In a 2006 appeal to EPA's Environmental Appeals Board (EAB), *In re Prairie State Generating Co.*, the Agency's EAB decided that a PSD source would not be considered to cause or contribute to a modeled NAAQS violation because its estimated air quality impact was

insignificant at the time and place of the modeled violations and pointed to PSD regulations, guidance, and the ambiguity of the term "contribute" to support its reasoning. 13 E.A.D. 1, 94-109, PSD Appeal No. 05-05, (EAB 2006). The EAB in *Prairie State* also noted EPA's consistent recognition of two separate definitions of "contribute to" since the beginning of the PSD program and decision to reject the definition that "contribute to" means any addition to the amount of emissions in an airshed. *Id.*

In short, the plain text of section 165(a)(3), the legislative history of the CAA, the structure and purpose of Subpart I of the PSD program, and relevant case law, all compel the conclusion that EPA has discretion to determine the level below which emissions may be considered not to "contribute to" a violation of a NAAQS or PSD increment. EPA has consistently recognized this authority based on the ambiguity of the term "contribute to" and has used that authority to set an appropriate level—reflected in SILs—to help determine emissions that will not "cause or contribute to" a violation of a NAAQS or PSD increment.

III. EEI Supports EPA's Air Quality Variability Approach, but Has Concerns Regarding Some of the Choices EPA Makes in Setting the SILs.

As described by EPA in the *Draft Guidance*, the air quality variability (AQV) approach is intended to provide a way to determine a change in ambient air concentrations "that is meaningful in the context of inherent variability." *Draft Guidance* at 9. EEI appreciates that EPA has developed a technical approach that explicitly recognizes that day-to-day variations in both source operations and meteorological conditions create "inherent variability" in the air quality monitoring data at any given site. *Id.* EPA's AQV approach, which seeks to incorporate

consideration of this variability in the calculation of air quality values and the resultant SILs, is an important technical advancement that reflects the dynamic nature of ambient air quality.

Under the AQV approach, EPA is able to calculate confidence intervals around the average measured values at ambient air quality monitors, providing a way to assess the statistical significance of any projected future changes in ambient air quality. EPA, Technical Basis for the EPA's Development of Significant Impact Thresholds for $PM_{2.5}$ and Ozone (2016) [hereinafter Technical Basis]. EPA's Technical Basis document explains that it has elected to use statistical significance as a measure of whether there will be a potentially significant impact to ambient air (that is, one that will cause or contribute to a violation of the NAAQS). *Id.* at 5. According to EPA, the use of statistical significance as the benchmark for determining whether an air quality impact is significant "is fundamentally based on the idea that an anthropogenic perturbation of air quality that is within a specified range may be considered indistinguishable from the inherent variability in the measure atmospheric concentrations . . . ." *Id.* at 7. EEI agrees with EPA that projected future ambient air impacts from a new source seeking a permit that cannot be distinguished from the inherent variability in the airshed cannot rise to the level of significance that would cause or contribute to a violation of the NAAQS. As set forth in more detail below, in selecting a 50% confidence interval EPA has provided no explanation of its failure to consider a larger confidence interval that would result in higher SIL values that would still be supported by the AQV approach.

EEI also notes the AQV approach is just one of several valid approaches to determining the SILs. In prior guidance documents, EPA has adopted SILs that are set as a percent of the

NAAQS,[2] and EPA's use of the AQV approach in the *Draft Guidance* in no way undermines the validity of such SILs.

A. EPA should consider a broader range of confidence intervals that would still set a SIL below the level of statistical significance.

The AQV approach samples actual air quality monitoring data to create a distribution of values around a mean. Using this approach, it is possible to calculate confidence intervals for the resulting distribution of data. Applying its selected method of equating statistical significance with significant contributions to air quality, EPA determined that something less than the value that represents the 68% confidence interval (one standard deviation, the benchmark for statistical significance) should apply. Technical Basis at 38. The only explanation EPA gave for its choice of the 50% confidence interval was that "a CI smaller than a 68% CI is chosen to ensure that the physical limit selected would identify values that would very likely not be found to have a *statistically significant* effect." *Id.* (emphasis in original).

EPA's Technical Basis document evaluated four confidence intervals: 25%, 50%, 75%, and 95%. Technical Basis at 37. EPA provides no explanation as to why it did not consider the SIL values that would have resulted from selecting a confidence interval larger than 50% but less than 68% percent. Further, EPA explained that with confidence intervals below the level of statistical significance (68%) "there is no scientific reason to select any one CI[ ] over another." *Id.* at 38.

[2] *See, e.g.*, Memorandum from Anna Marie Wood, Office of Air Quality Planning and Standards, to Regional Air Division Directors 11 (June 28, 2010) (establishing nitrogen dioxide SILs at 4% of the NAAQS),

B. *EPA's decision to set national SILs that do not account for regional variability is difficult to evaluate in the absence of a proposal on the Modeled Emission Rate Precursors (MERPs).*

EPA's *Draft Guidance* establishes SILs that are applicable nationwide. In the Technical Basis document, EPA explains that nationwide SILs are preferable from a policy perspective because the historical practice has been to set a single national SIL to reflect the fact that NAAQS are set nationally. Technical Basis at 39. However, the use of single, nationwide SILs for $PM_{2.5}$ and ozone fails to account for the fact that the conditions affecting secondary formation exhibit a level of regional variability that is not a factor when evaluating directly emitted (primary) pollutants. While acknowledging this fact, EPA offers four reasons why a nationwide SIL is still appropriate: (1) EPA's analysis indicates a lack of large-scale regional trends in the variability around monitored air quality values; (2) a national value eliminates the need to develop local or regional approaches to determining the SIL; (3) the nature of EPA's method to calculate the SIL means that it would not reflect actual site variability; and (4) using a nationwide SIL provides a "level playing field" assuring that there is no incentive to "shop for a higher SIL value" when locating a new source. *Id.* at 40.

As a general matter, it is not clear why EPA's *Draft Guidance* couldn't specify an approach to determining the SILs that follows the method of statistical analysis that EPA used in making its own monitor-specific calculations. Much like the EPA regions, state permitting agencies, and sources often work together to develop technical approaches to refined air quality modeling, there is no reason they could not engage in a similar process here to apply EPA guidance and determine a regionally-applicable SIL. EPA seems to acknowledge such an approach would be feasible, noting that states could choose to adopt alternative SILs on a case-by-case basis as long as they are appropriately justified in the permitting record. *Draft Guidance* at 3. EPA should

therefore provide additional guidance on what it would expect a permitting record to show if a state opted to rely on an alternate, state-derived SIL.

In addition, it is important to note that the siting of a facility is an expensive and complex process that is subject to a wide variety of considerations. A typical part of any site selection process is conducting an initial analysis of air quality in the area to determine if it will be possible to get the necessary permits in the required timeframe to construct operate the facility. Because these analyses are already one of many important factors that companies consider when siting facilities, it is not clear to EEI how the derivation of regionally-applicable SILs would alter the behavior of project developers.

Based on EEI's review of EPA's Appendix W proposal, EEI expects that regional variability is likely to play a significant role in another screening tool EPA intends to develop: the Modeled Emission Rate Precursors. As explained in EPA's Appendix W rulemaking proposal, the MERPs will be screening tools to evaluate the potential impact of ozone and secondary $PM_{2.5}$ based on the emissions of precursor pollutants. 80 Fed. Reg. 45,340, 45,348 (July 29, 2015).[3] In its comments on the Appendix W proposal, EEI expressed support for the concept of MERPs, but noted that the utility of MERPs as a screening tool will need to be evaluated when additional details are provided by EPA. Comments of the Edison Electric Institute on the Revision to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter, Docket No. EPA-HQ-OAR-2015-0310, Oct. 26, 2015 at 11 [hereinafter EEI Comments]. Without additional

[3] *See also* Memorandum from Tyler Fox to Proposed Regulatory Docket No. EPA-HQ-OAR-2015-0310 Regarding PM2.5 (June 30, 2015), *available at* http://www.epa.gov/ttn/scram/11thmodconf/20150630-PM25_Docket_Memo.pdf.

information on MERPs, how they will account for regional variability, and how they relate to the SILs, EEI cannot fully evaluate the implications of EPA's decision to set single, nationwide SILs for ozone and $PM_{2.5}$.

IV. When Read with EPA's Appendix W Proposal and other Guidance Documents, there is Substantial Uncertainty Regarding How Sources Can Actually Use the SILs.

The *Draft Guidance* raises many questions about how SILs actually may be used by permit applicants to determine that refined modeling approaches are not required. Most importantly, when read in conjunction with EPA's Appendix W Proposal and the 2015 single-source modeling guidance, it is not at all clear how a source should conduct modeling to employ the SILs. See 80 Fed. Reg. 45,340; EPA, Guidance on the Use of Models for Assessing the Impacts of Emissions from Single Sources on the Secondarily Formed Pollutants Ozone and $PM_{2.5}$ (2015) [hereinafter Single Source Guidance]. To fulfill the SIL's purpose of focusing modeling resources where they are most needed and making it possible to obtain permits in a reasonable timeframe, EPA should specify the models and methodologies for SIL evaluation so that there will be no need for additional consultation beyond that which already takes place between permit applicants and state or local permitting agencies, except in very rare circumstances.

A. It is not clear what modeling approaches, if any, EPA intends parties to use in the SILs screening process.

Because the SIL is an ambient air value, any permit applicant wishing to use the SIL as a screening approach must rely upon some type of modeled outputs to compare the projected impacts of its emissions to the SIL. However, the *Draft Guidance* provides no meaningful guidance to states or permit applicants regarding the modeling approaches that would be acceptable in a SILs screening process. Turning to EPA's Appendix W Proposal and Single

Source Guidance provides no help. When read together, these documents plainly raise a simple question: does EPA believe there are *any* approaches to modeling for SILs screening that could be specified in the *Draft Guidance* and relied upon by the states and permit applicants without the need for further review?

EPA's Appendix W Proposal sets forth tiered approaches for single-source assessment for both ozone and $PM_{2.5}$. 80 Fed. Reg. at 45,365 (Section 5.3.2); *Id.* at 45,366 (Section 5.4.2). Under EPA's proposed approach, tier 1 would involve a number of screening assessments, while tier 2 would require single-source photochemical grid modeling. *Id.* The Appendix W Proposal sets forth "technically credible approaches" to tier 1 assessment, which include reliance on values from peer-reviewed literature or results of similar air quality modeling exercises. EPA's 2015 Single Source Guidance for ozone and $PM_{2.5}$ explains that first-tier approaches could be used by permit applicants "seeking to estimate single source impacts on secondary pollutants for purposes of comparison to a SIL . . . ." Single Source Guidance at 13. However, the Single Source Guidance goes on to express skepticism about the availability of tier 1 approaches noting "a very limited number of screening approaches have been developed and fewer still have been fully documented and tested for robust application." *Id.* The only tier 1 method the Single Source Guidance suggests is the application of existing modeled impacts from a photochemical grid model where sources are deemed to be similar in terms of background rates, release parameters, and background environment. *Id.* However, the Single Source Guidance provides no indication of when sources could be "deemed to be similar."

