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June 21, 2022

Filed To: Docket No. EPA-HQ-OAR-2021-0668
Email To: Regan.Michael@epa.gov
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Michael S. Regan, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C 20460

Re: Proposed Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard.

Dear Administrator Regan:

Please find attached comments filed on behalf of the Midwest Ozone Group ("MOG")1 on the proposal by the U.S. Environmental Protection Agency ("EPA") to promulgate a Federal Implementation Plan ("FIP") Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard ("NAAQS"). 87 Fed. Reg. 20,036 (April 6, 2022). The comment period on this proposal has been extended to June 21, 2022. 87 Fed. Reg. 29,108 (May 12, 2022).

MOG is an affiliation of companies and associations that draws upon its collective resources to seek solutions to the development of legally and technically sound air quality programs that may impact on their facilities, their employees, their communities, their contractors, and the consumers of their products. MOG's primary efforts are to work with policy makers in evaluating air quality policies by encouraging the use of sound science. MOG has

1 The members of and participants in the Midwest Ozone Group include: Alcoa, Ameren, American Electric Power, American Forest & Paper Association, American Iron and Steel Institute, American Wood Council, Appalachian Region Independent Power Producers Association, Associated Electric Cooperative, Big Rivers Electric Corp., Buckeye Power, Inc., Citizens Energy Group, City Water, Light & Power (Springfield IL), Cleveland Cliffs, Council of Industrial Boiler Owners, Duke Energy Corp., East Kentucky Power Cooperative, ExxonMobil, FirstEnergy Corp., Indiana Energy Association, Indiana-Kentucky Electric Corporation, Indiana Utility Group, LGE/ KU, Marathon Petroleum Company, National Lime Association, North American Stainless, Nucor Corporation, Ohio Utility Group, Ohio Valley Electric Corporation, Olympus Power, and Steel Manufacturers Association.

been actively engaged in a variety of issues and initiatives related to the development and implementation of air quality policy, including the development of transport rules (including the Revised CSAPR Update), NAAQS standards, nonattainment designations, petitions under Sections 126, 176A and 184(c) of the Clean Air Act ("CAA"), NAAQS implementation guidance, the development of Good Neighbor State Implementation Plans ("SIPs") and related regional haze and climate change issues. MOG Members and Participants own and operate numerous stationary sources that are affected by air quality requirements including the ozone NAAQS.

These comments renew MOG's objection to the arbitrarily and unreasonably short comment period allowed for this proposal and for the eight related Good Neighbor SIP disapproval proposals. In addition, these comments demonstrate that EPA's proposed FIP/transport rule is both legally and technically flawed.

Specifically, EPA seeks to advance its proposal at Steps 1 and 2 based upon inaccurate air quality modeling and without consideration of the flexibility guidance issued by EPA for use in the preparation of Good Neighbor SIPs relating to the 2015 ozone NAAQS. Additionally, the proposal is flawed because of the agency's failure to align the timing of the upwind and downwind states' responsibilities as it selected the analytical year for evaluating the Good Neighbor Provisions of the CAA.

Further, the agency has errored at Steps 3 and 4 in assessing control requirements for EGUs and non-EGUs, in redefining the EGU emission trading program and in taking significant technical shortcuts to accommodate its self-imposed deadlines. For reasons related to timing and resource constraints, and not for technical reasons, EPA elected not to perform full-scale photochemical air quality modeling in support of quantifying the impact of air quality improvements associated with various control cases considered for adoption in the proposed FIP. Instead, EPA applied a "simplified" Air Quality Assessment Tool (AQAT) as the method for estimating the impacts of the control cases at Step 3 of the transport analysis. In place of a direct comparison of the final remedy to an air quality simulation, EPA provides only a comparison of various calibration factors as justification for their conclusion that the simplified AQAT supports the proposal in determining air quality concentration changes at individual receptors at magnitudes in the hundredths (0.01) of ppb – an infinitesimally small value. Considering the importance of this regulation, significant cost to impacted industries and electric consumers, potential impact on electric supply reliability, and miniscule air quality benefit projected for the required control scenario, at a minimum, EPA should have run an air quality simulation to corroborate its findings with the simplified AQAT. Anything less constitutes arbitrary and capricious action.

As these comments demonstrate, EPA's proposal is fatally flawed both legally and technically and should be withdrawn.

Very truly yours,

/s/ *David M. Flannery*

David M. Flannery
Legal Counsel
Midwest Ozone Group

cc: Ms. Elizabeth Selbst,
Air Quality Policy Division
Office of Air Quality Planning and Standards
US Environmental Protection Agency

MIDWEST OZONE GROUP COMMENTS ON PROPOSED FEDERAL IMPLEMENTATION PLAN ADDRESSING REGIONAL OZONE TRANSPORT FOR THE 2015 8-HOUR OZONE NAAQS.

