

**COMMENTS OF THE MIDWEST OZONE GROUP  
ON EPA'S OZONE NAAQS NODA  
DOCKET # EPA-HQ-OAR-2015-0500  
(80 FEDERAL REGISTER 46271, AUGUST 4, 2015)**

**October 23, 2015**

## TABLE OF CONTENTS

1.	Introduction.....	1
2.	EPA Should Defer to State Based Initiatives on Interstate Transport.....	1
3.	Transport Rule Criteria.....	2
4.	Controls must first be placed on local sources.....	3
5.	The NEOTR is obligated by Section 184(c)(1) of the CAA to act on local transport before EPA undertakes regional transport.....	4
6.	International Emissions.....	6
	a. International emissions must be addressed as part of the development of any new transport rule.....	6
	b. EPA uses 2007 modeling to develop case for background ozone concentrations and international transport assumptions.....	8
	c. EPA fails to include future year transport of international emissions and uses 2011 boundary condition files to estimate the international component of emissions transport.....	9
7.	Maintenance Areas.....	11
8.	Significance level.....	13
9.	New Modeling.....	13
10.	Emission Inventory Issues.....	14
	a. Most recent IPM runs all show significantly different distributions of generation and emissions among states.....	14
	b. EPA adjusted IPM results from 2018 to 2017 in lieu of making actual 2017 simulation that would account for economic and environmental constraints in the model.....	16
	c. EPA fails to use onroad mobile source emission factors consistent with the fleet characterization representative of conditions in 2017.....	16
	d. EPA has failed to appropriately account for growth and control data submitted by States that results in additional emission differences across the U.S.....	17
11.	Air Quality Modeling, Attainment Calculation, and Significance Calculation Issues.....	19
	a. EPA conducted its model performance evaluation using only on the 8-hr daily maximum metrics from its 2011 platform and not hourly ozone metrics as recommended in draft model performance evaluation guidance.....	19
	b. EPA evaluated the air quality model using metrics developed from days estimated at 60 ppb and higher, however, the calculations of significant contribution were calculated using days of 75 ppb or higher.....	20
	c. EPA used the Anthropogenic Precursor Culpability Assessment (APCA) source apportionment methodology within the air quality model to develop contribution metrics of upwind states to downwind nonattainment and maintenance monitors, allocating non-controllable (i.e., biogenic emissions) with anthropogenic contributions in determining a state’s contribution on downwind monitors.....	21

	d.	EPA has failed to follow its own attainment guidance in selecting days and grid cells for which the significance calculations were derived.....	23
	e.	EPA has failed to account for most current 8-hr ozone design value data in determining areas that are designated nonattainment or maintenance areas in the future year.....	25
12.		176A Petition.....	28
13.		Conclusion.....	29

**COMMENTS OF THE MIDWEST OZONE GROUP ON EPA'S OZONE NAAQS  
NODA DOCKET # EPA-HQ-OAR-2015-0500  
(80 FEDERAL REGISTER 46271, AUGUST 4, 2015)**

**October 23, 2015**

1. Introduction.

The Midwest Ozone Group (MOG) is an affiliation of companies, trade organizations, and associations which have drawn upon their collective resources to advance the objective of seeking solutions to the development of a legally and technically sound national ambient air quality program.<sup>1</sup> The primary goal of MOG is to work with policy makers in evaluating air quality policies by encouraging the use of sound science.

MOG has been actively engaged in a variety of issues and initiatives of EPA related to the development and implementation of air quality policy including not only the development of NAAQS standards but also such programs as transport rules, petitions under 176A and 126 of the Clean Air Act and the development of state-based alternatives to EPA transport rules.

MOG members operate more than 85,000 MW of coal-fired generation in more than ten states. Its members are concerned not only about the direct impact of rules such as this on their facilities but also about the impact that such rules have on the consumers of their electric power.

MOG is pleased to have the opportunity to offer comments on the ozone NAAQS NODA. We will also take this occasion to offer comments on any potential transport rule or good neighbor SIP guidance that the agency may develop based upon the data which is the subject of this NODA.

2. EPA Should Defer to State Based Initiatives on Interstate Transport.

In the event that EPA elects to consider the need for a process to address the good neighbor SIP requirements of the Clean Air Act, MOG urges that the agency turn to mechanisms other than a transport rule.

One such alternative is the State Collaborative On Ozone Transport (SCOOT) process which is seeking a multistate collaboration on a "good neighbor" SIP development process. EPA clearly needs to let that process mature and finalize before proceeding with a new ozone transport rule.

---

<sup>1</sup> These comments were prepared with the technical assistance of Alpine Geophysics, LLC. Comments or questions about this document should be directed to David M. Flannery, Legal Counsel, Midwest Ozone Group, Steptoe & Johnson PLLC, 707 Virginia Street East, Charleston West Virginia 25301; 304-353-8171; [dave.flannery@steptoe-johnson.com](mailto:dave.flannery@steptoe-johnson.com).

The January 22, 2015, memorandum by OAPQS Director Stephen Page was issued as "part of the process of working with states to offer support and information to enable the EPA and states to move forward to address the requirements of the 'Good Neighbor' provision for this NAAQS as soon as possible." In the memorandum, Director Page notes that "EPA plans to facilitate discussions with states on (1) available emission controls; (2) potential State-by-State electric generating unit (EGU) nitrogen oxides (NOx) reductions based on those controls; and (3) potential EGU emissions budgets informed by those reductions." EPA's stated goal in this process is to provide information "to initiate discussions that will inform state development and EPA review of "Good Neighbor" SIPs and, where appropriate, to facilitate state efforts to supplement or resubmit the Good Neighbor SIPs." Significantly, Page states that "EPA also recognizes its backstop role in the SIP development process-that is, our obligation to develop and promulgate federal implementation plans, as appropriate." MOG urges that EPA's role in the process should be to let the Good Neighbor collaborative among participating states conclude prior to adding more guidance on the Good Neighbor SIP process.

### 3. Transport Rule Criteria.

Any efforts to address interstate transport whether through SCOOT, good neighbor SIPs or a transport rule, must take into account the factors set forth by the DC Circuit and the U.S. Supreme Court in the review of CSAPR.

Principal among these factors is that individual states have the primary responsibility for air quality management planning in non-attainment areas within their borders. The Clean Air Act process requires states to control their own sources and, as appropriate, to eliminate their downwind impacts of a significant nature. Under the Clean Air Act Section 110 SIP process, if non-attainment remains, the states must apply the court mandated so-called "red lines" analysis. [*EME Homer City Generation, L.P. v. E.P.A.*, 696 F.3d 7, 11 (D.C. Cir. 2012) rev'd and remanded, 134 S. Ct. 1584, 188 L. Ed. 2d 775 (2014)]. See Sections 4 and 5 of these comments for additional discussion of State's nonattainment analytical obligations.

The starting point for interstate and international transport should be the scaling of current monitoring data with future year modeling to determine which monitors will be in non-attainment with the applicable NAAQS. This should be followed by the application of source apportionment modeling to assess responsibility for undertaking additional emission reductions. This is best accomplished through the application of the following analytical steps:

Step 1: Determine scaled design value (DV).

Step 2: Apply source apportionment data to DV from Step 1 to determine contribution from upwind States, downwind State, and international.

Step 3: Determine whether downwind state has applied appropriate control measures to local sources and still has resulting non-attainment.

Step 4: Determine whether areas identified in Step 3 would be in excess of the NAAQS but for international emissions (see section 6 of these comments). If so, no further analysis is appropriate to develop a transport rule with respect to that monitor.

Step 5: With respect to areas identified in Step 3 that are not excluded on the basis of international emissions, which upwind States that contribute to the DV in excess of the significance level.

Step 6: Apply an appropriate control strategy designed to eliminate such significant contribution.

Step 7: Make appropriate adjustments to such control strategy as is necessary to avoid the imposition of unreasonable costs and to avoid over-control related either to the significant contribution factor or to bring the downwind states into attainment.

We recognize that this analysis will require significantly more time and resources than have been historically allowed. These additional complexities include the situation in which an upwind state may contribute to one downwind non-attainment area to a much greater extent than it does to another and the situation in which a downwind non-attainment area is itself contributing to non-attainment in another state. These circumstances raise the question about the order in which emission reduction requirements are to be implemented.

We also recognize that a full analysis of this matter will involve additional consideration of such matters as:

- a. the role of a downwind State as the state with the primary responsibility for attaining NAAQS within its borders;
- b. the implications of the establishment of alternative thresholds for significance;
- c. the cost levels that should be deemed to be unreasonable; and
- d. the best method to address motor vehicles as the single largest contributor in most upwind States to downwind non-attainment.

The technically-appropriate and, more significantly, the legally-required forum for development and implementation of “good neighbor” SIPs is the states. Only the states are equipped to address such questions as whether additional controls are needed on one or more units, whether units should be operated differently, or whether units should be regulated at different emission rates than are provided by existing applicable regulatory requirements.