The Single Source Guidance contemplates the possibility that a tier 2 analysis could be conducted using either a photochemical grid model (such as CMAQ or CAMx) or a Lagrangian model (such as CALPUFF or SCICHEM). Single Source Guidance at 17-18. However, in discussing the potential use of a Lagrangian model, the Single Source Guidance notes that photochemical model concentration estimates may be needed to properly characterize the variability of oxidants and reactants within a Lagrangian model. *Id.* at 18. Thus, it appears that while EPA is purporting to provide a variety of options for screening approaches in the SILs, a permit applicant will more likely than not face a requirement for single-source photochemical grid modeling as a component of SILs analysis. This modeling will require time-consuming and case-specific multi-agency consultations. Such consultations are a significant burden in light of the fact that the ability to construct new electric generation is dependent upon the completion of the entire PSD permitting process, in which SILs analysis is only a preliminary step.

EPA should clarify how screening modeling analyses can be done. In particular, EPA should provide documentation of tier 1 screening approaches it believes are sufficiently well documented to be used in a SILs evaluation, including guidance on how similar a source seeking a permit and a previously modeled source must be for prior model outputs to be useful in screening. EPA should also clarify the acceptability of CALPUFF and SCICHEM as tier 2 modeling approaches.

B. The role of EPA's Model Clearinghouse in SILs modeling is unclear, and SILs may not lead to the reduction in Clearinghouse workload suggested by EPA in its Appendix W proposal.

EEI's comments on the Appendix W Proposal raised significant concerns regarding whether EPA's refusal to designate preferred models for ozone, $PM_{2.5}$, and long-range transport would

lead to a strain on the resources of the Model Clearinghouse. EEI Comments at 7-9. In the Appendix W proposal, EPA sought to assure the regulated community that the burdens on both permit applicants and the Model Clearinghouse would not be too substantial because EPA expected that most sources would be able to use screening approaches to evaluate impacts to ozone and $PM_{2.5}$ and therefore would not need to conduct full photochemical grid modeling that is subject to Model Clearinghouse review. *See* 80 Fed. Reg. at 45,348. However, reading EPA's *Draft Guidance* together with the 2015 Single Source Guidance, it is clear that the current SILs proposal will not have the effect of reducing the number of modeling demonstrations that will require the involvement of the Model Clearinghouse.

As stated above, the *Draft Guidance* provides no description of preferred models for screening, leaving states and permit applicants to look to the 2015 Single Source Guidance. The 2015 Single Source Guidance states:

> A candidate model for use in estimating single source impacts on secondarily formed pollutants such as ozone and $PM_{2.5}$ for the purposes of permit review programs should meet the general criteria of an 'alternative model' outlined in 40 C.F.R. part 51, Appendix W, section 3.2.

Single Source Guidance at 10. The Single Source Guidance goes on to say that the process of evaluating a model for use in single-source modeling should include consultation with EPA's Model Clearinghouse "if appropriate." *Id.*

EEI's comments on the Appendix W Proposal highlighted its significant concerns with the lack of clarity around the Model Clearinghouse process. EEI Comments at 7-9. The approach that EPA is taking to the evaluation of single-source impacts for comparison with the SILs only

serves to add to the confusion. Given that the section 3.2.2 criteria themselves are already extremely general, EEI does not know what EPA means when it suggests that single-source models must meet the "general criteria" under section 3.2. Furthermore, it is not at all clear when it would be "appropriate" to consult with the Model Clearinghouse.

Finally, if it is genuinely EPA's intent to require some level of Model Clearinghouse review for screening model approaches used in SILs evaluations, the SILs approach does very little to abate the volume of requests that are likely to be before the Clearinghouse. EEI recognizes that the MERPs—if established by EPA—could provide an alternative screening approach that addresses this concern. However, without the ability to review a proposed MERPs approach, EEI cannot evaluate its potential impact, and it is possible that MERPs reviews also could require the involvement of Clearinghouse. Therefore, EPA should provide clarity on the role it envisions the regions and Model Clearinghouse playing in modeling for comparison to a SIL and provide appropriate guidance to permitting authorities regarding when and how they should be seeking Clearinghouse input.

C. EPA has failed to articulate approaches to evaluation of modeled values against the SILs that account for the variability that is inherent in modeling.

EPA's AQV approach to deriving the SILs recognizes the important roles that meteorological and emissions variability play in determining actual air quality. However, EPA's proposed approach for the SILs does not provide any mechanism by which permit applicants may account for the variability in air modeling results that are being compared to the SILs. While there are

well-documented technical approaches to addressing such variability,[4] EPA does not include them in its *Draft Guidance*. Such approaches, which derive a distribution of model results similar to the distributions of monitored concentrations under the AQV approach, provide a more accurate way of comparing model estimates to the SILs.

V. Conclusion.

EEI appreciates the EPA's effort to develop SILs for the PSD permitting program in the *Draft Guidance* and supports the use of SILs as an important screening tool for stationary sources in attainment areas. The EPA has a clear legal basis to develop and employ SILs based on the provisions in the PSD permitting scheme and statutory purposes of the PSD program, and as recognized by courts in several decisions.

However, numerous issues need to be addressed before SILs and the *Draft Guidance* can serve as a useful screening tool. EEI asks that EPA:

1. Evaluate SIL values based on confidence intervals greater that 50%;
2. Develop approaches that account for regional variability in secondary pollutant formation;
3. Clarify the procedures and models sources that should be used when developing values for comparison to the SILs; and
4. Clarify the role of EPA's Model Clearinghouse in the review of permitting approaches applying SILs.

[4] *See* Bob Paine, AECOM, *et al*., Status Report on Development and Testing of the EMVAP System presented at the 10th EPA Modeling Conference (Mar. 14, 2012), https://www3.epa.gov/scram001/10thmodconf/presentations/2-11-EMVAP_Emissions_Processor.pdf.

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway
Suite 120
Atlanta, Georgia 30354
404-363-7000

March 31, 2017

Subject: Georgia EPD Comments on EPA's Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program

Dear Mr. Bridgers:

The Georgia Environmental Protection Division (EPD) appreciates the opportunity to provide the following comments to the U.S. Environmental Protection Agency (EPA) on the recently released *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program*. EPD has reviewed the document and has provided detailed comments below.

Major Comments

1. Page 9, last paragraph: It is stated "Source release type "L" refers to low-level sources modeled with surface level emissions releases: stack height of 1 meter (m), stack diameter of 5 m, exit temperature of 311 Kelvin (K), exit velocity of 27 meters per second (m/s), and flow rate of 537 cubic meters per second (m^3/s). Source release type "H" refers to high elevation sources modeled with elevated emissions releases: stack height of 90 m, stack diameter of 5 m, exit temperature of 311 K, exit velocity of 27 m/s, and flow rate of 537 m^3/s." The choice of stack heights (1 m and 90 m) will cover the typical range of stack heights. Ozone and $PM_{2.5}$ impacts for stacks between that range can be interpolated. However, no reason is given for the selection of the other stack parameters. Please include a brief discussion why stack diameter of 5 m, exit temperature of 311 K, exit velocity of 27 m/s, and flow rate of 537 m^3/s were chosen.
2. Page 14: "Figure 4-4 shows maximum annual average impacts from SO_2 emissions on modeled $PM_{2.5}$ sulfate ion and NOx emissions on modeled $PM_{2.5}$ nitrate ion." Also, it is stated throughout the guidance document that "Neither $PM_{2.5}$ sulfate nor $PM_{2.5}$ nitrate are assumed to be neutralized by ammonium." No reason is given for excluding ammonium or the impacts of SO_2 and NOx on other secondary $PM_{2.5}$ species. Since SO_2 can impact ammonium, nitrate, and OC $PM_{2.5}$ concentrations and NOx can impact ammonium, sulfate, and OC $PM_{2.5}$ concentrations, the impact of SO_2 and NOx on total $PM_{2.5}$ should be examined rather than just SO_2 on sulfate ion and NOx on nitrate ion. Furthermore, this should be clarified in Step 3 under Daily $PM_{2.5}$ (page 28) and Step 3 under Annual $PM_{2.5}$ (page 29).
3. Appendix A: Table 4-1 on Page 10 lists the hypothetical sources included in EPA's modeling assessment. However, Tables A-1, A-2, and A-3 in Appendix A do not include Atlanta, Detroit, S. Bakersfield, Bakersfield, Shafter, LA, Riverside, or Pomona. Please add those results to Tables A-1, A-2, and A-3. In addition, it would be much easier to analyze hypothetical sources if Tables A-1, A-2, and A-3 were sorted by source # so that all the relevant information for that source (precursor, emissions, height, and max impact) was together rather than spread over multiple pages.

Minor Comments

1. Page 4, second paragraph: Add "as" to read "…or similar policy assessment as well as air quality modeling of hypothetical industrial sources with similar source characteristics and emission rates of precursors".
2. Page 15: The text in Figure 4-4 states "Maximum annual average secondary $PM_{2.5}$ sulfate ion impacts from SO_2 emissions and $PM_{2.5}$ nitrate ion impacts from NOx emissions", but the titles above each of the 4 plots state "SO_2 to period peak 24-hr $PM_{2.5}$ sulfate ion" or "NOx to period peak 24-hr $PM_{2.5}$ nitrate ion". The titles above each plot should be changed to match the text in Figure 4-4.
3. Page 20: In the MERP equation, add the word "Maximum" to read "Maximum modeled air quality impact from hypothetical source". In the next sentence, add the word "maximum" to read "For PM2.5, the maximum modeled air quality impact of an increase in precursor emissions…"
4. Page 20: The ")" is superscripted "(in $\mu g/m^{3)}$" and should be changed to "(in $\mu g/m^3$)".
5. Page 24: Add an additional sentence to read, "Given the critical air quality thresholds used as part of this illustrative exercise, annual $PM_{2.5}$ MERPs are consistently higher than for the daily $PM_{2.5}$ NAAQS for each hypothetical source modeled across all regions of the nation. This is because the daily $PM_{2.5}$ concentrations are much more sensitive to emission changes than the annual $PM_{2.5}$ concentrations."
6. Page 27: Change "A modeling protocol should be developed and shared with the EPA Regional Office that details the planned approach for developing MERPs based on photochemical modeling to ensure a sound technical basis for development of a suitable Tier 1 demonstration tool" to "A modeling protocol should be developed and shared with the permitting authority that details the planned approach for developing MERPs based on photochemical modeling to ensure a sound technical basis for development of a suitable Tier 1 demonstration tool".
7. Page 31: The MERP equation used 1.52 ppb, but on Page 44, the max impact value for elevated source 19 of the EUS region is 1.53 ppb. Therefore the equation on Page 31 should be
   *MERP for source 19 EUS region elevated release (tpy) = 1.0 ppb * (500 tpy / **1.53** ppb) = **327** tpy.*
8. Page 42: The last column in Table A-1 is "max impact (ppb)", while the last column in Table A-2 and A-3 is "max value (ug/m3)". To be consistent, "max impact" should be used for Tables A-2 and A-3. Also the unit is $\mu g/m^3$, not ug/m3.
9. The year of meteorological data that was used to derive the MERPs listed in Appendix A should be included in the document.