Docket ID No. EPA-HQ-OAR-2021-0668

87 Federal Register 20,036 (April 6, 2022)

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Senator Capito letter Administrator Regan, May 17, 2022; https://www.midwestozonegroup.com/wp-content/uploads/2022/06/Senator-Capito-letter-to-Administrator-Regan-May-17-2022-1.pdf

Exhibit B:

Overview of Lake Michigan Ozone Study, Stanier, C. O., & et al, November 2021; https://www.ladco.org/wp-content/uploads/Research/LMOS2017/LMOS_LADCO_report_revision_apr2019_final.pdf

Exhibit C

Analysis of Ozone Trends in the East in Relation to Interstate Transport; Norm Possiel, EPA/OAQPS, May 14, 2018; http://midwestozonegroup.com/files/2018-05-14_EPA_OAQPS_-_Analysis_of_O3_Trends_in_the_East_in_Relation_to_Interstate_Transport.pdf

Exhibit D:

Midwest Ozone Group Comments Regarding Control of Air Pollution From New Motor Vehicles; Heavy-Duty Engine and Vehicle Standards; Proposed Rule ; Docket ID No. EPA-HQ-OAR-2019-0055, May 16, 2022; https://www.midwestozonegroup.com/wp-content/uploads/2022/05/MOG-Heavy-Duty-Vehicle-Comments-5.16.22.pdf

Exhibit E

Technical Memorandum, Review of EPA's Use of AQAT in the Federal Implementation Plan for the 2015 Ozone NAAQS Transport Proposed Rule; Alpine Geophysics, June 16, 2022; https://www.midwestozonegroup.com/wp-content/uploads/2022/06/Technical-Memorandum-Review-of-EPAs-Use-of-AQAT-June-16-2022.pdf

Exhibit F

Technical Comments on Control Technology Options and Emission Allocations Proposed by the Environmental Protection Agency in Support of the Proposed 2015 Ozone NAAQS Transport Rule; Cichanowicz, J., Marchetti, J., Hein, M., Rivera, S., June 17, 2022; https://www.midwestozonegroup.com/wp-content/uploads/2022/06/Technical-Comments-on-EGU-Control-Technology-Options-June-17-2022.pdf

MIDWEST OZONE GROUP COMMENTS ON PROPOSED FEDERAL IMPLEMENTATION PLAN ADDRESSING REGIONAL OZONE TRANSPORT FOR THE 2015 8-HOUR OZONE NAAQS.

JUNE 21, 2022

The Midwest Ozone Group ("MOG") offers these comments[1] on the proposal by the U.S. Environmental Protection Agency ("EPA") to promulgate a Federal Implementation Plan ("FIP") Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard ("NAAQS"). 87 Fed. Reg. 20,036 (April 6, 2022). The comment period on this proposal has been extended to June 21, 2022. 87 Fed. Reg. 29,108 (May 12, 2022).

MOG is an affiliation of companies and associations[2] that draws upon its collective resources to seek solutions to the development of legally and technically sound air quality programs that may impact on their facilities, their employees, their communities, their contractors, and the consumers of their products. MOG's primary efforts are 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 related to the development and implementation of air quality policy, including the development of transport rules (including the Revised CSAPR Update), NAAQS standards, nonattainment designations, petitions under Sections 126, 176A and 184(c) of the Clean Air Act ("CAA"), NAAQS implementation guidance, the development of Good Neighbor State Implementation Plans ("SIPs") and related regional haze and climate change issues. MOG Members and Participants own and operate numerous stationary sources that are affected by air quality requirements including the ozone NAAQS.

As will be pointed out in these comments, EPA's proposed FIP/transport rule is both legally

[1] 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 or Kathy G. Beckett (Steptoe & Johnson PLLC, P.O. Box 1588, Charleston, WV 25326-1588) or Edward L. (Skipp) Kropp, (Steptoe & Johnson PLLC, P.O. Box 36425, Indianapolis, IN 46236; dave.flannery@steptoe-johnson.com / (304) 353-8171; kathy.beckett@steptoe-johnson.com / (304) 353-8172; or skipp.kropp@steptoe-johnson.com / (317) 946-9882 respectively.