4. Controls must first be placed on local sources.

EPA is required under the CAA to first consider the effects of local emissions in a nonattainment area and nearby areas in state(s) closest to the nonattainment area in question before seeking controls in upwind states. CAA §107(a) states that “[e]ach State shall have the primary responsibility for assuring air quality within the entire geographic area comprising such State.” In addition, CAA §110(a)(1) requires that a state SIP “provides for implementation, maintenance, and

enforcement” of the NAAQS “in each air quality control region . . . within such State.” Moreover, EPA recognized the requirement to look locally in both its 1997 NO<sub>x</sub> SIP Call and in CAIR. We note that the requirement to consider emission reductions from local controls in downwind states was an element of CAIR (a factor that was not adversely impacted by the *North Carolina v. EPA* decision). EPA must study the impact of local controls in its upcoming rulemaking and require that such local sources be appropriately controlled before turning to upwind states for additional reductions.

In particular, EPA must determine whether downwind states would experience non-attainment of the NAAQS even if no transport occurred at all. If local sources in a non-attainment area, or for that matter, local sources within the OTR, are causing the NAAQS to be exceeded four or more times in the critical year, independent of regional transport, then it is imperative that the downwind states control those sources before EPA can turn to upwind states for further controls.

5. The NEOTR is obligated by Section 184(c)(1) of the CAA to act on local transport before EPA undertakes regional transport.

Section 184(c)(1) of the federal Clean Air Act establishes the following process for addressing transport concerns within the Northeast Ozone Transport Region:

“Upon petition of any State within a transport region established for ozone ... the Commission may ... develop recommendations for additional control measures ... if ... such measures are necessary to bring any area in such region into attainment ....

This process, fairly applied, obligates OTR states to address transport from their own sources, (i.e., local sources), as the primary means for addressing any concerns those states may have about the transport of air pollutants and nonattainment. Only after implementing controls on their own sources may the OTR states satisfy their primary obligation under the CAA to address their own sources that are impacting air quality first and only then turn to upwind states to impose additional controls on their sources.

As MOG pointed out in its May 29, 2015 letter to the OTC (a copy of which is attached), OTC member states have identified significant sources of local transport within the OTC that are the “largest state contribution” to violations of the NAAQS. A presentation by the Connecticut Department of Energy and Environmental Protection on April 14, 2015 they identified specific concerns about interstate transport of air pollutants from other OTC states. As can be seen in Figure 1 below, excerpted from the Connecticut presentation, they have identified New York, New Jersey, and Pennsylvania as the “largest state contributors to CT’s violating monitor.”

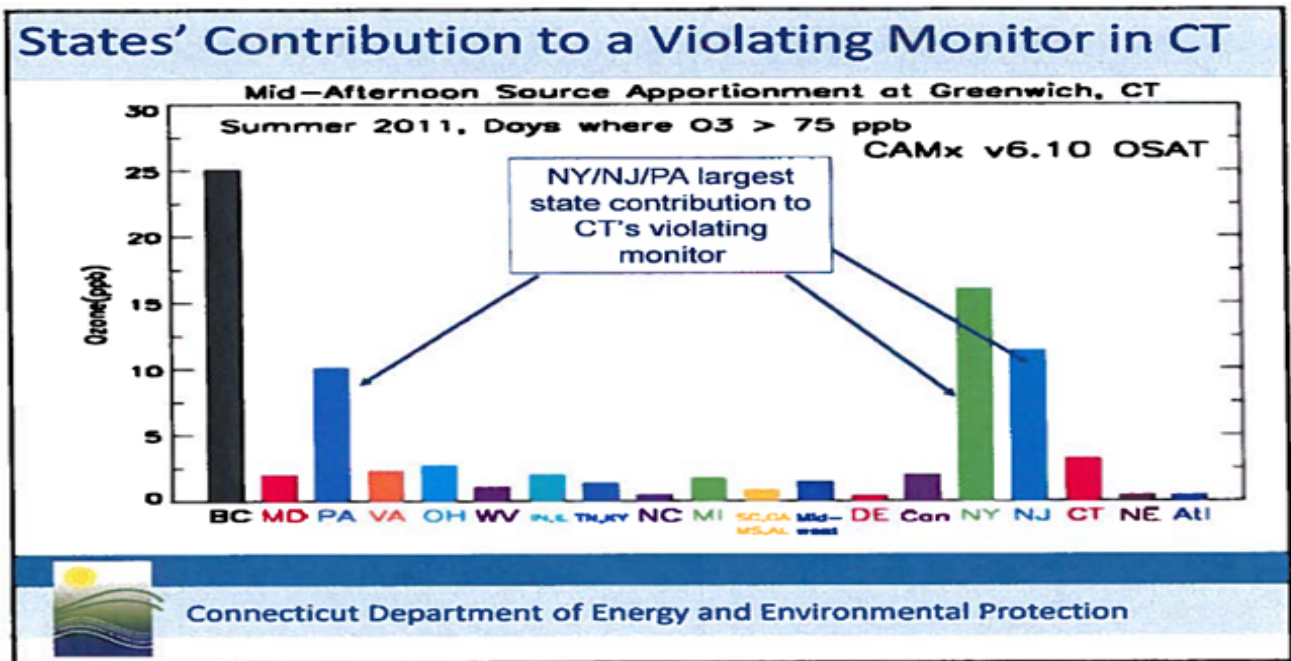


Figure 1. Connecticut presentation slide 8, New Jersey Clean Air Council Hearing, April 14, 2015

The same presentation also cites concerns about the phenomenon known as “High Electric Demand Day” (“HEDD”) emissions ( i.e., days on which localized distributive generation is dispatched by local owners) and concludes that reductions of these emissions “are a key to attaining the ozone NAAQS.” See Connecticut presentation, slide 10, New Jersey Clean Air Council Hearing, April 14, 2015 (Figure 2, below). Additionally, Connecticut specifically highlights the emission reductions expected from New Jersey’s HEDD rule.



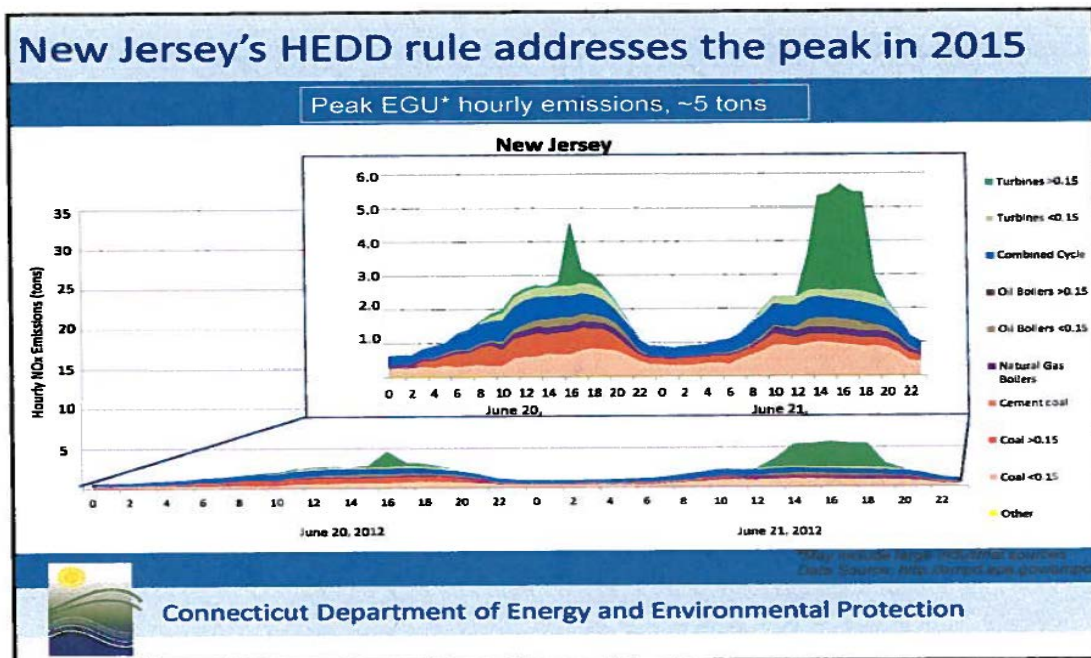


Figure 2. Connecticut, slide 12, New Jersey Clean Air Council Hearing, April 14, 2015, citing HEDD issues

The Stationary and Area Source Committee of the OTC reported to stakeholders during a September 10, 2015, briefing, its project to quantify the distributive generation (DG) emissions inventory. While DG sources are generally too small individually to fall under source specific air permitting rules, in combination they can be a significant contributor to local ozone nonattainment. The Committee reports that it will look at units that participate in the PJM, ISO-NE, and NY-ISO region to add emissions for the smaller units.

Unless and until this local transport is addressed in the Northeast, the OTC will not be able to achieve attainment of the NAAQS. It is the primary duty of the downwind states to address this concern as a condition precedent to the development of a transport rule related to these receptors.

## 6. International Emissions.

- a. International emissions must be addressed as part of the development of any new transport rule.