Thank you for the opportunity to provide input on this important guidance document. Please contact me at 404-363-7014 or james.boylan@dnr.ga.gov if you have any questions or wish to discuss these comments.

Sincerely,

James W. Boylan, Ph.D.
Manager, Planning and Support Program
Air Protection Branch, Georgia EPD

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Eric J. Holcomb
Governor

Bruno L. Pigott
Commissioner

March 23, 2017

Mr. George Bridgers
U. S. Environmental Protection Agency
Office of Air Quality Planning and Standards
AQAD - Air Quality Modeling Group
Attention: EPA-HQ-OAR-2015-0310-0171

Re: Indiana Comments concerning Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program
Docket ID EPA-HQ-OAR-2015-0310-0171

Dear Mr. Bridgers:

The Indiana Department of Environmental Management, Office of Air Quality (IDEM-OAQ) appreciates the opportunity to comment on the draft document "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program", released December 2nd, 2016. IDEM-OAQ understands comments must be received on or before March 31st, 2017. IDEM-OAQ has provided the following comments for U.S. EPA consideration.

Executive Order 13777 "Enforcing the Regulatory Reform Agenda" was signed on February 24th, 2017 and states the following:

- **Section 1**. *Policy.* It is the policy of the United States to alleviate unnecessary regulatory burdens placed on the American people.
- **Section 3(d):** Each Regulatory Reform Task Force shall evaluate existing regulations (as defined in section 4 of Executive Order 13771) and make recommendations to the agency head regarding their repeal, replacement, or modification, consistent with applicable law. At a minimum, each Regulatory Reform Task Force shall attempt to identify regulations that: (i) eliminate jobs, or inhibit job creation; (ii) are outdated, unnecessary, or ineffective; (iii) impose costs that exceed benefits;
- **Section 3(e):** In performing the evaluation described in subsection (d) of this section, each Regulatory Reform Task Force shall seek input and other assistance, as permitted by law, from entities significantly affected by Federal

regulations, including State, local, and tribal governments, small businesses, consumers, non-governmental organizations, and trade associations.

The U.S. EPA is mandated by Section 3(e) of Executive Order 13777 to consider input provided from State, local and tribal governments that would be affected by the Modeled Emission Rates for Precursors guidance. Indiana believes that this guidance affects all levels of governments and especially businesses, as the MERPs could cause *unnecessary regulatory burdens*.

IDEM reemphasizes its comments made on October 27, 2015 to address the Revisions to Appendix W (Docket ID EPA-HQ-OAR-2015_0310) in which concern for undue resource and financial burdens on sources and reviewing authorities for states and U.S. EPA to model single sources impacts on ozone and secondary $PM_{2.5}$ was expressed. The use of the MERPs as a Tier 1 screening method to assess secondary impacts from precursor pollutants is an *ineffective* method. It does not eliminate the need for a majority of new or modified sources to conduct a Tier 2 analysis which would cause unwarranted costs in performing the evaluation and it would increase the amount of time in the permitting process. This will *inhibit job* creation by lengthening the time that sources will be able to start construction on new facilities, and could reduce the number of jobs or the income of those hired workers due to unsubstantiated pollution control costs that *unnecessary* modeling determines will be needed.

Indiana is required by law to process PSD permits within 270 days of application submittal. The modeling required for those sources that exceed the MERPs Tier 1 screening method puts this federally mandated processing time in jeopardy. Assuming that no source updates occur during the application review process, regulatory agencies must account for the time to conduct the following basic modeling processes: protocol development and review (estimated time to complete: 1 month), applicant modeling (2 months), agency initial review (0.5 months), emissions processing (1 month), photochemical modeling (2 months), and result analysis (1 month). In some cases, the secondary modeling may be delayed until the dispersion modeling results are known for 24-hour and annual $PM_{2.5}$. In most PSD modeling applications, the applicant will have several updates to their application before the permit is finalized, leading to further delay of the secondary impact modeling. For those sources where modeling shows significant impacts, additional modeling on changes to the source emissions, stack parameters or control equipment will have to be conducted until the impact is reduced below significant impacts thresholds.

While the use of MERPs is only recommended guidance, U.S. EPA has a history of enforcing guidance as a policy or rule. U.S. EPA needs to realize that the MERPs are only guidance, and should not enforce the use of this guidance on states that see the Tier 2 modeling approach as an unnecessary burden in the permitting process. Within the memorandum signed on December 2nd, 2016, by Richard A. Wayland concerning "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as

a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program", U.S. EPA states the following: "As the term "guidance" suggests, it (the document) provides recommendations on how to implement the modeling requirements. Thus, it does not impose binding, enforceable requirements on any party, nor does it assure that (U.S.) EPA will approve all instances of its application, as the guidance may not apply to a particular situation based upon the circumstances."

While U.S. EPA states that the Tier 1 MERPs analysis method would eliminate a majority of sources from having to do a Tier 2 analysis, IDEM does not agree. The lowest 8-hour ozone NO_x MERP for Indiana is 234 tons per year, a number that most new or modified sources in the state are bound to exceed. While most sources can pass the MERPs test for secondary $PM_{2.5}$, when primary $PM_{2.5}$ emissions are considered, most sources will fail the analysis. $PM_{2.5}$ dispersion modeling typically shows a source's maximum $PM_{2.5}$ impact to be above the SIL, which would automatically fail the source in the MERPs analysis.

IDEM analyzed previously submitted PSD projects within the state that required either air quality modeling or analysis since 2013. While there was not a large number of projects to choose from, very few of these projects would have passed the Tier 1 MERPs assessment. There were nine such projects that required modeling or analysis. Only three of these projects would have passed the MERPs analysis for 8-hour ozone, 24-hour $PM_{2.5}$, and annual $PM_{2.5}$. Certainly U.S. EPA would not consider 33% of the PSD projects in Indiana since 2013 passing the Tier 1 assessment to be a majority.

Should U.S. EPA recommend the use of the MERPs, Indiana requests more clarity on whether the MERPs represent emissions from a single stack or an entire facility. The guidance seems to indicate that modeling was conducted for a single stack with either a high (90 meter) or low (1 meter) release height at emission rates of 100, 300, 500, 1000, or 3000 tons per year. Indiana believes that this means each stack at a new facility or a modified source must undergo the MERPs analysis, which would reduce the number of sources that would require Tier 2 modeling. However, within the same guidance document, U.S. EPA gives illustrative examples that are applied at the facility level, not the stack level. Indiana would like clarity in the guidance on whether the MERPs should be applied to entire facilities or to a single stack. If the MERPs are intended to apply to entire facilities, additional guidance is necessary in order to best characterize a source with multiple stacks emitting different precursor pollutants.

Indiana requests that U.S. EPA gives a better definition of the "critical air quality threshold". In the guidance document, the critical air quality thresholds (CAQT) are the draft significant impact levels (SILs) for each averaging time of the secondary pollutants. However, other values of the CAQT may be applied. Indiana would like to know what other values would be acceptable as the CAQT, and how could an alternative value for the CAQT be justified. Since the MERPs values are directly dependent on the CAQT, use of a CAQT different from the SIL would lead to either increased or decreased MERPs.

Indiana requests that U.S. EPA consider additional methods be applied to those sources that fail the Tier I MERPs analysis. Currently, Indiana completes a qualitative analysis of current ozone and/or $PM_{2.5}$ design values, compares facility emission rates to regional emission rates of precursor pollutants, considers historical wind data, and speciated data of $PM_{2.5}$. This qualitative analysis consumes very little time compared to photochemical modeling. Indiana believes that applying this method to those facilities that fail the Tier I MERPs analysis would give a representative assessment of single source impacts as well as significantly reduce the number of facilities needing to undergo a more detailed Tier II analysis. Indiana will work with the U.S. EPA Region 5 Office to continue using this qualitative analysis. This approach will further enhance the Tier I MERPs analysis for its secondary pollutant analysis for all applicable PSD modeling projects.

IDEM-OAQ wishes to thank U.S. EPA for the opportunity to comment on the proposed MERPs guidance and looks forward to working with both the U.S. EPA Region 5 Office and U.S. EPA headquarters in the review and final approval of the "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program". If there are further questions, please contact me at (317) 232-8222 or by e-mail at kbaugues@idem.IN.gov or Mark Derf – Section Chief, Technical Support and Modeling Section, Air Programs Branch at (317) 233-5682 or by e-mail at mderf@idem.IN.gov.

Sincerely,

Keith Baugues

Keith Baugues
Assistant Commissioner,
Office of Air Quality

KB/sd/md/mh

cc: Randy Robinson, U.S. EPA Region 5
Keith Baugues, IDEM-OAQ
Scott Deloney, IDEM-OAQ
Mark Derf, IDEM-OAQ
Mathew Hollinger, IDEM-OAQ

From: Fizel, Alyssa
To: Bridgers, George
Subject: Iowa DNR MERPs Comments
Date: Thursday, March 30, 2017 10:06:55 AM

The Iowa Department of Natural Resources (DNR) respectfully submits the following comments pursuant to EPA's proposed "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program," dated December 2, 2016.

The "Critical Air Quality Threshold" was chosen as the SIL but it is not clear if it would be acceptable to calculate a MERP by replacing the SIL with another value. For example, would it be appropriate in the case of ozone to calculate a MERP using a threshold that is equal to the NAAQS minus background. Or in the case of PM2.5 calculate a MERP using a threshold that is equal to the NAAQS minus background (and minus the modeled design value if the project involves direct PM2.5 emissions).

The DNR appreciates EPA's inclusion of two examples in Chapter 7 that illustrate the application of MERP Tier 1 demonstrations. Of the examples given Scenarios C and D each include conditions where the MERPs and associated air quality thresholds (SILs) are exceeded. However, it is not clear if a Tier 2 analysis is then the only available option or if other screening procedures would be available to evaluate secondary impacts. Therefore, we request that EPA include a discussion of the appropriate next steps where the MERPs Tier 1 analysis indicates a potential exceedance of a SIL.

Thank you,

Alyssa Fizel | Environmental Specialist
Iowa Department of Natural Resources
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From:	Porter, Matthew k
To:	Bridgers, George
Cc:	Anderson, Tom
Subject:	Draft MERPs Guidance Webinar
Date:	Wednesday, January 18, 2017 2:56:23 PM
Attachments:	notes_MERPs.docx

Good Afternoon George,

I reviewed those articles on MERPs you sent to me last week and the draft guidance. Please see attached my comments and questions. Hope these are informative and helpful.