[2] The members of and participants in the Midwest Ozone Group include: Alcoa, Ameren, American Electric Power, American Forest & Paper Association, American Iron and Steel Institute, American Wood Council, Appalachian Region Independent Power Producers Association, Associated Electric Cooperative, Big Rivers Electric Corp., Buckeye Power, Inc., Citizens Energy Group, City Water, Light & Power (Springfield IL), Cleveland Cliffs, Council of Industrial Boiler Owners, Duke Energy Corp., East Kentucky Power Cooperative, ExxonMobil, FirstEnergy Corp., Indiana Energy Association, Indiana-Kentucky Electric Corporation, Indiana Utility Group, LGE/ KU, Marathon Petroleum Company, National Lime Association, North American Stainless, Nucor Corporation, Ohio Utility Group, Ohio Valley Electric Corporation, Olympus Power, and Steel Manufacturers Association.

and technically flawed in part because EPA seeks to advance the proposal based upon inaccurate air quality modeling and without consideration of the flexibility guidance issued by EPA for use in the preparation of Good Neighbor SIPs relating to the 2015 ozone NAAQS. Additionally, the proposal is flawed because of the agency's failure to align the timing of the upwind and downwind states' responsibilities as it selected the analytical year for evaluating the Good Neighbor Provisions of the CAA. Further, the agency has erred in assessing control requirements for EGUs and non-EGUs and in redefining the EGU emission trading program. These comments also renew MOG's objection to the short length of the comment periods that EPA has offered for this proposal and for the eight related Good Neighbor SIP disapproval proposals. EPA has not provided adequate time for thoughtful assessment of this complex, lengthy, multi-source proposal.

I. General Comments.

1. EPA's selection of 2023 as the analytical year for its assessments of the state plans fails to align the obligation of upwind states with downwind states inasmuch as certain nonattainment areas have delayed implementation of nonattainment controls until 2025 and beyond.

EPA's statutory duty is to synchronize the "Good Neighbor" Provision of the CAA, §110(a)(2)(D)(i), with nonattainment and maintenance requirements of CAA including §172 such that compliance burdens are mutually and equitably aligned among upwind and downwind states. MOG is not offering comment on the downwind state plans for emissions reductions strategies provided the responsibility of upwind states under the Good Neighbor provisions of the CAA are timed to coincide with the responsibility of downwind states to implement nonattainment controls. In the case of the proposed rule, however, EPA has failed to address the timing of the implementation of upwind controls relative to downwind controls thereby causing unnecessary and excessive emissions controls to be required by the upwind sources. EPA's failure to comply with the CAA obligations to align upwind and downwind control obligations is compounded by the fact that EPA delayed disapproving upwind state Good Neighbor Plans far beyond the two years specified in the CAA for such action. The proposed disapprovals and FIP presume the significant contribution should be calculated without consideration of the downwind state delay in implementing emissions reductions and the effect on ozone concentrations, thus shifting a burden of otherwise unnecessary additional controls to the upwind states. The CAA, however, directs synchronization/alignment of upwind and downwind emission reduction requirements. Synchronization as applied means if a downwind state delays action, then the upwind state would accordingly take Good Neighbor action on a schedule that mirrors the downwind implementation strategy. To accomplish this emissions control program any other way means that either the upwind or downwind state could be obligated to implement emissions control far beyond what they otherwise might have to implement as part of a synchronized/aligned program.

Historically, EPA has assessed the impact of state emissions reductions programs on ambient air quality in the applicable future analytic year by first determining the extent to which existing "on-the-books" regulatory programs could be expected to improve ambient air quality. EPA has noted its modeling assessment generally accounts for enforceable "on-the-books" emissions reductions and provides the most up-to-date forecast of what future emissions would resemble, but EPA has departed from a comprehensive modeling assessment in the proposed rule

under evaluation. 87 Fed. Reg. at 20,054. For this proposed rule, emissions inventories were developed for the years of 2016, 2023, 2026, and 2032 that represent changes in activity data and of predicted emissions reductions from on-the-books actions, planned emissions controlled installations, and promulgated federal measures that affect anthropogenic emissions. EPA contends that its projected base case accounts for the effects of on-the-books federal and state rules through early 2021. *Id*. at 20,063. Of concern to MOG is the failure of EPA to consider emission control programs adopted after early 2021 that should be assessed for impact on nonattainment and therefore upwind significant contribution. With ongoing efforts to manage and balance timely programs directed at nonattainment in upwind and downwind states, it is objectionable that there are no provisions for consideration of enforceable programs that will impact compliance with the NAAQS after "early" 2021. It is also a matter of concern that EPA analysis was based upon the air quality modeling undertaken in connection with the Revised CSAPR Update[3] which includes an outdated emissions inventory that does not account for any on-the-books control programs adopted after 2019 nor does it reflect the updated emissions inventory that was used by EPA to assess Step 1 and 2 issues in connection with the current proposal.[4]