It is imperative that the modeling and associated data and methods prescribed by EPA for the purpose of developing any rulemaking proposal to address interstate ozone transport for the 2008 ozone NAAQS, take into consideration the impact of international transport on ozone air quality in the United States. In the NODA, EPA comments that it will be following the CSAPR approach. The CSAPR approach must, however, be modified to recognize the impacts of international ozone transport. Boundary concentrations and impacts from international sources, including Canada and

Mexico and beyond, are appropriate components to the ozone source apportionment modeling.

As acknowledged in EPA's research of "background" ozone levels, international impacts are a significant factor. EPA provides in its "Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards, August 2014" that background ozone can originate from natural sources of ozone and ozone precursors, as well as from manmade international emissions of ozone precursors. *Policy Assessment*. p. 2-12. In the first draft policy assessment document (USEPA, 2012), EPA identified three specific definitions of background O<sub>3</sub>; natural background (NB), North American background (NAB), and United States background (USB). NAB and USB are based on a presumption that the U.S. has little influence over anthropogenic emissions outside either our continental or domestic borders. *Policy Assessment*, p. 2-13. EPA's findings indicated that, "the relative importance of background O<sub>3</sub> would increase were ozone concentrations to decrease with a lower level of the O<sub>3</sub> NAAQS." *Policy Assessment*, p. 2-31. This is the circumstance we have today as the nation manages current levels of ozone concentrations relative to existing sources and current control and emissions reductions strategies and the NAAQS.

In the October 1, 2015 final Ozone NAAQS preamble EPA interjects the discussion of the impacts of international ozone levels. EPA offers discussion on the Clean Air Act section 179B which recognizes the possibility that certain nonattainment areas may be impacted by ozone or ozone precursor emissions from international sources beyond the regulatory jurisdiction of the state. EPA's science review suggests that the influence of international sources on U.S. ozone levels will be largest in locations are in the immediate vicinity of an international border with Canada or Mexico. Section 179B allows states to consider in their attainment plans and demonstrations (SIP and Good Neighbor SIP) whether an area might meet the ozone NAAQS by the attainment date "but for" emissions contributing to the area originating outside the U.S. If a state is unable to demonstrate attainment of the NAAQS in such an area impacted by international transport after adopting all reasonably available control measures, the EPA shall nonetheless approve the CAA-required state attainment plan and demonstration using the authority in section 179B as discussed further below.

Relative to Good Neighbor SIPs, international impacts also play an important role. Indeed, EPA's NODA data illustrates that international emissions contribute in excess of 15 ppb to all of the critical monitors in the East. We know the Clean Air Act was written to acknowledge the role of background and attainment. CAA §179B subsection (a) reads as follows addressing any implementation plan, whether downwind nonattainment SIPs or upwind good neighbor SIPs:

Notwithstanding any other provision of law, an implementation plan or plan revision required under this chapter shall be approved by the Administrator if –

- (1) such plan or revision meets all the requirements applicable to it under the chapter other than a requirement that such plan or revision demonstrate attainment and maintenance of the relevant national ambient air quality standards by the attainment date specified under the applicable provision of this chapter, or in a regulation promulgated under such provision, and
- (2) the submitting State establishes to the satisfaction of the Administrator that the

implementation plan of such State would be adequate to attain and maintain the relevant national ambient air quality standards by the attainment date specified under the applicable provision of this chapter, or in a regulation promulgated under such provision, but for emissions emanating from outside of the United States. (Emphasis added)."

The U.S. Supreme Court noted it is essential that states only be required to eliminate "only those "amounts" of pollutants that contribute to the nonattainment of NAAQS in downwind States..." *EPA v. EME Homer City Generation*, 134 S.Ct. 1584, 1606 (April 29, 2014). "EPA cannot require a State to reduce its output of pollution by more than is necessary to achieve attainment in every downwind State. . . " *Id.* at 1608. The subsequent 2015 D.C. Circuit *EME Homer* decision offered in response to the remand from the U.S. Supreme Court, expanded as follows, ". . . we thus must determine whether a downwind location would still attain its NAAQS if linked upwind States were subject to less stringent emissions." *EME Homer City Generation v. EPA*, 795 F.3d 118, 127(D.C. Cir. July 28, 2015). This statement assumes the variable for achieving attainment (or for not achieving attainment) is a set of sources in an upwind State, but it could have been a discussion of emissions from an upwind nation. In the circumstance of a variable of background ambient ozone concentrations attributable to international sources, the air quality deficit must be deducted from the formula for assigning whether a Good Neighbor SIP is warranted. The CAA provides for attainment "but for emissions emanating from outside the United States." As commented by the D.C. Circuit in the initial stages of the EME Homer Good Neighbor Litigation, ". . . the good neighbor provision requires upwind States to bear responsibility for their fair share of the mess in downwind States." *EME Homer City Generation, LP v. EPA*, 696 F.3d 7, 13 (D.C. Cir, August 21, 2012). Determination of "fair share of the mess" would be emissions reductions from the source state, after deduction of emission contributions from international sources, as contemplated by CAA §179B.

In addition, EPA notes that the new ozone NAAQS monitoring data influenced by international transport may be excluded from regulatory determinations. Depending on the nature and scope of international emissions events affecting air quality in the U.S., the event-influenced data may qualify for exclusion under the Exceptional Events Rule. EPA encourages affected air agencies to coordinate with their EPA regional office to identify approaches to evaluate the potential impacts of international transport and to determine the most appropriate information and analytical methods for each area's unique situation. October 1, 2015 Prepublication Final Rule for the National Ambient Air Quality Standard for Ozone, p. 553. In tandem with EPA's proposal to modify the ozone NAAQS, EPA has also commented that it is working on a number of fronts to better understand potential international sources of ozone and identify opportunities for reducing long-range transport. . . ." <http://www3.epa.gov/ozonepollution/pdfs/20141125fs-tools.pdf>. It is apparent considerable further analysis of international emissions issue is warranted as the agency stands poised to dictate obligations on states to manage the good neighbor SIP obligations under the CAA.

- b. EPA uses 2007 modeling to develop case for background ozone concentrations and international transport assumptions

Ozone pollution is unique. In addition to being a non-linear produced pollutant, concentration levels are influenced not only by local or regional anthropogenic sources, but by

“background” sources other than these manmade emissions of ozone precursors. The definition of background ozone can vary depending upon context, but it generally refers to ozone that is formed by sources or processes that cannot be influenced by actions within the jurisdiction of concern. The magnitude of this “background” influence can vary from day-to-day and location-to-location and is very difficult to project on temporal or spatial scales with certainty.

EPA recognizes in its staff Policy Assessment for review of the NAAQS that “an appreciable fraction of the observed ozone results from sources or processes other than local and domestic regional anthropogenic emissions of ozone precursors.” *Policy Assessment*, p. 2-12. The Agency further documents that “it should be recognized that climate change, if not addressed through the reduction of greenhouse gases and other climate-forcing pollutants, may increase the future contribution of certain components of background ozone (e.g., wildfires, fewer days with precipitation, and additional lightning strikes), further complicating the development of effective local ozone attainment strategies.” *Id.*

EPA uses a 2007 modeling analysis to confirm that background ozone, while generally not approaching levels of the ozone standard, can comprise a considerable fraction of total seasonal mean ozone across the U.S. (*RIA*, Background O<sub>3</sub>, Section 2.4.). It is recognized, however, that since 2007, U.S. anthropogenic emissions have decreased while international contribution of ozone precursor emissions has continued to increase.

Recent studies<sup>2</sup> have shown that ozone concentrations during peak ozone season have largely decreased as a result of U.S. ozone precursor regulation implementation. However, these same studies indicate that the background levels of ozone, measured at rural sites and during non-ozone season periods, have increased during this same timeframe and are consistent with international increases in ozone precursor emissions.

As a result of these diverging emission amounts, it can be reasonably expected that background ozone levels in 2011 and 2017 would show a higher fraction of background ozone across the U.S. compared to the 2007 calculations used to justify EPA initial arguments of background contribution. As this background ozone amount and relative fraction increases to levels closer to the new ozone NAAQS level, it will become harder for U.S.-based emissions controls to achieve attainment.

- c. EPA fails to include future year transport of international emissions and uses 2011 boundary condition files to estimate the international component of emissions transport.

In the photochemical modeling performed for the NAAQS NODA, the EPA used constant boundary condition (pollutants entering the modeling domain from the lateral boundaries) for the base year (2011) and future year (2017). In the *RIA* to the proposed ozone NAAQS, the Agency recognizes the uncertainty in the future year conditions with the statement (*RIA*, pp 3-5):

---

2 Cooper OR, Parrish DD, Ziemke J, Balashov NV, Cupeiro M, et al. 2014. Global distribution and trends of tropospheric ozone: An observation-based review. *Elem. Sci. Anth.* 2: 000029 doi: 10.12952/journal.elementa.000029

*“Boundary conditions, which are impacted by international emissions and may also influence future ozone concentrations, are held constant in this analysis based on a similar rationale regarding the significant uncertainty in estimating future levels.”*

We recognize the uncertainty in specifying boundary conditions. However, the preponderance of information is projecting that the amount of ozone and ozone precursor emissions are increasing and increasing international contributions will make attainment of the ozone standard more difficult and will likely necessitate additional domestic controls. EPA has specifically confirmed this as previously quoted from the 2014 Policy Assessment, “the relative important of background O<sub>3</sub> would increase were ozone concentrations will decrease with a lower level of O<sub>3</sub> NAAQS.” *Policy Assessment*, p. 2-13.