Thanks,

Matt

Matthew Porter
Meteorologist II
Division Of Air Quality, Permitting Section
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Notes on MERPs Guidance for O3 and PM2.5

Ozone: Do the EPA hypothetical sources include any facilities located near a city? VOC-limited within urban areas…NOX-limited within rural areas…and 1 ppb SIL for ozone is a slim margin even with small increases in VOC (e.g., < 1000 tpy increase). Urban source influences on ozone may be more sensitive to release height it would seem, as well.

PM2.5: Are MERPs appropriate or at all applicable to Class I Area Increment significant impacts or LRT screening methodologies? E.g., do we add the fractional contribution from direct PM2.5 as modeled by AERMOD to the NOX and SO2 precursor fractions of the representative MERPs values and compare the sum to the 100% total based on the Class I Area SIL?

Ozone and PM2.5: No advanced plume treatment or plume-in-grid enhancements are considered in the Baker et al., or Kell et al. modeling, or EPA modeling for MERPs. What is the basis of assuming sub-grid emissions do not significantly affect perturbations in ozone or PM2.5 from precursors? I'd like to have that reasoning in my "back pocket". Near-field impacts would seemingly benefit from sub-grid plume treatment, especially near-field impacts located within a few grid cells distance from urban centers. Figure 4-3 box plots show increased variability in PM2.5 concentrations from SO2 and NOX at approximately the edge-of-grid (e.g., 4km-12km grid edges and higher concentration variability showing up in 10km box plot bin). Sub-grid plume treatments may help assuage any doubts about increased variability due to emission dispersion at selected grid resolutions, and that distance to max pm2.5 concentrations is influenced more by actual chemistry showing secondary formation. This would help in determining "representativeness" of hypothetical source(s) and associated MERPs applied to a modified or new source where the precursor pm2.5 emissions are high enough to be significant (e.g., 1000-3000 tpy NOX or SO2).

Ozone: Figure 4-7 shows higher NOX contributions to ozone at 30 km whereas VOC contributions are elevated at 10 km distances. Is this expected? Could this be influenced by the rural max at 30 km due to NOX-limited conditions and the urban max at 10 km being influenced by urban VOC-limited conditions? This could help inform and support selection of representative hypothetical sources for rural and urban sources under PSD review for precursors.

Ozone and PM2.5: Were Ozone and PM2.5 impacts for MERPs determined using source apportionment, brute force (e.g., sensitivity), or a combination of the two? Wouldn't source apportionment (e.g., CAMx OSAT, PSAT, and APCA) be preferred over brute force or sensitivity in developing MERPs given the non-linear chemistry and competition between reactants? The MERPs guidance indicates "limited" study of comparisons has been made between source apportionment and model sensitivity.

PM2.5: Was there any analysis of VOC influences on secondary PM2.5? I realize this consideration may only be required for NNSR. However, do the models show any sensitivity to VOCs in terms of PM2.5 formation? If so, how much?

Ozone and PM2.5: Is there any way to ask for additional runs based on different hypothetical source locations, stack parameters, etc., and perhaps using different emission inventories and meteorology? Why not model both low and high-level hypothetical sources for every grid cell and create a database of ozone and pm2.5 impacts across emissions levels? Seems possible to automate this and reduce level of effort required to manage model runs and results post-processing, etc.

Ozone and PM2.5: Are the hypothetical source location coordinates available? This would be useful in determining representativeness of hypothetical sources for any proposed PSD projects.

Ozone: Are there more conservative MERPs available based on the VOC speciation profile assuming 100% formaldehyde? This could be useful in the case of an actual source whose VOC emissions profile is vastly different than the hypothetical sources.

Ozone and PM2.5: How do the performance evaluations compare between the ozone and PM2.5 model simulations? Do ozone predictions generally out-perform PM2.5 for the EPA CAMX simulations? Are there any regional considerations in terms of model performance?

Ozone and PM2.5: How do we appropriately adjust proposed MERPs values for sources operating less than 8760 hours per year, or for sources with limited daily operations? Do we need to re-run the PGMs to adequately address seasonal and diurnal variations in chemistry, or is there a conservative method we can fall back on?

Ozone and PM2.5: Were there any MERPs developed based on worst case hypothetical source and location that could be generally applied to any PSD project source?

Ozone and PM2.5: What mobile and area source emissions were used? Is there a summary of these emissions that line up in with the state/counties shown with ozone and pm2.5 impacts tabulated in Tables A-1 and A2? This would be helpful when comparing simulated non-point emissions (2011?) to present or future emissions (2017 and beyond).

Ozone and PM2.5: Will the MERPs modeling databases and hypothetical source impacts be updated on a regular basis?

NEDA CAP
CLEAN AIR PROJECT
The National Environmental Development Association's Clean Air Project

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Phillips 66
Procter & Gamble

Counsel:
RITTS LAW GROUP, PLLC

March 13, 2017

By electronic mail
Mr. George Bridgers
Air Quality Assessment Division
U.S. EPA Office of Air Quality, Planning & Standards
109 TW Alexander Drive,
Research Triangle Park, NC 27705
bridgers.george@epa.gov

Re: Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier l Demonstration Tool for Ozone and PM2s under the PSD Permitting Program (MERPS Guidance) (December 2, 2016)

Dear Mr. Bridgers:

NEDA/CAP appreciates the agency's diligence in issuing the December 2016 MERPs Guidance as a Tier 1 Demonstration tool, and particularly the framework it establishes for PSD permit applicants to use to estimate single source impacts on secondary pollutants (VOC and PM2.5 precursors) for Tier 1 screening analysis. Photo-chemical monitoring increasingly delays new manufacturing projects for months and months, so the MERPS Guidance is a critically important tool. Pursuant to the policy and in lieu of using the PSD Significant Impact Levels (SILs) for Tier I screening, a PSD applicant can demonstrate that a project will not violate or interfere with a NAAQS or NAAQS increment if the projected emissions from the project are less than the EPA default MERPS. The concept, that EPA already has done the modeling for the project and one can utilize those modeled values, could have dramatic impacts for shortening the time it currently takes to obtain a PSD preconstruction permit. Further because the MERPs are based on air quality dispersion modeling performed by EPA, they are irrefutably legally consistent with the Clean Air Act.

Default MERP Values - NEDA/CAP's members are therefore disappointed and frustrated to report that no NEDA/CAP company currently applying for a PSD permit can utilize the Guidance's "default MERPs." The default values are too conservative, presumably because each MERP value represents EPA modeling based on the most conservative conditions across

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the U.S. For this reason, it is essential that additional efforts continue for the development of regional and State MERPs.

NEDA/CAP supports EPA making the refinement of the MERPs a *priority*, even as the OMB-proposed agency budget augers substantial agency-wide cuts. To the extent that data or analyses can be provided to EPA to assist in these efforts, NEDA/CAP and others will be happy to work with EPA to assemble the necessary information as quickly as possible. We also will support funding these efforts to assure that MERPs remain an agency priority in our comments and other discussions pursuant to the Jan 24, 2017 White House Memorandum requesting recommendations within the next 120 days for "*Streamlining Permitting and Reducing Regulatory Burdens for Domestic Manufacturing;* 82 Fed. Reg. 8667 (Jan. 30, 2017). Development of MERPS is an opportunity to both streamline permitting and reduce regulatory burdens on manufacturers while achieving the EPA's goals (protection of health and the environment) more effectively and efficiently.

Development of a Sole Source Model Needed - In the absence of useful default MERPs and more regionally specific MERPs, the feature of the MERPs Guidance that we find most promising is its framework for a PSD permit applicant and local permit authority to develop case-by-case MERPs. This also is critical given the absence of a single-source ozone/PM2.5 model for PSD permitting. However, *therein lies the rub*. The MERPS framework for demonstrating case-specific MERPs requires modeling for developing MERPS, and there is no approved model for this purpose--certainly a Catch-22-- that EPA must address. But our optimism that EPA has done what it already done to develop the MERPs makes us confident that with funding and technical assistance, a sole-source model can be developed. Without those commitments, however, the Guidance does not fulfill its promise and does not alleviate PSD permitting issues.

Clarify the Guidance's Use of the Term "Emission Increases" – The Draft MERPs Guidance directs permit applicants and permitting authorities to compare "proposed emissions increase" to the MERPs to determine whether a significant impact would occur. The Guidance does not define the term "proposed emissions increase," which we feel is a significant omission. PSD regulations and related Clean Air Act interpretations provide different approaches for different purposes, but the most prominent definition for proposed emissions increases being "projected actual emissions" for proposed "major modifications of major sources" and "potential

emission" for new "major sources." It is crucial that only the actual emissions changes associated with a project at an existing major source be evaluated because the existing source emissions (including those that might be considered in an emissions netting analysis) may already have been included in the actual emissions inventory simulated in the photochemical modeling analysis. EPA should provide clarification on the term "emissions increases" on the Modeling Clearinghouse until it can be incorporated in a final MERPs Guidance document.

Other Recommendations - Because the MERP Guidance does not assure that EPA will approve all instances of its application (*id.*, p.1), NEDA/CAP urges EPA to take a more general approach to approving case-specific MERPs and provide additional clarification on how to use site specific MERPS values. For the same reason, NEDA/CAP also urges EPA to provide that the default MERPs may be "scaled up" based on regional ambient conditions and/or other factors. We hope to brainstorm on these issues and discuss the constraints if they exist with the EPA in the very near future.

Sincerely,

Leslie Sue Ritts, Counsel to NEDA/CAP

Cc: Mr. Chet Wayland

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Arthur N. Marin, Executive Director

March 30, 2017

U.S. Environmental Protection Agency
Air Quality Assessment Division
Air Quality Modeling Group
Research Triangle Park, NC 27711

Submitted via email to George Bridgers (bridgers.george@epa.gov)

Re: Draft Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program

Dear Mr. Bridgers:

The Northeast States for Coordinated Air Use Management (NESCAUM) submit the following comments on the U.S. Environmental Protection Agency's (EPA's) draft version of "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program" dated December 2, 2016 (*hereinafter* "draft MERPs guidance"). NESCAUM is the regional association of state air pollution control agencies representing Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

NESCAUM thanks the EPA for its efforts to develop a demonstration tool to assist with assessing the single-source impacts of secondarily-formed pollutants such as ozone and $PM_{2.5}$. NESCAUM also thanks the EPA for the opportunity to comment on the draft MERPs guidance. NESCAUM's comments follow below, and are grouped according to the section numbering of the draft guidance. Please note that some of these comments are of a technical nature while others are strictly editorial.