EPA has failed to discharge its responsibility under the CAA to harmonize the parallel timing and therefore collective impact of both upwind and downwind state implementation plans. The *Wisconsin* remand concluded that EPA exceeded its statutory authority under the Good Neighbor Provision "by issuing a Rule that does not call for upwind States to eliminate their substantial contributions to downwind nonattainment in concert with the attainment deadlines." *Wisconsin v. EPA*, 938 F.3d 303, at 318. The *Wisconsin* remand directed EPA to address the downwind state "deadline" in such a manner as to "harmonize" the deadlines of upwind and downwind states and to apply "parallel timeframes." *Id.* at 312, 314. The D.C. Circuit repeatedly has explained the CAA directive to "harmonize" and manage the relationship described as parallel between the Good Neighbor obligations for upwind states and statutory attainment deadlines for downwind areas. That relationship is one of "par," using the Court's term, meaning to be judged on a common level with the other.[5]

With this proposal, EPA ignores the obvious relationship between the downwind states' obligation to implement controls to attain the standard relative to the obligation of an upwind state to not significantly contribute to the nonattainment at issue. EPA has been directed by the D.C. Circuit to fashion its transport rules deadlines to coordinate with downwind states deadlines, in concert with one another. The D.C. Circuit found error in EPA's historic transport rule, Clean Air Interstate Rule ("CAIR"), in which EPA did not explain why it did not coordinate the Good Neighbor Provision with CAIR to provide a sufficient level of protection to downwind states. *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008). Despite the CAA §110(a)(2)(D)(i) requirement that upwind contributions to downwind nonattainment be "consistent with the provisions of [Title I]," EPA did not make any effort to *harmonize* CAIR's Phase Two deadline for upwind contributors to eliminate their significant contribution with the attainment deadlines for downwind areas. . . . As a result, downwind nonattainment areas must attain NAAQS for ozone

[3] 87 Fed. Reg. at 20,083.
[4] 86 Fed. Reg. at 23,075
[5] *Definition of Par*, MERRIAM-WEBSTER, https://www.meriam-webster.com/dictionary/par (last visited Mar. 24, 2022).

and PM2.5 without the elimination of upwind states' significant contribution to downwind nonattainment, forcing downwind areas to make greater reductions than CAA §110(a)(2)(D)(i)(I) requires. *Id.* (emphasis added). The D.C. Circuit described its *North Carolina* ruling in the *Wisconsin* remand as follows:

> We explained that EPA needed to "*harmonize*" the "Phase Two deadline for upwind contributors to eliminate their significant contribution with the attainment deadlines for downwind areas." . . . Otherwise, downwind areas would need to attain the NAAQS "without the elimination of upwind states' significant contribution.

Wisconsin, 938 F.3d at 314 (emphasis added).

The *Wisconsin* remand explained, "In sum, under our decision in *North Carolina*, the Good Neighbor Provision calls for elimination of upwind States' significant contributions on par with the relevant downwind attainment deadlines." *Id.* at 315 (emphasis added). The *Wisconsin* opinion explains further:

> The Good Neighbor Provision, as *North Carolina* emphasized, requires upwind States to eliminate their significant contributions to downwind pollution "consistent with the provisions of this subchapter," i.e., Title I of the Clean Air Act. 42 U.S.C. §7410(a)(2). One of the "provisions of this subchapter" is §7511(a)(1), which in turn requires downwind areas in moderate non-attainment to attain the NAAQS by July 20, 2018.

Id. at 315-16.

The *Wisconsin* remand summarizes that "it is the statutorily designed relationship between the Good Neighbor Provision's obligations for upwind states and the statutory attainment deadlines for downwind areas that generally calls for parallel timeframes." *Id.* at 316. Put simply the obligation to coordinate cuts both ways. Upwind and downwind obligations must have view of what each is required to accomplish and coordinate the implementation plans accordingly.

EPA offers its implementation timing interpretation of the D.C. Circuit court's holding in *Maryland v. EPA*, 958 F. 3d 1185 (D.C. Cir. 2020) as requiring the states and the Agency, under the Good Neighbor Provision, to assess downwind air quality as expeditiously as practicable and no later than the next applicable attainment date, which is now the Moderate area attainment date under CAA §181 for ozone nonattainment. The Moderate area attainment date for the 2015 8-hour ozone NAAQS is August 3, 2024. EPA states that it believes 2023 is now the appropriate year for analysis of interstate transport obligations for the 2015 8-hour ozone NAAQS because the 2023 ozone season is the last relevant ozone season during which achieved emissions reductions in linked upwind states could assist downwind states with meeting the August 3, 2024, Moderate area attainment date for the 2015 8-hour ozone NAAQS. 87 Fed. Reg. at 20,099. By selecting 2023 for analysis, EPA is inappropriately shifting the burden to the transport states because it is not similarly requiring downwind states to have their controls effective by that date as well.