For instance, there is now substantial evidence that anthropogenic emissions from Asia enhance ground-level ozone mixing ratios in the U.S. on many days each year. Lin et al., (2012)<sup>3</sup> report the application of a global high resolution model with full stratospheric and tropospheric chemistry to simulate the impacts of trans-Pacific international transport. They found surface 8-hr ozone enhancements as large as 8-15 ppb during May-June 2010 over the southwestern U.S. on days when observed MDA8 ozone exceeded 60 ppb. By zeroing out Asian anthropogenic emissions, 53% of the modeled ozone NAAQS exceedances (75 ppb) would not have occurred in the southwestern U.S., but for Asian emissions. Ozone enhancements over the Gulf Coast states were in the 1-2 ppb range.

Asian emissions of NO<sub>x</sub> and NMVOC are forecast to increase from 2000 to 2020 by 44% and 99%, respectively<sup>4</sup>. Other reports show similar increases during this timeframe based on ensemble simulations comprised of multiple socio-economic scenarios<sup>5</sup>.

Based on the most advanced global chemical transport model available for simulating international transport and deep stratosphere-troposphere exchange, the Geophysical Fluid Dynamics Laboratory modeling by Lin and coworkers has significant implications for attaining current and potentially more stringent ozone standards. Their research extends the findings of previous modeling studies that show international transport can add measurably to ozone exceedances at ground level monitors in the U.S.

Recent studies presented by members of the Task Force on Hemispheric Transport of Air Pollution<sup>6</sup> indicate that historically increasing amounts of Asian NO<sub>x</sub> emissions are influencing the background levels of ozone concentrations measured in the United States. Adequately accounting for these emissions and their projected increases ensures that EPA will appropriately design control

---

3 Lin, M., et al. (2012), Transport of Asian ozone pollution into surface air over the western United States in spring, *Journal of Geophysical Research*, 117, D00V07, doi:10.1029/2011JD016961.

4 Ohara, T., et al. (2007), An Asian emission inventory of anthropogenic emission sources for the period 1980-2020, *Atmospheric Chemistry and Physics*. 7. 4419-4444.

5 van Vuuren, D., M. den Elzen, P. Lucas, B. Eickhout, B. Strengers, B. van Ruijven, S. Wonink, R. van Houdt, 2007. Stabilizing greenhouse gas concentrations at low levels: an assessment of reduction strategies and costs. *Climatic Change*, doi:10.1007/s/10584-006-9172-9.

6 Cooper, O. R., et al. (2012), Long-term ozone trends at rural ozone monitoring sites across the United States, 1990–2010, *J. Geophys. Res.*, 117, D22307.

strategies and reduction programs that target domestic sources of emissions most likely to impact ozone formation in the U.S. and for which domestic States and stakeholders have control.

Additionally, as is documented in Appendix B of EPA's NAAQS NODA air quality modeling TSD<sup>7</sup>, contributions from boundary condition emissions, largely attributed to international transport, are typically of levels that equal or exceed any single upwind contributing state's contribution to a downwind state's modeled ozone concentrations. Based on the discussion above, it can be reasoned that these values would only increase with the observed increase in international emissions.

A useful starting point for addressing this concern would be for EPA to perform a sensitivity test on the additional domestic controls that would be required from increasing boundary conditions and that EPA use most current base year (2011) and projection years (2017 and 2025) estimates of international emissions and boundary conditions in its modeling approach.

#### 7. Maintenance Areas.

EPA's reliance on the CSAPR methodology to address "interference with maintenance" is not only inconsistent with the Clean Air Act, but also inconsistent with both the U.S. Supreme Court and D.C. Circuit decisions on CSAPR. The CSAPR methodology is not reasonable in its application, results in reach beyond the Clean Air Act and therefore must be revised. EPA provides the following statement in the NODA on "interference with maintenance,"

. . . as part of the approach for identifying sites with projected future maintenance problems, the highest (i.e., maximum) ambient design value from the 2011-centered 5-year period (i.e., the maximum design values from 2009-2011, 2010, 2010-2012, and 2011-2013) was projected to 2017 for each site using the site-specific RRFs. Following the CSAPR approach, monitoring sites with a maximum design value that exceeds the NAAQS, even if the average design value is below the NAAQS, are projected to have a maintenance problem in 2017. In this regard, nonattainment sites are also maintenance sites because the maximum design value at nonattainment sites is always greater than or equal to the 5-year weighted average. Monitoring sites with a 2017 average design value below the NAAQS, but with a maximum design value that exceeds the NAAQS, are considered maintenance-only sites. These sites are projected to have a maintenance problem, but not a nonattainment problem."

80 Fed. Reg. 46271, 46274 (August 4, 2015).

The U.S. Supreme Court in *EPA v. EME Homer City Generation, LP*, explains the maintenance concept set forth in the Good Neighbor Provision as follows:

Just as EPA is constrained, under the first part of the Good Neighbor Provision, to eliminate only those amounts that "contribute...to *nonattainment*," EPA is limited,

---

<sup>7</sup> EPA-HQ-OAR-2015-0500-0016

by the second part of the provision, to reduce only by “amounts” that “interfere with maintenance,” *i.e.* by just enough to permit an already-attaining State to maintain satisfactory air quality.” 134 S.Ct. at 1604, Ftn 18.

Relative to the reasonableness of EPA’s assessment of contribution, the U.S. Supreme Court also provides,

The Good Neighbor Provision . . . prohibits only upwind emissions that contribute significantly to downwind nonattainment. EPA’s authority is therefore limited to eliminating . . .the overage caused by the collective contribution . . .” *Id.* at 1064.

“ . . . the Good Neighbor Provision . . . requires EPA to eliminate amounts of upwind pollution that “interfere with maintained” of a NAAQS by a downwind State. §7410(a)(2)(D)(i). This mandate contains no qualifier analogous to “significantly,” and yet it entails a delegation of administrative authority of the same character as the [the nonattainment language of the Good Neighbor Provision]. Just as EPA is constrained, under the first part of the Good Neighbor Provision, to eliminate only those amounts that “contribute . . .to nonattainment,” EPA is limited, by the second part of the provision, to reduce only by “amounts” that “interfere with maintenance,” *i.e.*, by just enough to permit an already-attaining State to maintain satisfactory air quality. (Emphasis added.) With multiple upwind States contributing to the maintenance problem, however, EPA confronts the same challenge that the “contribute significantly” mandate creates: How should EPA allocate reductions among multiple upwind States, many of which contribute in amounts sufficient to impede downwind maintenance? Nothing in *either* clause of the Good Neighbor Provision provides the criteria by which EPA is meant to apportion responsibility.” *Id.* at 1604, ftn 18.

It is noteworthy that the Supreme Court provides that lacking a dispositive statutory instruction to guide it, EPA’s decision on the designation of significant contribution must meet the reasonableness test of the *Chevron* decision for filling the gap left open by Congress. *Id.* at 1604. The emphasis upon the single maximum design value to determine a maintenance problem for which sources (or states) must be accountable, creates a default assumption of contribution. A determination that the single highest modeled maximum design value is appropriate for the purpose to determining contribution to interference with maintenance is not reasonable, either mathematically, in fact, or as prescribed by the Clean Air Act or the U.S. Supreme Court. The method chosen by EPA must be a “permissible construction of the Statute.” *Id.* at 1606.

As proposed in the NODA, use of a modeled maximum design value, when the average is below the NAAQS to define contribution, results in a conclusion that any modeled contribution is deemed to be significant interference with maintenance. This concept is inconsistent with the Clean Air Act and the U.S. Supreme Court’s assessment of its meaning.

As noted by the D.C. Circuit in the 2012 lower case of *EME Homer City Generation v. EPA*, “The good neighbor provision is not a free-standing tool for EPA to seek to achieve air quality levels

in downwind States that are *well below* the NAAQS.” 696 F.3d. at 22. “EPA must avoid using the good neighbor provision in a manner that would result in unnecessary over-control in the downwind States. Otherwise, EPA would be exceeding its statutory authority, which is expressly tied to achieving attainment in the downwind States.” *Id.* It is not apparent that EPA has justified its proposal as a necessary to avoid interference with maintenance.

#### 8. Significance level.

The CAA includes no specifics regarding establishment of a significance level applicable to interstate transport. CAA Section 110(a)(2)(d) simply requires that:

“(2) Each implementation plan submitted by a State under this chapter shall be adopted by the State after reasonable notice and public hearing. Each such plan shall—

...

(D) contain adequate provisions—

(i) prohibiting, consistent with the provisions of this subchapter, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will—

(I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard, or

(II) interfere with measures required to be included in the applicable implementation plan for any other State under part C of this subchapter to prevent significant deterioration of air quality or to protect visibility,

(ii) insuring compliance with the applicable requirements of sections 7426 and 7415 of this title (relating to interstate and international pollution abatement);...