Section 1: Background

1. The first sentence in the 2nd paragraph states, "For Tier 1 assessments, EPA generally expects that applicants would use existing empirical relationships between precursors and secondary impacts based on modeling systems appropriate for this purpose." Based on that statement, are the Region 1 and Region 2 states able to continue using the detailed screening technique outlined in NESCAUM's May 30, 2013 comment letter on EPA's March 4, 2013 document *Draft Guidance for $PM_{2.5}$ Permit Modeling* if the permitting agency considers it sufficiently conservative?

2. Alternatively, could the NESCAUM screening technique be used in conjunction with the Tier 1 techniques described in this document in a weight-of-evidence analysis, or will the MERPs guidance replace the NESCAUM screening technique?

NESCAUM Members:
Connecticut Bureau of Air Management, Anne Gobin
Maine Bureau of Air Quality Control, Marc Cone
Massachusetts Bureau of Waste Prevention, Christine Kirby
New Hampshire Air Resources Division, Craig Wright
New Jersey Division of Air Quality, Francis Steitz
New York Division of Air Resources, Steve Flint
Rhode Island Office of Air Resources, Douglas McVay
Vermont Air Quality & Climate Division, Heidi Hales

Section 2: Ozone and Secondary $PM_{2.5}$ Formation in the Atmosphere

3. The draft MERPs guidance focuses on volatile organic compounds (VOCs) and nitrogen oxides (NOx) as precursors to ozone, and sulfur dioxide (SO_2) and NOx as precursors to $PM_{2.5}$. However, VOCs can also be precursors to secondary $PM_{2.5}$ formation. In fact, EPA mentions on page 7 of the draft MERPs guidance that $PM_{2.5}$ in the form of organic carbon can be formed secondarily in the atmosphere by reactions involving VOCs. EPA should provide an example of accounting for VOCs in a demonstration of whether emissions of these precursor pollutants are expected to result in a change in ambient $PM_{2.5}$ that would be less than a specific air quality threshold. Alternatively, if EPA feels that VOCs are not significant precursors to secondary $PM_{2.5}$, then EPA should provide a demonstration to that effect.

Section 4: Single-Source Precursor Emissions and Downwind Ozone and Secondary $PM_{2.5}$ Impacts

4. Does EPA envision adding hypothetical sources at additional locations to those already listed in Table 4-1? Adding additional locations would allow for a more accurate estimate of secondary impacts. For example, the two closest locations to New Jersey are Bronx, NY (very urban) and Adams County, PA (rural). Neither of these sites are particularly representative of many parts of New Jersey.

5. In Figure 4-4 on page 15, the figure headings and the related text on page 14 are not consistent. The main figure caption shows "annual average," but the subfigure headings are labeled as "24-hr." The text on page 14 specifies that this figure shows maximum annual average impacts.

Section 5: Framework for Developing MERPs as a Tier 1 Demonstration Tool

6. Section 5.1 of the draft MERPs guidance states, "Neither $PM_{2.5}$ sulfate nor $PM_{2.5}$ nitrate are assumed to be neutralized by ammonium." EPA's Draft $PM_{2.5}$ Precursor Demonstration Guidance dated November 17, 2016 states that ammonia has to be addressed in nonattainment New Source Review (NNSR) permitting and attainment planning. Are there plans to include Tier 1 MERPs for ammonia emissions? If there are plans to include MERPs for secondary ammonia emissions, EPA should establish significant emission thresholds for ammonia. Because EPA does not specify a modeled emission rate for ammonia as a precursor of $PM_{2.5}$, and does not establish a significant ammonia emission rate for NNSR permitting, there is a major gap in how to adhere to and demonstrate compliance for major sources of ammonia, including sources with ammonia-emitting NOx control systems.

7. If the conversion of the sulfate ion to ammonium sulfate and ammonium bisulfate was included, the secondary $PM_{2.5}$ impacts due to SO_2 emissions would be significantly higher. This will be due to the higher molecular weight of ammonium sulfate [$(NH_4)SO_4$] and ammonium bisulfate [$(NH_4)_2SO_4$]. This is similarly the case for nitrate ion converting to higher molecular weight ammonium nitrate [NH_4NO_3], particularly in the winter months. EPA should include a statement in the guidance that states $PM_{2.5}$ impacts due to SO_2 and NOx emissions listed in Tables A-1, A-2, and A-3 may be underestimated in areas with ammonia emissions.

Section 6: Recommended Method for Developing MERPs as a Tier 1 Demonstration Tool

8. From reading the draft MERPs guidance, it appears that stakeholders may perform their own modeling to derive MERPs for use in a Tier 1 demonstration, or they may use, as appropriate, MERP values derived by EPA from its modeling of hypothetical sources (particularly the most conservative illustrative MERP values presented in Table 7-1 on page 30, but also the values in Appendix A). While this section focuses on the general framework for developing MERPs, there is no actual guidance discussion on whether and when the MERPs in Section 7 and Tables A-1, A-2, and A-3 can be used instead of developing source-specific MERPs. We request that EPA add language to the body of the guidance to make this clearer.

9. Section 6.1 on pages 27 to 29 presents a general framework for stakeholders to use when performing modeling to derive their own Tier 1 demonstration tool. Five basic steps are provided for 8-hour ozone, daily $PM_{2.5}$, and annual $PM_{2.5}$. Other than pollutant and averaging period, the five steps are identical. For conciseness, these three sets of five steps could be condensed into a single set of steps applicable to all of the relevant pollutants/averaging periods.

10. Is EPA going to provide more resources and training to help states apply the MERPs guidance?

Section 7: Illustrative MERP Tier 1 Demonstrations Based on the EPA Modeling for Example PSD Permit Scenarios

11. For Table 7.1, if the lowest (most conservative) MERP among all of the regions of the U.S. is to be used for the first step of the Tier 1 demonstration, the examples illustrating the use of MERP values are not consistent with this criterion. Perhaps the lowest (most conservative) MERP value for each pollutant and averaging period should be listed in bold to emphasize its use in a Tier 1 demonstration, or the table should be reduced to the lowest MERP values for each pollutant, regardless of the region.

12. For Scenario B, the facility is located in the southeast region and the additive secondary impacts on daily $PM_{2.5}$ are taken from the western US. While the Tier 1 comparison of

the daily PM MERPs uses the lowest (most conservative) of any source modeled in the continental U.S., the additive secondary impacts for annual $PM_{2.5}$ do not follow this criterion. The annual SO_2 from the source was compared to the annual PM MERP from the western US of 2,289 tpy. However, the lowest annual PM MERP for SO_2 is 1,795 tpy from the central US.

13. Also for Scenario B, the example $PM_{2.5}$ analysis ends abruptly. We suggest adding a summary sentence after each example calculation to emphasize that because the resulting percentage (in this case, 60% for daily and 13% for annual) is less than 100%, the critical air quality threshold is not expected to be exceeded.

14. For Scenario C, the discussion states that source 19 from the eastern US is being used, but the equation lists source 16 from the western US, with a MERP value of 1.31 ppb for a 1,000 tons per year elevated source.

15. For Scenario D, it is initially confusing to determine where the 60% secondary impact comes from. We suggest adding wording to refer the reader back to the Scenario B example calculations at the top of page 32. We also recommend continuing the Scenario D example to include annual $PM_{2.5}$.

16. In Table 7.1 and Appendix A Tables A-1, A-2, and A-3, the 24-hour $PM_{2.5}$ and 8-hour ozone Tier 1 impacts are based on the source's tons per year emissions of NOx, SO_2, and VOC. Given that these NAAQS are short-term (24-hour and 8-hour), a source's impact might be considered more a function of its lbs per hour emission rates rather than its tons per year emissions, and using tons per year values may underestimate impacts. Assume, for example, a source is only permitted to operate 2,000 hours per year. Applying a lbs per hour emission rate from the Tier 1 hypothetical source modeling will result in an emission rate less than 25 percent of the actual lbs per hour emission rate.

17. Tables A-1, A-2, and A-3 in Appendix A would be easier to read if the column headers were listed on each page of the table instead of just on the first page.

If you have any questions concerning these comments, please contact Paul Miller, NESCAUM Chief Scientist, pmiller@nescaum.org.

Sincerely,

Paul J. Miller

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March 31, 2017

VIA ELECTRONIC MAIL

George Bridgers
Office of Air Quality Planning and Standards
Environmental Protection Agency
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COMMENTS OF THE NAAQS IMPLEMENTATION COALITION ON THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S "DRAFT GUIDANCE ON THE DEVELOPMENT OF MODELED EMISSION RATES FOR PRECURSORS (MERPS) AS A TIER 1 DEMONSTRATION TOOL FOR OZONE AND $PM_{2.5}$ UNDER THE PSD PERMITTING PROGRAM"

Mr. Bridgers:

I write on behalf of the National Ambient Air Quality Standards ("NAAQS") Implementation Coalition concerning the Environmental Protection Agency's ("EPA" or the "Agency") *Draft Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ Under the PSD Permitting Program* ("Draft Guidance").[1] The NAAQS Implementation Coalition is comprised of trade associations, companies, and other entities who confront challenges in permitting and operating facilities under increasingly-stringent NAAQS, including those for ozone and $PM_{2.5}$. It is our experience that addressing these challenges is critical to fostering the economic expansion that creates manufacturing jobs and generates tax revenue to fund important local services.

From a procedural perspective, we believe that transparency would maximize improvements to further versions of the Draft Guidance. Unfortunately, the Draft Guidance's present comment submission process does not afford for public review of other submitted comments. Therefore, we request that EPA open a docket on regulations.gov for comments and materials related to the Draft Guidance. Generally speaking, we encourage EPA to open such dockets for all future draft guidance or related documents. This will provide

[1] Nothing in these comments shall constitute a waiver of any arguments our members have made or will make in any other context, including but not limited to rulemakings and/or litigation.

stakeholders an opportunity to review and be informed by comments submitted to the Agency and will foster openness as EPA develops implementation policy. If EPA chooses not to open a docket, it should make these materials publicly available on its website along with links to the items available for comment.

Turning to the substance of the Draft Guidance, we first note that we interpret the Clean Air Act as providing a strong legal basis for MERPs. Similar to our assessment of the related Significant Impact Levels for ozone and $PM_{2.5}$, we believe that MERPs reflect the substantial flexibility that the Clean Air Act affords EPA to administer PSD permitting so as to "insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources."[2] Indeed, we find MERPs analogous to long-standing Screening Emission Rates.[3]

MERPs are intended to screen single-sources from requirements to model ozone and $PM_{2.5}$ precursors that were recently published in EPA's final rule amending Appendix W ("Final Appendix W Rule").[4] These new requirements will increase permitting challenges for our members, as few options exist for single-sources to conduct such modeling beyond expensive and time-consuming photochemical grid modeling. As we noted in our comments to the proposed Appendix W Rule, the Interagency Workgroup on Air Quality Modeling Phase 3 ("IWAQM 3") explained, "At this time, it is not clear that a robust reduced form model exists for either O_3 or secondary $PM_{2.5}$ for the purpose of assessing single source downwind impacts of these pollutants."[5]

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[2] NAAQS IMPLEMENTATION COAL., COMMENTS ON THE REVISED DRAFT GUIDANCE ON SIGNIFICANT IMPACT LEVELS FOR OZONE AND FINE PARTICLES IN PREVENTION OF SIGNIFICANT DETERIORATION PERMITTING PROGRAM 5 (Sep. 30, 2016) (citing Clean Air Act §160(3), 42 U.S.C. §7470(3)).