EPA recently demonstrated its improper interpretation of the process disconnect between

standards to which downwind plans are held versus the standards to which upwind plans are held in its proposed denial of transport plans in February of 2022. MOG asserts that the law provides both plans must be aligned with the same timeframes and that the obligations are simultaneous. EPA attempts to provide justification for the disapproval of the New York transport plan due to delayed controls as follows:

> . . . under the *Wisconsin* decision, states and the EPA may not delay implementation of measures necessary to address good neighbor requirements beyond the next applicable attainment date without a showing of impossibility or necessity. *See*, 938 F.3d at 320. In those cases where the measures identified by the State had implementation timeframes beyond the next relevant attainment dates the submission did not offer a demonstration of impossibility of earlier implementation of those control measures. Similarly, the State's submittal is insufficient to the extent the implementation timeframes for identified control measures were left unidentified, unexplained, or too uncertain to permit the EPA to form a judgment as to whether the timing requirements for good neighbor obligations have been met.

87 Fed. Reg. 9,494. (Emphasis added.)

As noted in MOG's April 25, 2022, comments to the proposed New York and New Jersey state implementation plan denials, downwind states and regulated entities are on an ever-changing path to manage the complex implementation of emissions reductions programs to address local and regional air quality impacts. The air quality modeling relied upon for these proposals fails to provide a wholistic assessment of all emission control requirements. The following quote illustrates the missed timely air quality improvement opportunity:

> The New York State Department of Environmental Conservation ("NYDEC") has developed recent controls for simple cycle and regenerative combustion turbines ("SCCT") or "peaking units" noted by the agency as being inefficient and approaching 50 years of age. Yet, while the agency has estimated controls will result in a 4.8 ppb significant air quality improvement to nonattainment monitors within the New York Metropolitan Nonattainment Area (NYMA), implementation is delayed until 2025 and beyond. NYDEC also recently has imposed NOx controls on distributed generation units, which as with peaking units, has been structured to delay implementation of controls beyond the applicable attainment date as part of the attainment plan proposed for approval by EPA.

87 Fed. Reg. 4,530 (Jan. 28, 2022).

On June 2, 2022, EPA promulgated a final rule concerning the New York ozone control state implementation plan strategies, particularly with regard to Title 6 of the New York Code of Rules and Regulations (NYCRR), Part 2219, "Incinerators", and Part 222, "Distributed Generation Sources". 87 Fed. Reg. 33,438 (June 2, 2022). Responding to comments raised by MOG about the poor timing of controls relative to an attainment strategy, EPA offered its action was "not intended to satisfy specific nonattainment planning obligations" nor interstate transport obligations demonstrating the agency's failure to realize the implementation planning provisions of the CAA all fall within the same CAA §110 of Part D addressing Plan Requirements for Nonattainment

Areas. *Id.* at 33,439. EPA offers this statement of response: "EPA acknowledges that the State of New York has unmet attainment planning obligations for the NYMA nonattainment area." *Id.* It remains a concern that EPA approves delay of much needed emissions reductions within the NYMA while proposing Good Neighbor emissions reductions that fail to align upwind and downwind obligations on the same coordinated schedule.

Delayed implementation of emissions reductions programs that impact attainment must be reviewed when determining an upwind state has failed its good neighbor obligation. In the example quoted above the downwind state New York has not timely implemented controls designed to effect ozone air quality improvement. The CAA does not contemplate only looking to upwind states to resolve the New York nonattainment when New York has failed to act. It is more appropriate to align the implementation date of the New York emissions program with the upwind state good neighbor emissions program.

Another key source of impact upon nonattainment are mobile sources. Within the Clean Air Act, Subchapter 1, Part D titled "Plan Requirements for Nonattainment Areas" is found Subpart 1 titled "Nonattainment Areas in General." Subpart 1 includes Section 177 addressing new motor vehicle emissions standards in state plans for nonattainment areas. It is apparent that the CAA contemplated the option of developing nonattainment plans per Section 172 to address certain new motor vehicles or new motor vehicle emissions. For those approved downwind nonattainment plans that include motor vehicle emissions reduction strategies for achieving attainment, delay in implementation beyond the attainment date is unacceptable under CAA §179. In the proposed FIP, EPA provides,

> The EPA recognizes that mechanisms exist under title I of the CAA that allow for the regulation of the use and operation of mobile sources to reduce ozone-precursor emissions. These include motor vehicle inspection and maintenance (I/M) programs, gasoline vapor recovery, clean-fuel vehicle programs, transportation control programs, and vehicle miles traveled programs. *See, e.g.,* CAA sections 182(b)(3), 182(b)(4), 182(c)(3), 182(c)(4), 182(c)(5), 182(d)(1), 182(e)(3), and 182(e)(4). <u>The EPA views these programs as most effective and appropriate in the context of the planning requirements applicable to designated nonattainment areas.</u>

87 Fed. Reg. 20,077, f/n 142. EPA acknowledges the significance of mobile source emissions to nonattainment. Delay in implementation of needed attainment mobile source controls by a downwind state unlawfully shifts the emissions reduction burdens onto upwind states if EPA fails to engage in alignment of the dates upon which each of the states must satisfy nonattainment strategy performance.