There is no further guidance under the CAA to define “amounts [of emissions] which will contribute significantly to nonattainment in, or interfere with maintenance by, any other state with respect to any such primary or secondary ambient air quality standard ...” EPA established the 1% significance level in its June 11, 2011 promulgation of CSAPR (76 Fed. Reg. 48211, 48236).

The significance level established in CSAPR should be reconsidered and revised as appropriate in connection with any new transport rule to take account of limitations of air quality modeling which may not be sensitive enough to predict 1% levels. In addition, setting a more appropriate significance level may be one approach for assurance that there is no over-control.

#### 9. New Modeling.

To the extent that EPA proposes a transport rule on the basis of emission inventory and modeling data that are different from that included in the NODA, those data should also be made available for public comment.

At the Association of Air Pollution Control Agencies (AAPCA) 2015 Annual Meeting held



in Raleigh, North Carolina, in September of 2015, EPA staff made a presentation<sup>8</sup> that included reference to the intention of the Agency to propose, by the end of the year, a transport rule to address the 2008 ozone NAAQS. The stated purpose of this rule is:

“Where upwind states contribute to downwind attainment and maintenance problems, the rule will propose to focus on near-term EGU NO<sub>x</sub> reductions achievable by 2017 in those states.”

An additional EPA presentation<sup>9</sup> made at this same meeting noted that:

“Comments on the data provided with this NODA will be used to inform a *final* transport rule, not the *proposed* rule”

During the question and answer period associated with these presentations, EPA staff was asked about the noted differences in electric generating utility emission projections released with the NAAQS NODA and those more currently released as part of EPA’s power sector modeling platform. In response, Richard Wayland, Director for the Air Quality Assessment Division of the Office of Air Quality Planning and Standards indicated that reviewers should consider commenting upon the most current projections of EGU emissions (those associated with the Clean Power Plan) and not those released with the NAAQS NODA (which exclude the impacts of the Clean Power Plan).

In light of the significant differences in emission projections from this source sector between these two estimates (and noted later in this document) and the EPA reference to review most current data, not information released with the NAAQS NODA, it is recommended that EPA make available for comment the emission inventories, modeling data, and attainment and relative contribution results associated with its intended modeling platform for the final transport rule.

#### 10. Emission Inventory Issues.

- a. Most recent IPM runs all show significantly different distributions of generation and emissions among states.

EPA has recently exercised the Integrated Planning Model (IPM) to simulate future year forecasts of electric generating utility (EGU) emissions. In the past two years, three separate runs have been conducted with three separate versions of the model for the 2017 time frame.

On November 27, 2013, EPA made available their power sector modeling platform, associated data assumptions, and file documentation using IPM v.5.13. Emission projections from this version were released with the proposed ozone NAAQS rule and EPA’s Version 6.1 2011 modeling platform.

On March 25, 2015, EPA made available another power sector modeling platform, IPM v. 5.14, its associated data assumptions, and file documentation that was released with the NAAQS NODA.

---

8 [http://www.csg.org/aapca\\_site/events/documents/AAPCAEPANAAQSandotherimplupdatesFINAL.pdf](http://www.csg.org/aapca_site/events/documents/AAPCAEPANAAQSandotherimplupdatesFINAL.pdf)

9 [http://www.csg.org/aapca\\_site/events/documents/AAPCA\\_PresentationAQMG.pdf](http://www.csg.org/aapca_site/events/documents/AAPCA_PresentationAQMG.pdf)

On August 3, 2015, EPA announced the Clean Power Plan analyzed using IPM v.5.15. This version has yet to be included in any publicly released EPA attainment modeling or associated source contribution calculations.

Each of these model versions have provided regional, State, and unit level emission estimates that differ from each other. Table 1 below provides an example of some of the States and their differing NOx emissions from the EGU sector as simulated by the various versions of IPM.

**Table 1.** Annual EGU NOx Emissions (tpy) from example States from various IPM versions.

State	Annual EGU NOx Emissions (tons)		
	IPM v.5.13	IPM v.5.14	IPM v.5.15
	2018	2017	2018
Arkansas	39,352	26,096	17,294
Connecticut	907	1,014	3,643
Delaware	1,009	702	1,041
Kentucky	55,790	86,018	52,675
Louisiana	19,888	27,266	20,899
Maryland	11,378	8,858	6,385
Massachusetts	1,917	1,559	4,306
Michigan	73,261	72,898	46,523
Nevada	7,745	9,499	5,249
North Carolina	36,928	49,263	35,475
Rhode Island	304	279	420
Virginia	23,519	24,221	16,199
Wisconsin	21,038	19,903	15,146
Wyoming	49,665	32,700	16,834

As can be seen, there are noted differences in the emission estimates for this sector from the three different versions of the models, each version used independently to calculate future year nonattainment with the ozone NAAQS and to estimate significant contribution from upwind states to downwind monitors.

As an example, using the IPM run associated with the NAAQS NODA release (v.5.14), North Carolina has annual EGU NOx emissions of 49,263 tons and is identified as a significant contributor (0.93 ppb) to the Essex, MD maintenance monitor. However, in earlier EPA estimates, using IPM v.5.13, North Carolina had annual EGU NOx emissions of 36,928 tons per year and was not linked to any nonattainment or maintenance area. Similarly, in EPA's most recent IPM projections, using v.5.15, North Carolina has annual EGU NOx emissions of 35,475 tons per year, less than either of the previous two estimates. It can be assumed that similar to the v.5.13 calculations, using this latest estimate of EGU NOx tons would show no significant linkage between North Carolina and downwind nonattainment or maintenance sites.

Without having a consistently generated estimate of ozone precursor emissions from this source sector using this model, States cannot be sure that their contributions to downwind ozone concentrations are accounted for correctly. Similarly, EPA cannot fairly demonstrate significant contribution with such varied modeling data.

EPA should use the most current assumptions and model runs to update the future year air quality simulations and significant contribution analyses with the updated data.

- b. EPA adjusted IPM results from 2018 to 2017 in lieu of making actual 2017 simulation that would account for economic and environmental constraints in the model.

EPA completed a single IPM run that was post-processed once for each output year to get results for 2018 and 2025<sup>10</sup>. In the emission inventory TSD associated with the NAAQS NODA, EPA states that adjustments were made to the 2018 EGU runs to represent 2017 emissions<sup>11</sup>. However, while some unit specific adjustments are noted in the TSD, it is unclear how EPA adjusted these inventories to account for compliance with the Cross-State Air Pollution Rule's (CSAPR) Phase 2 emissions budgets and assurance provisions as now required in 2017 and beyond. It may be reasonably assumed that not all sources required to comply with the rule's Phase 2 budget are likely to do so during calendar year 2017 and not prior. EPA's adjustment methods do not indicate whether control implementation occurred during 2017 or whether these assumptions are included in the adjustments between 2018 and 2017.

EPA should rerun IPM explicitly for 2017 to generate the emissions and generation distributions associated with the timed implementation of CSAPR's Phase 2 budgets.

- c. EPA fails to use onroad mobile source emission factors consistent with the fleet characterization representative of conditions in 2017.

To project future emissions for onroad mobile sources, the EPA used MOVES2014. The EPA obtained 2018 future year projected emissions for these sectors by running the MOVES models using year-specific information about fuel mixtures, activity data, and the impacts of national and state-level rules and control programs. EPA notes that development of the future year onroad emissions requires a substantial amount of lead time and resources. EPA had already prepared the emissions projections for 2018 when EPA revised the attainment deadline for Moderate nonattainment areas to July 2018 in the 2008 Ozone SIP Requirements Rule which effectively required the agency to adjust its projection year for this rulemaking to 2017. Thus, for purposes of the 2011v6.2 platform, the EPA calculated the 2017 emissions from mobile sources by adjusting the 2018 emissions to represent 2017 using factors derived from national scale runs of MOVES. The agency anticipates that for the final rule to address interstate transport for the 2008 ozone standard, the mobile source emissions for 2017 that will be used in the air quality modeling will be generated by running these for models the year 2017.

---

10 EPA-HQ-OAR-2015-0500-0015

11 <http://www.epa.gov/airmarkets/documents/ipm/Adjusted2017.pdf>

However, with the anticipated and significant change in fuels and engines required by January 1, 2017 under the Tier 3 rule<sup>12</sup>, it is unclear how EPA's use of adjustment factors would appropriately account for this first year of full phase-in of associated standards. Additionally, as this source category is the largest single contributor to ozone concentrations at most monitors in the U.S. and the recent notice of violation recognizing the implementation of "defeat devices" in certain diesel-fueled vehicles<sup>13</sup>, it can be assumed that the relative contribution from this category, and the states from which their emissions are generated, are incorrectly estimated in the contribution calculations used in determining upwind significance.

EPA should run MOVES2014 to generate 2017-specific emission factors for onroad mobile sources and re-estimate state-on-state significant contribution values using the updated emissions. It is also recommended that EPA consider the impacts of the "defeat device" contribution of motor vehicle emissions on the significant contribution calculations used to determine upwind contributors to downwind nonattainment and maintenance issues.

- d. EPA has failed to appropriately account for growth and control data submitted by States that results in additional emission differences across the U.S.