[3] *See* 40 C.F.R. § 52.21(b)(2).

[4] *Revisions to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches To Address Ozone and Fine Particulate Matter*, 82 Fed. Reg. 5182 (Jan. 17, 2017).

[5] NAAQS IMPLEMENTATION COAL., COMMENTS ON THE REVISION TO THE GUIDELINE ON AIR QUALITY MODELS: ENHANCEMENTS TO THE AERMOD DISPERSION MODELING SYSTEM AND INCORPORATION OF APPROACHES TO ADDRESS OZONE AND FINE PARTICULATE MATTER: PROPOSED RULE, EPA Docket No. EPA-HQ-OAR-2015-0310-0142 (Oct. 27, 2015) (citing EPA, INTERAGENCY WORKGROUP ON AIR QUALITY MODELING PHASE 3 SUMMARY REPORT: NEAR-FIELD SINGLE SOURCE SECONDARY IMPACTS 3-4, EPA-454/P-15-002, July 2015).

There have been no significant technical advances in ozone and $PM_{2.5}$ precursor modeling since that report. Nevertheless, EPA announced in its response to comments for the Final Appendix W Rule that it was revising IWAQM 3 to note the existence of screening tools like MERPs.[6] To the extent that EPA has apparently concluded that the Draft Guidance outlines a reduced form model for single-source ozone or secondary $PM_{2.5}$ impacts, the Agency implicitly acknowledges MERPs' crucial role in developing projects under the Final Appendix W Rule's precursor modeling requirements.

However, we respectfully disagree that MERPs represent the *robust* reduced form model for assessing single-source ozone or secondary $PM_{2.5}$ impacts that IWAQM 3 originally identified as lacking. Rather, we believe that MERPs should be further improved and refined. For example, EPA should better explain how PSD permit applicants can use Table A-1 in the Draft Guidance to screen out of precursor modeling requirements. Specifically, EPA needs to explain exactly how the background concentrations of NOx and VOCs and meteorological factors should be used to demonstrate suitability to a particular site.

The system outlined in the Draft Guidance has the potential for inconsistency and confusion, resulting in permitting delays and uncertainty. EPA should instead establish a pre-approved platform for ozone and $PM_{2.5}$ modeling that allows MERPs to be developed covering all areas of the country. This platform could then be used for ozone and secondary $PM_{2.5}$ modeling in cases when MERPs are exceeded. Furthermore, the platform could be used for states to develop MERPs as well as for site-specific ozone or $PM_{2.5}$ modeling, if required.

These improvements will take time. Therefore, we encourage EPA to adopt a moratorium on single-source precursor modeling of at least three years to further develop cost-effective models and screening techniques that do not require lengthy Model Clearinghouse approval. EPA can reevaluate the state of technology at the close of that period to determine whether the moratorium should continue.

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[6] EPA, RESPONSE TO COMMENTS ON THE REVISIONS TO THE GUIDELINE ON AIR QUALITY MODELS: ENHANCEMENTS TO THE AERMOD DISPERSION MODELING SYSTEM AND INCORPORATION OF APPROACHES TO ADDRESS OZONE AND FINE PARTICULATE MATTER 51-52, EPA Docket No. EPA-HQ-OAR-2015-0310-0156 (Dec. 20, 2016).

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Hopefully, the need for any screening tool can be eclipsed by technological improvements to precursor modeling. To that end, EPA should direct more funding to research on modeling secondary pollutant formation for a single source or small group of sources at an industrial facility. Developing models to economically model single-source ozone and $PM_{2.5}$ would substantially reduce burdens on applicants performing modeling demonstrations necessary for a PSD permit. This research should include refined methods as well as conservative "streamlined" screening methods. We encourage the Office of Air Quality Planning and Standards to utilize the current EPA budget process to specifically identify any additional funding needed for developing MERPs, other screening tools, and precursor models.

We appreciate the opportunity to comment on the Draft Guidance. We hope that these comments will foster a better dialogue, as the regulated community continues to face implementation challenges under increasingly more-stringent NAAQS. We remain ready to work with EPA to identify solutions that accomplish efficient NAAQS implementation.

Sincerely,

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Counsel for the
NAAQS Implementation Coalition

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Ohio Environmental Protection Agency

John R. Kasich, Governor
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MAR 3 1 2017

George Bridgers
U.S. Environmental Protection Agency
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RE: Ohio EPA Comments on U.S. EPA's December 2, 2016 Draft Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program

Dear Mr. George Bridgers,

The Ohio Environmental Protection Agency (Ohio EPA) has reviewed and is providing comment on U.S. EPA's draft MERPs guidance. Ohio EPA appreciates the opportunity to provide U.S. EPA with comments on this draft guidance.

Background:

U.S. EPA posted draft guidance with respect to Modeled Emission Rates for Precursors on December 2, 2016. As stated in Ohio EPA's comments on U.S. EPA's July 29, 2015 Proposed Rules: Revision to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches To Address Ozone and Fine Particulate Matter [80 FR 45339] (herein referred to as "Proposed Appendix W"), Ohio EPA is generally in favor of a simplified and streamlined methodology for addressing the impacts of single sources on secondary formation of ozone and PM2.5. Ohio EPA is appreciative of U.S. EPA efforts presented in this guidance, and in favor of the concept of a screening tool. Establishing appropriate and technically credible relationships between emissions and ambient impacts is necessary for achieving an effective screening tool. With that in mind, Ohio EPA does have concerns and comments, as presented below.

General Comments:

1. Ohio EPA reiterates its concern expressed in comments on the Proposed Appendix W that extensive photochemical modeling is not appropriate for single source permitting activities. Photochemical modeling is time and resource intensive and places a considerable burden on reviewing agencies and applicants. Given its inclusion as a second tier demonstration tool in the Appendix W for addressing single-

source impacts, photochemical modeling should be only a last resort and able to be avoided in all but the rarest occasions.

2. Ohio EPA suggests that the use of either the most conservative (lowest) value across a region/area or the source-specific value derived from a more similar hypothetical source provided in U.S. EPA's modeling in this draft guidance be acceptable with minimal requirements for demonstrating the similarity between a permit application source and the previously modeled hypothetical sources. The guidance states that "to utilize the EPA analytical work reflected in this draft guidance as part of a Tier 1 demonstration for a specific PSD permit situation...one approach could be for the permit applicant to present to the appropriate permitting authority a technically credible justification that the emissions characteristics (e.g., stack height) of the specific source described in a permit application and the chemical and physical environment in the vicinity of that proposed source are adequately represented by the various hypothetical sources modeled by EPA, such that the most conservative (lowest) illustrative MERP values in a region or across the US...may be appropriate to use for the Tier 1 demonstration in an individual permit application. Another possible approach would be for the permit applicant to show the appropriate permitting authority that the project source is more similar to certain hypothetical sources modeled as part of the EPA's assessment presented in Chapter 5".

   The guidance is too vague about what would be accepted as a "technically credible justification", and the guidelines that are given suggest that this justification needed to show that a source in a permit application situation is adequately represented by the existing modeling is far too rigorous for a Tier 1 screening tool. For a source in a given region, the most conservative (lowest) illustrative MERP values in that region should be able to be used with no further justification to demonstrate that the source impact is below the critical air quality threshold and this should be explicitly stated in the guidance document.

   Additionally, to use a more similar hypothetical source to a source in a permit application, the justification should be minimally burdensome to demonstrate the similarity of the source to the hypothetical source. For example, in Appendix A of the draft guidance, source 12 in the Eastern US is a source in Tuscarawas County, Ohio. It should be readily apparent that this is the most appropriate source on which to base a MERPs value for the majority of potential sources in Ohio, provided there are no major differences in land-use or topography surrounding the potential source and the hypothetical source. The guidance should include an explicit indication that the closest hypothetical source modeled by U.S. EPA to a proposed source will be acceptable as "more similar" in such a case. The guidance indicates that for demonstrating the similarity of a hypothetical and potential permitted source, "Information that could be used to describe the comparability of two different geographic areas includes average and peak temperatures, humidity, terrain, rural or urban nature of the area, nearby regional sources of pollutants (e.g., biogenics, other industry), and ambient concentrations of relevant pollutants where available." Proximity of a permit application source and a hypothetical source in the modeling provided in this guidance should drastically reduce the requirements of such a comparison and only a minor demonstration that there is not substantially different land-use or terrain between the

two sources should be necessary for use of the closest hypothetical source modeled to be acceptable.

The draft guidance is too vague concerning what justification will be needed to deem the use of MERPs acceptable. Further, the draft guidance seems to imply an overly burdensome technical demonstration be required to make good use of the hypothetical source modeling provided by U.S. EPA, especially specific hypothetical sources within a given region as opposed to the most conservative value for the entire region. As a Tier 1 Demonstration tool these must be made simple to use with minimal restrictions for easy application to sources by permit applicants.

3. Ohio EPA is concerned with the drastic gap between the two tiers as described in this draft guidance. As previously noted, Ohio EPA does not believe that photochemical modeling is appropriate for single source permitting activities. However, with U.S. EPA's inclusion of photochemical modeling for Tier 2 demonstrations, Ohio EPA reiterates that every effort must be made to ensure that this modeling is not needed in all but the rarest occasions. As such, the gap between Tier 1 and Tier 2 is too wide and additional options should be available should a source fail to be deemed acceptable based purely on Tier 1 analysis as described by this draft guidance. Ohio EPA notes the inclusion in the 2014 U.S. EPA guidance document "Guidance for PM2.5 Modeling" of a hybrid qualitative/quantitative approach to assess secondary PM2.5 impacts from the precursor emissions from new or modifying sources, which includes methods like using "pollutant offset ratios" with dispersion modeling, and suggests that something similar, or some other additional demonstration, should still be available before full photochemical modeling is required. In the finalized Appendix W, U.S. EPA notes that "The EPA will continue to engage with the modeling community to identify credible alternative approaches for estimating single-source secondary pollutant impacts, which provide flexibility and are less resource intensive for permit demonstrations." This is extremely necessary and developing additional measures to avoid the necessity of photochemical modeling of single sources should be a high priority.

Again, Ohio EPA thanks you for this opportunity to comment.