This issue of imbalance specifically was addressed by D.C. Circuit in the *Wisconsin* remand as an appropriate basis for extending the compliance deadline for upwind states. In the *Wisconsin* opinion the Court stated: "if a modified attainment deadline applies to downwind States, EPA may be able, if justified, to make a corresponding extension for an upwind State's good neighbor obligations." *Wisconsin,* 938 F.3d at 317.

EPA's proposal does not recognize the corresponding alignment obligation as articulated in the *Wisconsin* remand. The omission creates a fatal flaw in the proposal rendering it unlawful, arbitrary and capricious. EPA's calculated upwind state contribution that does not assess downwind contribution demonstrates the failure to harmonize the two because the relationship between the upwind and downwind emissions obligations is in concert, with both impacting air quality simultaneously. The contribution calculated for upwind states changes as downwind states eliminate their contribution to nonattainment and maintenance. As downwind states reduce their contribution, the amount of emission reductions necessary to eliminate the upwind states contribution necessarily decreases. Neither contribution can be addressed in a vacuum as EPA is attempting to do in this proposed rule.

2. The comment period is too short to allow review and analysis of the proposed rule.

EPA published the proposed rule on April 6, 2022 and requested comments no later than June 6, 2022. The comment period was subsequently extended by a modest additional 2 weeks to June 21, 2022 (87 Fed. Reg. 29108, May 12, 2022). The granted extension allowed insufficient time to develop a technically robust and thorough set of comments on the proposed FIP. U.S. Senator Shelley Capito also has expressed concern about the short comment period, as evidenced by her letter of May 17, 2022, to EPA Administrator Regan requesting an extension of 45 days from the June 21, 2022, deadline for the comment period as necessary to provide enough time for careful review and feedback on this proposal. Senator Capito's letter is attached to these comments and identified as Exhibit A.

In letters dated April 9, 2022, and May 23, 2022, MOG requested an extension of the comment period for a number of reasons. Of primary significance to MOG is the February 22, 2022, EPA publication of eight separate proposed rules that propose to disapprove Good Neighbor SIPs impacting 19 states. The 19 state Good Neighbor SIPs are inextricably linked with the proposed transport rule because both target the same ambient air quality standard. EPA responded to the MOG letter on May 12, 2022, asserting "EPA must balance the importance of ensuring the public has meaningful opportunity to comment with Congress' direction for expeditious action to address good neighbor obligations," citing the CAA minimum comment period requirements and the CAA requirement to "address Good Neighbor obligations as expeditiously as practicable and in alignment with the attainment schedule for downwind areas" set forth at 42 U.S.C. § 7410(a)(2)(D)(i)(I).

Comments on each of the eight proposed Good Neighbor SIP disapprovals were due April 25, overlapping the comment period on this proposed transport rule by 19 days. EPA's coincident rulemaking proposals for the FIP and SIPs effectively deprived MOG and all other stakeholders of about 30% of the proposed transport rule comment period. It is disingenuous for EPA to deny an adequate comment period on this transport rule, hiding behind its ongoing obligations to address Good Neighbor submittals "as expeditiously as practicable." EPA failed to act on the 2018 and 2019 Good Neighbor SIPs submitted by 19 states allowing up to three and a half years to pass until February 22, 2022, when it proposed to disapprove all 19 Good Neighbor SIPs.

MOG also requested additional time to comment on the proposed transport rule because EPA is seeking comment on 53 specific issues raised in the proposed rule, including an omnibus

issue styled “Request for Comment on All Aspects of the Proposal.” EPA cannot possibly support its conclusion that the extended 75 day comment period granted in piecemeal fashion is sufficient time to analyze and develop meaningful comments on this 181-page proposed rule with supplemental docket reports, appendices, etc.

Finally, the proposed rule is dramatically broader in scope than the transport rules that have preceded it. Not only does the proposed rule cover a much larger geographic area than prior rules, it proposes to impose new control requirements on both EGU’s and a broad category of industrial sources including reciprocating internal combustion engines in Pipeline Transportation of Natural Gas; kilns in Cement and Cement Product Manufacturing; boilers and furnaces in Iron and Steel Mills and Ferroalloy Manufacturing; furnaces in Glass and Glass Product Manufacturing; and high-emitting, large boilers in Basic Chemical Manufacturing, Petroleum and Coal Products Manufacturing, and Pulp, Paper, and Paperboard Mills. The expanded scope of this rule adds yet another significant layer of complexity to the analysis of the proposal, making development of meaningful comments resource intensive and time consuming. As a result MOG has been unable to engage its consultants such that they have the time necessary to perform a number of technical analyses of both the cost of controls and the air quality impact of the proposed rule because of the abbreviated comment period.