A number of state and local agencies, under the previous modeling platform comment period<sup>14</sup>, submitted comments to EPA indicating that the growth and control assumptions used in the forecast of emissions from 2011 to 2018 do not match what are planned within those regulated regions. While EPA has noted it has included some of these programs into its most recent forecasts, much of the data that was provided by these States was not appropriately used to account for growth and control programs for a 2017 emissions projection.

As an example, the states participating as members of MARAMA submitted, via contract support, state, county, facility, or category-level growth and control files for the series of years from 2011 through 2040<sup>15</sup>. While the data provided included specific information for each year in the series, EPA used growth and control rates specific to 2018 to generate emission estimates for the 2017 inventories used in the attainment and significant contribution modeling. This is also noted in the emissions inventory TSD Section 4 on the forecasting and summarized in Table 4-1 of that document, as is indicated for multiple categories processed by EPA:

Examples from TSD, page 90:

Non-IPM sector (ptnonipm): Closures, projection factors and percent reductions reflect comments received from the notices of data availability for the 2011 and 2018 emissions modeling platforms, along with emission reductions due to national and local rules, control programs, plant closures, consent decrees and settlements. Projection for corn ethanol and biodiesel plants, refineries and upstream impacts take into account Annual Energy Outlook (AEO) fuel volume projections. Airport-specific terminal area forecast (TAF) data were used

---

12 79 FR 23414

13 <http://www3.epa.gov/otaq/cert/documents/vw-nov-caa-09-18-15.pdf>

14 79 Federal Register 2437

15 EPA-HQ-OAR-2013-0809-0045

for aircraft to account for projected changes in landing/takeoff activity. For year 2017, due to the late change of modeling years from 2018 to 2017, most projection information was obtained for year 2018 but projections were processed for the year 2017, meaning that controls with known compliance dates in year 2018 were not applied.

Point and nonpoint oil and gas sectors (pt\_oilgas and np\_oilgas): Regional projection factors by product and consumption indicators using information from AEO 2014 projections to years 2018 and 2025, as well as comments received on the notices of data availability for the 2011 and 2018 emissions modeling platforms. Cobenefits of stationary engines CAP-cobenefit reductions (RICE NESHAP) and controls from New Source Performance Standards (NSPS) are reflected for select source categories.

Remaining Nonpoint sector (nonpt): Projection factors and percent reductions reflect comments received from the notices of data availability for the 2011 and 2018 emissions modeling platforms, along with emission reductions due to national and local rules/control programs. PFC projection factors reflecting impact of the final Mobile Source Air Toxics (MSAT2) rule. Upstream impacts from AEO fuel volume, including cellulosic ethanol plants, are reflected. For year 2017, due to the late change of modeling years from 2018 to 2017, most projection information was obtained for year 2018 and used as-is without interpolation to 2017.

In some cases, the growth rates used to represent the planned economic change in activity differed between the two years, sometimes notably. For non-EGU point sources in Maryland, the average cumulative growth rate between 2017 and 2018 across all facilities increased from 3.0% to 3.5%. While this single value may seem relatively small from a year to year basis, combined with other States in the region who also have submitted similar data that was inappropriately used in the forecast, a downwind monitor's ozone concentrations may be overestimated and then used in the nonattainment calculation process or an upwind state may have disproportionately calculated contribution to a downwind monitor.

Additionally, some States and regional planning organizations have undertaken attainment studies of their own, using data and assumptions more current and regionally specific than what EPA's timelines will allow. Again, using Maryland as an example, the Maryland Department of Environment has recently published results that show future year attainment with the 2008 ozone NAAQS using only on-the-books and on-the-way controls<sup>16</sup>. Even more ozone benefits are further shown in this presentation when including the MD-only requirements and OTC measures anticipated during this forecast period.

It is recommended that EPA revise the 2017 emission projections used to calculate nonattainment and significant contribution by using the 2017-specific growth and control data submitted by commenters during the modeling platform comment process. It is also recommended that EPA consider State and planning organization generated analyses that benefit from using more

---

16

[http://www.mde.state.md.us/programs/WorkwithMDE/MDEBoardsandCommissions/Documents/AQAC\\_Meeting\\_Materials-8-5-15.pdf](http://www.mde.state.md.us/programs/WorkwithMDE/MDEBoardsandCommissions/Documents/AQAC_Meeting_Materials-8-5-15.pdf)

current and representative data and assumptions than what EPA's regulatory timelines allow.

11. Air Quality Modeling, Attainment Calculation, and Significance Calculation Issues.

- a. EPA conducted its model performance evaluation using only on the 8-hr daily maximum metrics from its 2011 platform and not hourly ozone metrics as recommended in draft model performance evaluation guidance.

In December 2014, EPA published a draft modeling guidance document<sup>17</sup> reflecting "EPA's recommendations for how air agencies should conduct air quality modeling and related technical analyses to satisfy model attainment demonstration requirements for the 2008 ozone and 2012 PM<sub>2.5</sub> National Ambient Air Quality Standards (NAAQS)." ("2014 Modeling Guidance"). In this document, EPA lists a series of recommended evaluation calculations used to determine how well the air quality model replicates observed concentrations of ozone and its precursors. The results of these calculations are then used to support confidence in the model's ability to predict responses to emission changes over time and the associated impact on air quality.

In this document, EPA states:

At a minimum, a model used in an attainment demonstration should include a complete operational MPE using all available ambient monitoring data for the base case model simulation period.

*(2014 Modeling Guidance, page 63).*

This operational evaluation is used to assess how accurately the model predicts ambient concentrations in time and space, providing confidence that the model can adequately represent observed ozone formation during the same time periods observed by the monitoring network.

The document further states:

It is recommended that, at a minimum, statistical performance metrics be calculated for hourly ozone and 8-hourly maxima ozone for each day of the model simulation used to support the attainment demonstration.

*(2014 Modeling Guidance, page 74).*

In the air quality modeling TSD<sup>18</sup> supporting the NAAQS NODA, EPA has provided evaluation statistics for the maximum daily 8-hour ozone concentrations, but has failed to observe its own guidance by providing the recommended hourly metrics for each day of the model simulation used to support its attainment demonstration.

By failing to include these metrics, EPA has ignored the possibility that the hourly formation of ozone at many locations is not adequately represented in the model and that attainment

---

<sup>17</sup> [http://www.epa.gov/ttn/scram/guidance/guide/Draft\\_O3-PM-RH\\_Modeling\\_Guidance-2014.pdf](http://www.epa.gov/ttn/scram/guidance/guide/Draft_O3-PM-RH_Modeling_Guidance-2014.pdf)

<sup>18</sup> EPA-HQ-OAR-2015-0500-0016

demonstration results for future year may also be compromised by the model's inability to capture the diurnal formation of ozone at various locations. Using maximum daily 8-hour concentrations as the sole diagnostic metric for performance evaluation of the air quality model does not account for the hourly variability introduced by the meteorological and emission inputs to the simulation. This application can mask important issues, such as the timing of the ozone concentration increases in the morning which can have significant impact on how the model responds to changes in emissions (e.g., motor vehicle emissions during the morning commute).

It is recommended that EPA conduct hourly performance evaluation calculations on the modeling platform used in the attainment demonstration and associated significance calculation as to appropriately follow EPA recommended guidance consistent with the available, hourly observations from the monitoring network.

- b. EPA evaluated the air quality model using metrics developed from days estimated at 60 ppb and higher, however, the calculations of significant contribution were calculated using days of 75 ppb or higher.

As noted above, the purpose of a model performance evaluation is to provide confidence in the ability of that model in assessing the purpose for which it is used. In the calculation of future year attainment and the associated relative contribution calculations conducted by EPA, the Agency has established a 75 ppb threshold, consistent with the 2008 8-hr ozone NAAQS, for which their significant contribution calculations were conducted. In other words, EPA has limited the significant contribution calculations to those days for which the model has predicted monitor-level ozone concentrations equal to, or in excess of, 75 ppb.

However, in evaluating the model for representativeness in replicating observed concentration values, EPA has included significantly more days in its evaluation. By evaluating the model for days of 60 ppb and higher, but using the model only for days of 75 ppb or higher, we are left with uncertainty in whether the demonstrated use of the model is appropriate. The confidence values calculated at 60 ppb are not the same as those that would be calculated at 75 ppb. And as the model was never been specifically evaluated at modeled days of 75 ppb or higher, it has not been demonstrated that the significant contribution calculations are applicable at these levels.

Additionally, recent analyses comparing significant contribution percentages of regions and source categories on downwind monitors, calculated using the same modeling platform but using different threshold values (60 ppb and 75 ppb), demonstrates that the relative contribution of upwind states on downwind monitors can vary drastically depending on the established threshold.

For example, as can be seen in Table 1, the impact of New York emissions on Fairfield, Connecticut monitor 090010017, designated as a maintenance monitor in EPA's NAAQS NODA, changes by over 2.1 ppb between a source apportionment run from the same 2011 modeling platform using a threshold of 75 ppb (12.04 ppb, 31 days used in calculation) compared to using a threshold of 60 ppb (9.90 ppb, 93 days used in calculation). Similarly, the relative contribution impact of emissions from New Jersey and Delaware changes by 4% between the two thresholds (7% at 60 ppb, 11% at 75 ppb).