Sincerely,

Robert Hodanbosi

Robert Hodanbosi, Chief
Division of Air Pollution Control
Ohio EPA

Cc: Jennifer Van Vlerah, SIP Manager, Ohio EPA DAPC

COMMENTS OF THE UTILITY AIR REGULATORY GROUP ON EPA'S DRAFT GUIDANCE ON THE DEVELOPMENT OF MODELED EMISSION RATES FOR PRECURSORS (MERPs) AS A TIER 1 DEMONSTRATION TOOL FOR OZONE AND $PM_{2.5}$ UNDER THE PSD PERMITTING PROGRAM

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MARCH 31, 2017

COMMENTS OF THE UTILITY AIR REGULATORY GROUP ON EPA'S DRAFT GUIDANCE ON THE DEVELOPMENT OF MODELED EMISSION RATES FOR PRECURSORS (MERPs) AS A TIER 1 DEMONSTRATION TOOL FOR OZONE AND $PM_{2.5}$ UNDER THE PSD PERMITTING PROGRAM

On December 2, 2016, the United States Environmental Protection Agency ("EPA" or "Agency") made available for public comment draft guidance detailing a recommended process for permit applicants and permitting authorities to use in assessing the impact of a proposed major new or modified source of emissions of precursors to ozone and/or fine particulate matter ("$PM_{2.5}$") on levels of those pollutants in ambient air. EPA, "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program," EPA-454/R-16-006, https://www3.epa.gov/ttn/scram/guidance/guide/EPA454_R_16_006.pdf ("Draft Guidance"). These are the comments of the Utility Air Regulatory Group ("UARG") on that Draft Guidance.[1]

UARG believes that MERPs are consistent with the new source permitting requirements of the CAA,[2] and, if further developed as discussed below, will be useful in addressing requirements for sources that emit precursors of ozone and $PM_{2.5}$ in accordance with recently-promulgated revisions to EPA's Guideline on Air Quality Models ("Appendix W").[3] To improve the usefulness of MERPs for this purpose, however, these comments explain that EPA must develop them further, as discussed below. Once they have been adequately developed, UARG urges EPA to incorporate them as regulations, perhaps by referencing them as a screening model in Appendix W.

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[1] UARG is an ad hoc, not-for-profit association of individual electric generating companies and national trade associations. UARG's purpose is to participate on behalf of its members collectively in EPA's rulemakings and other Clean Air Act ("CAA" or "Act") proceedings that affect the interests of electric generators and in litigation arising from those proceedings.

[2] 42 U.S.C. §§ 7401, *et seq.* Further citations to the Act in these comments will be given to the sections of the Act itself.

[3] 82 Fed. Reg. 5182 (Jan. 17, 2017) (to be codified at 40 C.F.R. Pt. 51, App. W).

I. MERPS ARE AN IMPORTANT COMPONENT OF A FUNCTIONAL PERMITTING PROGRAM FOR MAJOR NEW OR MODIFIED SOURCES THAT EMIT PRECURSORS OF OZONE AND $PM_{2.5}$.

The Prevention of Significant Deterioration ("PSD") program of the Act requires an owner or operator to obtain a permit for a proposed major emitting facility (or a facility for which a major modification is planned) in an area not designated nonattainment for a particular pollutant.[4] In its application for such a permit, the owner or operator must demonstrate:

> that emissions from construction or operation of such facility will not cause, or contribute to air pollution in excess of any (A) maximum allowable increase or maximum allowable concentration for any pollutant in any area to which this part applies more than one time per year, [or] (B) national ambient air quality standard in any area air quality control region . . . .[5]

Appendix W specifies the modeling techniques, including both air quality models and screening approaches, that should be used for making these demonstrations. Until recently, Appendix W said that if it was necessary to quantify the impact of a single source on levels of ozone or $PM_{2.5}$ in ambient air, as would be required for a PSD permit application, the most suitable approach should be selected on a case-by-case basis.[6] Recent revisions to Appendix W, however, adopt a new two-tiered approach to assessing the impact of single sources on either ozone or $PM_{2.5}$. For both ozone and $PM_{2.5}$, "existing technical information," possibly paired with supplemental analysis, may be adequate for a Tier 1 analysis, but, in the absence of such information, a Tier 2 analysis using chemical transport modeling is now required.[7] Use of such a

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[4] CAA § 165(a)(1).

[5] CAA § 165(a)(3). EPA has promulgated National Ambient Air Quality Standards ("NAAQS") for both $PM_{2.5}$ and ozone. 40 C.F.R. §§ 50.7, 50.9, 50.10, 50.13, 50.15, 50.18. The Agency has also promulgated maximum allowable increases, known as "increments," for $PM_{2.5}$ *Id*. §§ 51.166(c), 52.21(c). No increments have been adopted for ozone.

[6] 40 C.F.R. Pt. 51, App. W, §§ 5.2.1c., 5.2.2d (2016).

[7] 82 Fed. Reg. at 5213-14 (to be codified at 40 C.F.R. Pt. 51, App. W, §§ 5.3.2, 5.4.2).

chemical transport model is complicated, time-consuming, and costly.[8] Although Congress did not intend the PSD program to prevent economic growth and development,[9] requiring chemical transport modeling will delay, and may even dissuade companies from developing, new or expanded facilities. Thus, to ensure that PSD permitting requirements do not unnecessarily impede economic growth, it is vital that EPA identify tools that source owners and operators can use for a Tier 1 analysis that satisfies the requirements of section 165(a)(3) of the Act in lieu of requiring use of a chemical transport model. MERPs are intended to be such a tool.[10]

II. MERPS ARE CONSISTENT WITH THE ACT.

Although some have questioned their legality,[11] in UARG's view MERPs are consistent with the Act's requirements for PSD permitting. For the reasons set forth below, UARG finds that MERPs comport with congressional intent for the PSD program, as well as the Act's text and structure. UARG urges EPA to adopt a clear explanation of the legal basis for MERPs at the time it finalizes its MERPs program.

In adding PSD permitting requirements to the Act in 1977, Congress sought "to protect public health and welfare from any actual or potential adverse effect which [the Administrator] . . . anticipate[s]" may occur and "to assure that any decision to permit increased air pollution in any area [other than a nonattainment area] . . . is made only after careful evaluation of all the

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[8] EPA has provided guidance to be followed for such modeling that illustrates its complexity. EPA, Guidance on the Use of Models for Assessing the Impacts of Emissions from Single Sources on the Secondarily Formed Pollutants: Ozone and $PM_{2.5}$, EPA-454/R-16-005 (Dec. 2016), EPA-HQ-OAR-2015-0310-0172. This guidance explains that among the complexities associated with use of chemical transport models are requirements for use of a prognostic meteorological model, for a fine grid of receptors "in all directions surrounding a project source to capture meteorological and chemical variability" at distances that may exceed 50 km, and for a model performance evaluation. *Id*. at 13, 15, 18.

[9] The PSD program is intended "to insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources." CAA § 160(3).

[10] According to EPA, "MERPs may provide a simple way to relate maximum downwind impacts with an air quality concentration threshold that is used to determine if such an impact causes or contributes to a violation of the appropriate NAAQS." Draft Guidance at 20. EPA has specifically described MERPs "as a Tier 1 demonstration tool for permit-related programs." 82 Fed. Reg. at 5193.

[11] *See* Comments of Earthjustice, (Oct. 27, 2015), EPA-HQ-OAR-2015-0310-0115.

consequences."[12] At the same time, however, Congress also made clear its intent that economic development continue.[13] To avoid excessively hampering development, Congress limited the prohibition on deterioration of air quality to "significant deterioration," and only subjected "major emitting facilities" to PSD permitting requirements.[14] Further, Congress warned these permitting requirements should not create unnecessary "bureaucratic delay."[15]

Congress chose not to prescribe how an owner or operator would demonstrate that a proposed source "will not cause, or contribute to" a NAAQS violation or increment exceedance. In particular, Congress did not define either the phrase "cause, or contribute to," or the terms "cause" and "contribute" in the Act. Instead, Congress directed EPA to fill in the details, instructing the Administrator to "promulgate regulations respecting the analysis required."[16] Consistent with this congressional direction, MERPs give meaning to the "cause, or contribute to" language of the PSD permitting program in the specific context of sources whose emissions include precursors to ozone and $PM_{2.5}$.[17]

MERPs are analogous to EPA's Significant Emission Rates ("SERs"), a long-standing regulatory approach that exempts sources with emissions less than a specified level from aspects

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[12] CAA § 160(1), (5).

[13] CAA § 160(3).

[14] CAA § 165(a).

[15] S. Rep. No. 95-127, at 32 (1977), *reprinted in* 3 Comm. On Env't & Pub. Works, A Legislative History of the Clean Air Act Amendments of 1977, at 1371, 1406 (1979).

[16] CAA § 165(e)(3).

[17] Even if Congress had not directly authorized EPA to delineate the required analysis, EPA would have authority to interpret the undefined and ambiguous "cause, or contribute to" language. In particular, the term "contribute to" has been found to be ambiguous in other aspects of the Act. *See, e.g., Catawba Cty. v. EPA*, 571 F.3d 20, 35 (D.C. Cir. 2009) (per curiam); *Envt'l Def. Fund, Inc. v. EPA*, 82 F.3d 451, 459 (D.C. Cir. 1996) (per curiam). EPA is entitled to implement its own interpretation of ambiguous "cause, or contribute to" phrase in section 165(a)(3) of the Act. *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2439 (2014) ("[W]hen an agency-administered statute is ambiguous with respect to what it prescribes, Congress has empowered the agency to resolve the ambiguity."). Furthermore, EPA's interpretation of such ambiguous language need not be the only possible one, as long as it is reasonable. *Miss. Comm'n on Envtl. Quality v. EPA*, 790 F.3d 138, 151 (D.C. Cir. 2015) (per curiam).

of PSD permitting,[18] EPA established SERs in 1980 as an exercise of its inherent authority to specify *de minimis* exemptions from certain PSD requirements.[19] The United States Court of Appeals for the District of Columbia Circuit has long recognized such a "permissible . . . exercise of agency power, inherent in most statutory schemes, to overlook circumstances that in context may fairly be considered *de minimis*," particularly where "the literal terms of a statute [would] mandate pointless expenditures of effort."[20] SERs reflect EPA's recognition that "there is no practical value in conducting an extensive PSD review" when a source's emissions are sufficiently low.[21]

MERPs employ the same *de minimis* authority to exempt sources with emissions of precursors of ozone and $PM_{2.5}$ that are below specified levels from extensive, Tier 2 PSD demonstrations. MERPs, like SERs, are a straightforward application of EPA's *de minimis* exemption authority. MERPs are specified such that facilities whose emissions fall below them will not cause or contribute to a NAAQS or increment violation. They reflect recognition that requiring time-consuming and costly chemical transport modeling to estimate the downwind impacts for such a facility would require "pointless expenditures of effort." MERPs represent a reasonable solution to ensuring the preservation of clean air resources, while at the same time streamlining the permitting process and reducing the needless administrative and financial burden for those proposed facilities to demonstrate that they will not cause or contribute to a violation of a NAAQS or PSD increment.

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[18] 40 C.F.R. §§ 51.166(b)(23), 52.21(b)(23).