Examples of missed opportunities to submit additional technical analyses include Alpine Geophysics which would have executed an air quality modeling simulation of the control case to corroborate EPA's findings with the simplified AQAT analysis. That technical work would have generated updated design values to determine attainment and nonattainment at Step 1 of the EPA 4 step process and linkages at Step 2. Apparently even EPA did not have enough time during the many months of rule development to run an air quality simulation of the control case based on its technical memo on AQAT issues. Alpine Geophysics was also unable to perform a source apportionment simulation to determine the relative contribution and ozone concentration improvement from EGU and non-EGU sources identified for potential control under the proposal. That analysis would impact both Steps 2 and 3. Additionally, neither Cichanowicz nor Marchetti were able to conduct a more detailed review of omissions and errors in the state budget setting process, due to EPA imposed limitations. More specifically, given the time constraint, they could not interact with all the affected utilities to identify specific issues related to how EPA handled their units in the state budget setting process. They also were unable to interact in detail with affected utilities on the issue of reliability limiting their discussion of the potential impacts on reliability of this proposal to the grid system impact rather than impacts on specific states.

Finally, regarding evidence of the grossly insufficient comment period, MOG notes MISO, PJM, and ERCOT, the Regional Transmission Organizations (RTOs) most affected by the proposed rule, have all reported the possibility of significant power shortages in the US in 2022, without even having the impact of the proposed rule imposed on the facilities they dispatch. MOG submits that EPA has failed completely to listen to the input of the organizations responsible for maintaining grid reliability and that, absent an extensive analysis of the grid that cannot possibly be performed due to the artificially short comment period, any rule finalized by EPA without that data is doomed to fail.

All the issues articulated above illustrate that the modestly extended comment deadline is

insufficient to develop an adequate set of comments on the proposed transport FIP.

3. The CAA does not mandate promulgation of a FIP at this time.

EPA initiated an accelerated effort to implement a new transport rule by first proposing disapprovals of state Good Neighbor SIPs. EPA's administrative action for the state SIPs is necessary to establish failures on the part of states to address transport issues. Following closely on the heels of the SIP disapprovals, EPA proposes the Federal Implementation Plan as a substitute for state action. As previously noted in these comments, EPA has taken an unnecessary and hurried approach that is inconsistent with and unsupported by applicable law. EPA's action is not substantiated by appropriate science and modeling. This FIP rulemaking proposal is time constrained by their own design which prevents thoughtful technical analyses of the agency's proposals and meaningful participation by all stakeholders.

Section 110(c) of the CAA states that "The [EPA] Administrator shall promulgate a Federal implementation plan at any time within 2 years after the Administrator": (1) finds that a state has failed to make a required submission or that the state plan submitted "does not satisfy" the minimum criteria in Section 110(k)(1)(A), or (2) "disapproves a State implementation plan submission in whole or in part," unless the State corrects the deficiency and the Administrator approves the correction before the Administrator promulgates the plan. The Act anticipates a legally and technically justified disapproval, after which EPA is required to promulgate a Federal Implementation Plan ("FIP") within two years, unless the State corrects the deficiency before promulgation of the FIP.

At issue in connection with both the proposed FIP and eight related proposed SIP disapprovals are two initial administrative considerations. First, EPA must offer adequate justification for both the proposed SIP disapprovals and the proposed FIP prior to urging states to remedy alleged deficiencies in their SIPs. As will be discussed extensively in these comments, EPA has not adequately demonstrated the bases for its actions. Second, EPA has not provided legally sufficient public notice and comment. In addition to administrative procedures, EPA also is obligated to ensure its actions support the principal of environmental justice, particularly in energy communities, pursuant to Executive Orders 12898 (Feb. 11, 1994) and 14008 (Jan. 27, 2021). Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Meaningful involvement implies adequate time to study and comment upon the agency action. The following comments illustrate that EPA is improperly advancing a proposed FIP while moving in a parallel timeframe to improperly disapprove state implementation plans implementing the Good Neighbor Provisions of the CAA. The agency's rush in time is legally flawed in that it disenfranchises the regulated community and the public.