In this example, both the magnitude and direction of contribution to the Connecticut monitor changes for multiple states and regions (including boundary condition/international emissions) with the change in reporting threshold. Without a robust performance evaluation conducted on the EPA modeling platform at 75ppb, there is less confidence that the source apportionment results also calculated using that threshold are adequate to assign significant contribution. And while in both instances New York is identified as a significant contributor (using the 1% NAAQS threshold), other upwind states at other monitors may have enough contribution changes to move from significant to non-significant depending on the threshold selected.

**Table 1.** Modeled and relative contribution to Fairfield, CT monitor (090010017) using OSAT at reporting thresholds of 75 ppb and 60 ppb.

Region	60 ppb Threshold (93 days)		75 ppb Threshold (31 days)	
	Total (ppb)	Total (%)	Total (ppb)	Total (%)
NY	9.90	14%	12.04	15%
PA	5.04	7%	7.64	9%
NJ/DE	5.03	7%	8.77	11%
CT	2.55	4%	2.35	3%
VA	2.24	3%	3.67	4%
MA/RI/VT/N	2.18	3%	1.58	2%
MD	1.47	2%	2.87	4%
Southeast	3.15	5%	3.99	5%
Midwest	8.49	12%	10.72	13%
Other States	4.37	6%	5.23	6%
Can/Mex/Offshore	7.23	10%	6.20	8%
Boundary/Initial	17.51	25%	16.94	21%
<b>Grand Total</b>	<b>69.16</b>	<b>100%</b>	<b>82.00</b>	<b>100%</b>

It is recommended that EPA conduct a thorough model performance evaluation for modeled ozone concentration days of 75 ppb or higher to adequately evaluate those days for which the model is being used to calculate significant contribution of upwind states on downwind monitors.

- c. EPA used the Anthropogenic Precursor Culpability Assessment (APCA) source apportionment methodology within the air quality model to develop contribution metrics of upwind states to downwind nonattainment and maintenance monitors, allocating non-controllable (i.e., biogenic emissions) with anthropogenic contributions in determining a state’s contribution on downwind monitors.

Source apportionment technology is used to estimate the contribution of source regions, and the emission categories within those regions, to receptor sites at downwind locations. Within the air



quality model used by EPA in calculating future year nonattainment, there exist two alternate techniques that can be used in developing source attribution results; the Ozone Source Apportionment Technology (OSAT) and the Anthropogenic Precursor Culpability Assessment (APCA). These two source apportionment techniques are complementary, but are not interchangeable.

According to the model's documentation<sup>19</sup>, the OSAT technique provides a more robust picture of what emissions sources are contributing to ozone formation since it specifically apportions ozone to all source categories, including the "uncontrollable" (e.g., biogenics in EPA's modeling). This allows for a separation of attribution for anthropogenic and biogenic contribution to a downwind monitor's modeled concentration.

The APCA technique is better used in the development of control strategies since it apportions some biogenic emissions to anthropogenic sources in the case where biogenic emissions react with anthropogenic sources. If the modeling were to be used exclusively for the development of a control strategy or regulation to address nonattainment, APCA may be the more appropriate technique.

However, since the main purpose of the modeling documented in the NAAQS NODA is the calculation and assignment of relative contribution and not control strategy development for attainment of the NAAQS, the OSAT method is the preferred approach.

To additionally support this application preference, a recent study compared the modeled absolute and relative contribution of multiple source regions and categories on downwind receptor ozone concentration estimates.

As can be seen in Table 2, while using the APCA technique on a 2011 modeling platform and a 70 ppb reporting threshold, results for the EPA identified nonattainment monitor in Hamilton, Ohio (390610006) show anthropogenic emission contribution of 50.5 ppb (68%) to the total modeled ozone concentration for the 36 days used in the calculation. Using the same platform and threshold, this same monitor has a calculated anthropogenic emission contribution of 47.25 ppb (64%) of a total concentration.

---

<sup>19</sup> [http://www.camx.com/files/camxusersguide\\_v6-20.pdf](http://www.camx.com/files/camxusersguide_v6-20.pdf)

**Table 2.** Modeled absolute (ppb) and relative (%) ozone contribution at Hamilton, Ohio monitor using APCA and OSAT source apportionment techniques with 70 ppb threshold. Total ppb sums may not match due to rounding.

Category	APCA Technique		OSAT Technique	
	ppb	% of Total	ppb	% of Total
Biogenics	5.15	7%	8.43	11%
Fires	0.96	1%	0.96	1%
MV & NR	30.36	41%	28.48	38%
EGUs	8.3	11%	7.45	10%
Non-EGUs	5.31	7%	4.97	7%
Anthro Other	6.53	9%	6.35	9%
Boundary / Initial	17.38	23%	17.38	23%

Simply by using the alternate source apportionment technique, EPA has increased the relative contribution of anthropogenic emissions at this monitor by 3.25 ppb and 4% of the total ozone concentration. When this incremental amount of ozone is further attributed to individual regions and states, it could make the difference between a state exceeding the significant contribution threshold at a downwind monitor.

It is recommended that EPA calculate relative and significant contribution metrics from upwind states on downwind nonattainment and maintenance monitors using the OSAT source apportionment technique.

- d. EPA has failed to follow its own attainment guidance in selecting days and grid cells for which the significance calculations were derived.

In the methods documented by EPA in the air quality modeling TSD, the Agency derives intermediate concentration data, calculates relative response factors (RRF), and develops significant contribution metrics using methods inconsistent with its own modeling guidance.

EPA states in its most recent attainment modeling guidance that:

The most important consideration associated with the RRF calculation is determining which model values are most representative of the expected air quality change for a given location. This requires consideration of all of the varying changes in hourly pollutant concentrations between the base and future cases and a determination of the most appropriate summary (average) value to apply to the base design value.

Further, the document states:

We therefore recommend calculating the RRF based on the highest 10 modeled days in the simulated period (at each monitoring site). We believe this balances the desire to have enough days in the RRF to generate a robust calculation, but not so many days that the RRF does not represent days with concentrations near the observed design values.

However, when calculating the RRF used in significant contribution metrics, EPA has selected all modeled days with concentrations equal to or exceeding the 2008 NAAQS threshold to be part of the calculations. In doing so, EPA disregards its own guidance on the calculation method (selecting only the top ten days) and potentially introduces days into the calculation that may not be representative of typical ozone concentration formation or contribution to a downwind receptor.

Also contrary to recently released guidance, EPA appears to have selected concentration values only in grid cells where a receptor is situated, and not in the grid cell simulating highest ozone concentration in the neighboring 3x3 grid array surrounding the monitor.

Again, EPA guidance states,

[T]here can be days in which the modeled source-receptor relationships may not yield a representative response for a particular cell or array of grid cells. This can result from small inconsistencies between the model representation of transport patterns (or chemical formation) and what actually occurred on that day.

It is recommended that ozone RRF calculations consider model response in grid cells immediately surrounding the monitoring site along with the grid cell in which the monitor is located. There are two primary reasons why we believe it is appropriate to include predictions from grid cells near a monitor rather than just the cell containing the monitor. First, limitations in the inputs and model physics can affect model precision at the grid cell level. Allowing some leeway in the precision of the predicted location of daily maximum ozone concentrations can help assure that possibly artificial, fine scale variations do not inadvertently impact an assessment of modeled ozone response. Second, some ozone monitors and important emission sources may be located very close to the border of a grid cell. Considering multiple cells near a monitor rather than the single cell containing the monitor diminishes the likelihood of inappropriate results which may occur from the artificial geometry of the superimposed grid system.

Based on the above considerations, it is recommended that the RRF be based on a 3 x 3 array of cells centered on the location of the grid cell containing the monitor.

In contrast, EPA states in the NAAQS NODA AQ TSD that:

The 8-hour average “pseudo” concentrations for each tag and the MDA8 concentrations are extracted for those grid cells containing ozone monitoring sites.

By developing significance calculations based on methods inconsistent with its own attainment modeling guidance, EPA has introduced the potential for unrepresentative contribution calculations for source states and their relative impact on downwind monitors. As a result, it is recommended that EPA regenerate its significance calculations using methods consistent with recent guidance and more representative of modeled concentration changes resulting from emission deltas.

- e. EPA has failed to account for most current 8-hr ozone design value data in determining areas that are designated nonattainment or maintenance areas in the future year.

The EPA's Proposed "Good Neighbor" Rule identifies links between specific upwind states and downwind ozone nonattainment or maintenance areas based on photochemical modeling of the 2011 base year and 2017 future years. Model results for the base and future years are used to compute relative response factors (RRFs) equal to the ratio of predicted future year to corresponding predicted base year design values (DVs). These RRFs are then multiplied by DVs calculated from monitoring data for a base period centered on the 2001 base model year to obtain the predicted future year DV.