[19] EPA, Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans, Final Rule, 45 Fed. Reg. 52676, 52705 (Aug. 7, 1980).

[20] *Alabama Power Co. v. Costle*, 636 F.2d 323, 360 (D.C. Cir. 1979).

[21] 45 Fed. Reg. at 52705.

III. EPA SHOULD CLARIFY ITS MERPS GUIDANCE TO ENHANCE ITS USEFULNESS.

Although UARG supports MERPs as appropriate and legal tools for addressing PSD permitting requirements for facilities that emit precursors to ambient ozone and $PM_{2.5}$, UARG is concerned that, in its present form, the Draft Guidance is less useful than it could and should be. Specifically, UARG recommends that the Draft Guidance be revised to (1) clarify the requirements for modeling to support development of MERPs, including further modeling by the Agency to support MERPs; (2) clarify the process for using existing modeling to develop area-specific MERPs; and (3) clarify the use of MERPs to address $PM_{2.5}$ increments.

A. EPA Should Clarify and Simplify Requirements for Modeling to Support Development of MERPs.

Although the Draft Guidance includes in Tables A-1 through A-3 the results of EPA's modeling of several hypothetical sources in three regions of the United States, it clearly contemplates additional modeling by permit applicants or permitting authorities to develop MERPs.[22] It provides little clarity concerning the modeling that would be required, however, noting only that "[a] modeling protocol should be developed and shared with the EPA Regional Office," that such a protocol should provide for photochemical modeling, that there is no minimum number of sources that should be modeled, and that current and post-construction conditions should be represented.[23] If EPA actually expects others to conduct modeling for development of MERPs, it should provide greater specificity concerning the content of the modeling protocol. It should also specify the minimum requirements for MERPs development. As drafted this guidance seems to reflect an EPA wish list.

[22] Draft Guidance at 27, 42-74.
[23] *Id*. at 27.

Even if the Draft Guidance were to specify minimum modeling requirements for MERPs development, however, use of a chemical transport model would be required. Because use of such a model is time-consuming and burdensome, it is questionable whether anyone would perform such modeling unless the permitting of a facility or group of facilities was under consideration. Moreover, because development of a MERPs as a Tier 1 screening tool would require modeling at least as complex as that required for a Tier 2 demonstration, it is unclear why anyone would develop the Tier 1 tool rather than going straight to the Tier 2 demonstration.

UARG appreciates the modeling of single-source impacts on secondary pollutants already performed by EPA and included in Tables A-1 through A-3 of the Draft Guidance. Given the questions above about the likelihood of modeling by others to support development of MERPs, UARG urges EPA to perform additional modeling to support development of MERPs. Indeed, in the absence of such modeling by EPA, the first permit applicants will likely bear an outsized cost for modeling and later applicants will reap the benefits. Continued modeling by EPA would help to address this fundamental unfairness and would support the timely development of MERPs as a useful tool.

B. EPA Should Clarify the Process for Using Existing Modeling To Develop Area-specific MERPs.

Although the Draft Guidance indicates that "[p]re-existing modeling . . . that is deemed sufficient may be adequate" for development of MERPs applicable to an area,[24] the steps for developing the MERPs are not clear. How is the geographic area of interest to be defined? What source sensitivity simulations are required? What models are to be used? How does this modeling differ from the pre-existing modeling that can be relied upon or is this modeling for the purpose of whether the pre-existing modeling is adequate? The examples that the Draft

[24] *Id*.

Guidance provides based on the modeling done by EPA are helpful, but inadequate to answer these questions. Without such answers, neither a permit applicant nor a permitting agency can feel confident that EPA will conclude that a Tier 1 demonstration based on particular MERPs is adequate. To minimize the uncertainties highlighted by these questions, EPA should consider specifying initial MERPs for areas with pre-existing modeling. At the same time, because several conservative assumptions may underlie those MERPs,[25] a permit applicant or state should be allowed to refine a MERP, as appropriate for a particular project, with adequate technical justification,

C. EPA Should Clarify that MERPs Are Applicable to PSD Increments.

With regard to the relationship between MERPs and PSD increments, UARG understands that it is EPA's intent that MERPs may be used as a tool to demonstrate that a new or modified source will not cause or contribute to a violation of either a NAAQS *or* a PSD increment. This understanding is based on EPA's discussion of its intent to develop MERPs in its proposal of revisions to Appendix W.[26] Yet the Draft Guidance only once explicitly refers to the use of MERPs to demonstrate no violation of a PSD increment will occur.[27] UARG urges EPA both to clarify that MERPs are applicable to increments as well as to NAAQS and to conduct modeling for such MERPs as well as for NAAQS.

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[25] MERPs derived from existing modeling may, for example by based on EPA's unnecessarily stringent Significant Impact Levels ("SILs"). *See* Hunton & Williams, LLP, Comments of the Utility Air Regulatory Group on EPA's Draft Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Deterioration Permitting Program (Sept. 30, 2016). Furthermore, these MERPs likely reference both worst-case modeled impacts from prototypical sources and an assumption that those impacts coincide in time and place with the existing ozone and $PM_{2.5}$ concentrations that are closest to the NAAQS.

[26] EPA, Proposed Rule, Revision to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches To Address Ozone and Fine Particulate Matter, 80 Fed. Reg. 45340, 45348 (July 29, 2015) ("As part of the separate rulemaking, the EPA intends to demonstrate that a source with precursor emissions (e.g., NOx and SO_2 for $PM_{2.5}$) below the MERPs level will have ambient impacts that will be less than the SIL and, thereby, provide a sufficient demonstration that the source will not cause or contribute to a violation of the PM 2.5 NAAQS *or PSD increments*." (emphasis added)).

[27] Draft Guidance, at 21 ("Consistent with EPA's draft guidance containing these SIL values, to the extent a permitting authority elects to use a SIL to quantify a level of impact that causes or contributes to a violation of the NAAQS or PSD increment(s), such values will need to be identified and justified on a case-by-case basis.").

IV. EPA SHOULD RECONSIDER PROMULGATING THE MERPS CONCEPT IN A REGULATION.

UARG recommends that, after providing the further clarification concerning MERPs discussed above, EPA reconsider its decision not to promulgate MERPs, as a concept, in regulations.[28] Appropriate MERPs regulations would increase the confidence of facility owners and operators that they can rely on MERPs in support of their applications for PSD permits. Furthermore, codifying the MERPs concept in regulations would enhance consistency in how MERPs are used.[29] UARG notes that SERs, which, as discussed above, are analogous to MERPs, are specified in the Agency's PSD regulations. MERPs could be treated similarly.

As an alternative to codifying the MERPs concept in the PSD regulations, however, EPA could consider revising Appendix W to specify the MERPs concept as screening models. Under Appendix W, a screening model "provide[s] conservative modeled estimates of the air quality impact of a specific source or source category based on simplified assumptions of the model inputs (e.g., preset, worst-case meteorological conditions)."[30] If a screening model suggests that a source may cause or contribute to a NAAQS or PSD increment violation, Appendix W continues, then a second tier of modeling should be done.[31]

The MERPs concept thus fits Appendix W's screening model description perfectly. The formula to develop a MERPs value provides a conservative estimate, because its inputs include a critical air quality threshold below which a permitting authority is confident that pollutant emissions will not lead to a NAAQS or PSD increment violation—a conservative number itself. The formula's other inputs come from previous modeling data that reflects the maximum

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[28] *See* 82 Fed. Reg. at 5193.

[29] By codifying the concept as opposed to specific emission rates, EPA could allow for refinement of the MERPs themselves for particular application and provide for the evolution of MERPS due to improved information or changes in emissions or atmospheric conditions in an area.

[30] 82 Fed. Reg. at 5206 (to be codified at 51 C.F.R. Pt. 51, App. W, § 2.2b).

[31] *Id*.

impacts based on a year of data collection, which accounts for worst-case meteorological data occurring in that year. Based on these conservative inputs, the resulting MERPs values are indeed conservative thresholds for screening out sources not requiring additional, more sophisticated modeling for PSD permitting and qualifies as a screening model.[32]

V. CONCLUSION

In short, MERPs, which are consistent with statutory PSD permitting requirements, are vital elements of a permitting program for facilities that emit precursors of ozone and $PM_{2.5}$. Provisions concerning development and application of MERPs and the applicability of MERPs to increments require clarification, however, if the MERPs program is to function appropriately. Codification of MERPs either in EPA's PSD regulations or as screening models in Appendix W would provide additional clarity and consistency.

[32] The MERPs concept also satisfies Appendix W's criteria for use as a demonstration tool. Such tools "must be reflected in a codified regulation or have a well-documented technical basis and reasoning that is contained or incorporated in the record of the regulatory decision in which it is applied." 82 Fed. Reg. at 5207 (to be codified at 40 C.F.R. Pt. 51, App. W, § 2.2e). The Draft Guidance provides "a well-documented technical basis and reasoning" for using the MERPs concept as a demonstration tool in the PSD permitting program. The use of MERPs as a Tier 1 demonstration tool is therefore supported by existing regulations.

Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

DEQ

Matthew H. Mead, Governor

Todd Parfitt, Director

March 31, 2017

Brian Timin
Air Quality Assessment Division,
Environmental Protection Agency
109 T.W. Alexander Drive
Research Triangle Park, NC 27709

Submitted electronically to timin.brian@epa.gov

Re: **Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program**

Dear Brian Timin:

The Wyoming Department of Environmental Quality, Air Quality Division (Division or WDEQ) appreciates the opportunity to comment on the Environmental Protection Agency (EPA)'s Guidance on the Development of Modeled Emission Rates (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program.

WDEQ supported the development of generally-applicable MERPs as was described by the EPA in the proposed revision to the EPA's Guideline on Air Quality Models (GAQM) in 2015. Our comment letter on the GAQM revision stated that we supported the development of MERPs because they would allow an agency to determine, as appropriate, that air quality standards for ozone and PM2.5 are protected without requiring a PSD applicant to conduct expensive and time-consuming chemical transport modeling.

The December 2, 2016 guidance for the development of the MERPs offers no generally-applicable MERPs, and provides a suggested framework for the development of site-specific MERPs. It would be impractical for WDEQ to embark on an expensive effort to develop site-specific MERPs given current resource limitations and the uncertainty that any PSD project(s) would arise that are of sufficient scope such that MERPs would be applicable. The EPA has the expertise to develop, legally support, and maintain generally-applicable MERPs that would be of value to permitting agencies, and the WDEQ encourages the EPA to do so.

Thank you for the opportunity to comment on this guidance. As always, the Division is available to discuss any of the comments outlined in this letter. Please feel free to contact me at 307-777-7391.

Sincerely,

Nancy E. Vehr
Air Quality Division Administrator

CC: Todd Parfitt, Wyoming Department of Environmental Quality, Director
Colin McKee, Wyoming Governor's Office, Policy Advisor
Monica Morales, EPA Region 8