Two different base period DVs are calculated from observations: the average of DVs computed from measurements for periods ending 2011, 2012, and 2013 (i.e., average of the three design values for the three attainment periods 2009-2011, 2010-2012, and 2011-2013) and the maximum of these three base period DVs. RRFs and resulting predicted future year DVs were computed by EPA using the Modeled Attainment Test Software (MATS).

EPA's proposed rule identifies two categories of ozone monitoring sites based on the predicted future year DVs determined from MATS in the above manner:

- (a) "Nonattainment" sites are those monitoring sites for which the average of the three DVs is projected to exceed the NAAQS in 2017.
- (b) "Maintenance" sites are those monitoring sites that are not nonattainment sites as in (1) above but the maximum of the three DVs is projected to exceed the NAAQS in 2017.

EPA used source apportionment modeling to determine which states are predicted to contribute an amount in excess of 1% of the level of the NAAQS to ozone at each downwind nonattainment or maintenance monitoring site defined in the above manner. Emissions from any such states are deemed to produce a "significant" contribution to either nonattainment or maintenance sites, respectively, of the ozone NAAQS for purposes of the rule. Thus, significant transport couples are defined by EPA based on DVs calculated from observations made during 2009 – 2013. However, in late 2015, EPA released DVs based on observations from a more recent period: 2012-2014. These more recent DVs reflect reductions in ozone precursor emissions which have occurred since 2009-2013 and thus a reduction in the number of potential nonattainment and maintenance sites as defined by EPA.

We examined EPA’s list of nonattainment and maintenance monitoring sites for 2017 as defined in the NAAQS NODA to determine which of these sites were actually already in attainment of the NAAQS based on observations from 2012-2014. Sites already in attainment based on these most recent data represent locations where transport from upwind sources is not contributing to nonattainment or maintenance problems.

Total counts of eastern state nonattainment and maintenance monitoring sites based on EPA’s 2017 projections in the proposed rule versus nonattainment and maintenance sites determined from 2012-2014 data are provided in Table 3.

**Table 3.** Counts of eastern state nonattainment and maintenance sites<sup>20</sup>.

	Ozone Sites
2017 nonattainment sites as predicted by EPA	14
2017 maintenance sites as predicted by EPA	23
2017 nonattainment sites already in attainment based on 2012-2014 data	6
2017 maintenance sites that are not maintenance or nonattainment based on 2012-2014 data	13

These results show that many sites in the eastern U.S. predicted by EPA to be in nonattainment of the ozone standards in 2017 are in attainment of the 2008 8-hr ozone NAAQS based on current DVs. Furthermore, over half of the eastern state ozone 2017 maintenance sites are no longer maintenance sites as of 2014. These results indicate that air quality has improved more rapidly than predicted by EPA’s proposed modeling.

We examined locations of monitoring sites projected by EPA to be nonattainment in 2017 which were observed to be in attainment as of 2014 based on averaging the most current DVs. Table 4 lists all such monitoring sites. Similarly, Table 5 lists all monitoring sites projected by EPA to be maintenance in 2017 which were observed to be neither maintenance nor nonattainment as of 2014 based on most current DVs.

---

<sup>20</sup> As determined from list of monitoring sites included in the NAAQS NODA.

**Table 4.** EPA designated nonattainment monitors in 2017 currently attaining 2008 8-hr ozone NAAQS.

Monitor ID	State	County	Ozone Design Values (ppb)		
			2009-2013 Average Design Value	Current 2012-2014 MDA8 Design Value	2017 Projected Average Design Value
240251001	Maryland	Harford	90.0	75	81.3
360850067	New York	Richmond	81.3	73	76.3
361030002	New York	Suffolk	83.3	73	79.2
390610006	Ohio	Hamilton	82.0	75	76.3
482011034	Texas	Harris	81.0	72	76.8
482011039	Texas	Harris	82.0	72	78.2

**Table 5.** EPA designated maintenance monitors in 2017 currently attaining 2008 8-hr ozone NAAQS.

Monitor ID	State	County	Ozone Design Values (ppb)		
			2009-2013 Maximum Design Value	2012-2014 MDA8 Design Value	2017 Projected Maximum Design Value
211110067*	Kentucky	Jefferson	85.0	66	78.6
211850004	Kentucky	Oldham	86.0	74	77.3
240053001	Maryland	Baltimore	84.0	72	76.2
261630019	Michigan	Wayne	81.0	74	76.2
340230011	New Jersey	Middlesex	85.0	74	76.3
340290006	New Jersey	Ocean	85.0	75	76.6
360810124	New York	Queens	80.0	72	77.6
421010024	Pennsylvania	Philadelphia	87.0	75	78.4
482010024	Texas	Harris	83.0	72	78.5
482010026	Texas	Harris	80.0	67	76.1
482010055	Texas	Harris	83.0	75	77.0
482011050	Texas	Harris	80.0	72	76.2
484393011	Texas	Tarrant	83.0	75	76.6

\*Monitor's design value does not meet completeness criteria

Based on these findings, EPA should review the list of nonattainment and maintenance sites using the most current ozone design value data and rerun both the future year attainment analysis and associated contribution study to assign attainment designation and significant contribution values to monitors in upwind states. A state with monitored attainment should not be considered to be non-attainment based on modeling data alone.

## 12. 176A Petition.

The interplay of ozone NAAQS, the ozone transport rule (CSAPR) and petitions asserting ozone transport impacting neighboring states also warrants comment. This proposal comes at a time when a 176A petition is pending, but that petition is premised upon historical information and is not relevant to whether a new health-based ozone standard is justified. Since that petition the Supreme Court has remanded CSAPR to the D.C. Circuit and the stay of this rule has been lifted. Implementation is in process and guidance on the matter is forthcoming.

On December 9, 2013, a Clean Air Act §176A petition was jointly filed by nine Northeast states – Connecticut Delaware, Maryland, Massachusetts, New Hampshire, New York, Pennsylvania, Rhode Island and Vermont (Petitioners) Section 176A, a product of the 1990 Clean Air Act Amendments, allows EPA to establish, by rule, a transport region whenever the Administrator has reason to believe that the interstate transport of pollutants from one or more states contributes significantly to a violation of a NAAQS in another state or states.

Petitioners' Section 176A petition seeks to expand the Northeast Ozone Transport Region (OTR) to include the states of Illinois, Indiana, Kentucky, Michigan, North Carolina, Ohio, Tennessee, Virginia and West Virginia. It alleges that the targeted upwind states have failed to fulfill all Clean Air Act requirements because their air pollution control programs do not require the installation of controls as stringent as required by the OTR and because air pollution from the upwind states is transported into the OTR, thus contributing to violations of the 2008 National Ambient Air Quality Standard for ozone within the OTR states.

The Petitioners hope that the petition, if granted, will subject the targeted states to more stringent requirements in the form of revised State Implementation Plans for VOC and NOx emissions, including but not limited to additional requirements for enhanced Inspection and Maintenance of mobile sources, nonattainment New Source Review, and Reasonably Available Control Technology. Those opposed to Petitioners' action question the technical basis for the petition, noting that it relies so heavily on data published no more recently than 2005.

The petition does not have any air quality merit and is political in nature. Petitioners offer no analysis of air quality measurements in the OTR and instead rely on outdated computer modeling published in 2005 to assert the nonattainment status of the region. Air quality is significantly improving in much of the OTR making it unnecessary to impose additional controls. The significant reduction in emissions projected by EPA to occur over the next several years will result in continued improvement in air quality throughout the OTR. For other monitors in the OTR, source apportionment analysis indicates that any additional controls should be local in nature.

As confirmed by the analysis of the State of Maryland, NAAQS violations in OTR occur during periods of stagnation and recirculation when no interstate transport occurs. High ozone readings in OTR in 2013 occurred at the same time as the peaking of emission rates of sources in the OTR (and not in the target states).

Emission reductions by EGUs in the Midwest and Southeast are greater than reductions that have occurred in the Northeast. Petitioners offer no evidence of significant contribution other than EPA's 2005 modeling that was based on what turned out to be an incorrect premise that emissions from EGUs in the target states would be 13% higher than they actually were in the year of the analysis (2012). Target state EGU NOx emissions in 2012 are 23% below EPA CAIR Phase I cap levels (2009-2014) and 7% below Phase II (2015).

Petitioner criteria for selecting new members of the OTR have no support in Clean Air Act. Emission reductions by EGUs in the Midwest and Southeast are greater than reductions that have occurred in the Northeast. Petitioners offer no evidence of significant contribution other than EPA's 2005 modeling that was based on what turned out to be an incorrect premise that emissions from EGUs in the target states would be 13% higher than they actually were in the year of the analysis (2012).

Finally, EPA's recently released transport rule guidance moots the need for the granting of this petition. EPA OAQPS Director Steve Page memorandum to EPA Regional Air Directors dated January 22, 2015, titled "Information on the Interstate Transport 'Good Neighbor' Provision for the 2008 Ozone National Ambient Air Quality Standards (NAAQS) under Clean Air Act (CAA) Section 110(a)(2)(D)(i)(I)."

### 13. Conclusion

MOG appreciates the opportunity to submit these comments on the NODA and the potential for a new transport rule.



## **ATTACHMENT**