Curiously, EPA does not offer any explanation for its conscious decision not to work with the states to develop a state implementation plan call as provided in §110(k)(5). This section of the CAA creates an administrative process of up to 18 months for states to address flaws in the disapproved SIPs. These accelerated SIP and FIP proposals clearly indicate that transparency and cooperation are not priorities. In the spirit of cooperative federalism of the CAA, EPA should have

provided updated guidance, new modeling, instructions on corrections for specific state deficiencies, and adequate time for state response and public comment and review. Rather, EPA directs the reader to a footnote citing three consent decrees it agreed to in lieu of the CAA implementation plan development process. These "agreements" between EPA and petitioners are improperly driving the timing of EPA's consideration of state implementation plans related to the 2015 ozone NAAQS Good Neighbor Provisions.[6] Pursuant to the January 12, 2022, Consent Decree entered in *Downwinders at Risk et al. v. Regan*[7], EPA agreed by April 30, 2022, to take action to approve or disapprove the interstate ozone state implementation plans (SIPs) of 21 states: Alabama, Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, New Jersey, New York, Ohio, Oklahoma, Tennessee, Texas, West Virginia, and Wisconsin. Also, EPA agreed that if by February 28, 2022, it proposes full or partial disapproval of a SIP from one of the 21 states, along with a proposed FIP to directly regulate interstate ozone emissions from that state, it will finalize its full or partial disapproval of the state's own plan by December 15, 2022. MOG also notes that the proposed *Downwinders* Consent Decree was provided for comment and that the concerns of the upwind states and the regulated community were ignored by EPA. See comments of Alabama, Missouri, Wyoming, and MOG in docket EPA-HQ-OGC-2021-0692.

MOG urges EPA to adhere to the CAA which does not mandate promulgation of a FIP in an abbreviated time frame. The CAA allows EPA as much as 2 years to work with the states to address any concerns the Administrator may have about their plans, specifically allowing states the opportunity to correct any deficiencies. Additionally, states raise a key administrative error, EPA failed to act timely on the state SIP submittals. EPA received the state submittals as early as 2018 and delayed action until 2022. This proposal effectively penalized states (and their citizens) by not giving them the statutory opportunity to collaboratively engage in remedy. EPA's actions effectively dismiss resource intensive state agency work failing to review it or engage in assessment. This series of events by EPA is offensive and disenfranchises the state/local governments and citizens most directly impacted. The following quotes from affected states speak for themselves about EPA's administrative and substantive misstep.

The concern expressed by the Commonwealth of Kentucky in its comment[8] on the proposed disapproval of its SIP as follows:

> EPA's delayed disapproval of Kentucky's I-SIP regarding prongs 1 and 2 of CAA section 110(a)(2)(D)(i)(1) prevented Kentucky from addressing deficiencies or submitting SIP revisions. Kentucky would appreciate the opportunity to address these identified deficiencies through a revised SIP submission, which may eliminate the need for a Federal Implementation Plan.

The State of West Virginia stated this concern[9] as follows:

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[6] 87 Fed. Reg. 20,057, f/n 69.
[7] U.S. District Court for the Northern District of California, Case No. 4:21-cv-3551.
[8] https://www.regulations.gov/comment/EPA-R04-OAR-2021-0841-0024
[9] https://www.regulations.gov/comment/EPA-R03-OAR-2021-0873-0006

DAQ contends that at the time of submittal the WV 2015 Ozone Good Neighbor SIP contained all 1 "necessary provisions" as were then currently required by EPA to constitute an approvable SIP. DAQ utilized the March 27, 2018 EPA memorandum guidance from Office of Air Quality Planning and Standards ("OAQPS") Director Peter Tsirigotis titled Information on the Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards under Clean Air Act Section 110(a)(2)(D)(i)(I)3 ("2018 Interstate Transport SIP Information Memorandum" and included as Appendix C of the SIP) during preparation of the SIP. During the three years following DAQ's SIP submittal and EPA's failure to timely review it, which culminated in this proposed disapproval, EPA reevaluated and modified without communication to states what it considers as acceptable "necessary provisions" to meet the requirements of the 2015 Ozone Good Neighbor SIP. DAQ contends it is impossible for states to predict, much less meet, SIP requirements which are in constant fluctuation, poorly or not defined, and never acted upon by EPA.

In its comments on the proposed disapproval of its SIP the State of Arkansas offered the following comment[10]:

Simply put, EPA did not act on 2015 Ozone Transport SIPs in a timely manner. As EPA notes in the proposed disapproval, decision points are made based on information available at the time. Had EPA reviewed the SIP in the timeframe required by federal law, the information available at the time—the same information that states used to inform their decisions—would have ensured that states did not waste time on robust analyses of available data for the purposes of making sound, evidence-based decisions. EPA stalled an evaluative action until the perceived "facts" of the situation changed such that timely state analyses were rendered outdated. Because EPA did not act on SIP submissions in a timely manner as required by the Clean Air Act, and instead intended their assessment of Transport SIPs to be "forward looking," states have been put at a clear disadvantage in the final stages of the SIP process.

As stated by the State of Missouri in its comments[11] on the proposed disapproval of its SIP[12]:

This most recent round of EPA actions to propose disapprovals (and specific approvals) of good neighbor SIPs and to propose FIPs for 26 states magnifies the flaws of EPA's 4-step framework to address good neighbor obligations. While the underperforming model, as discussed in the comments above, hinders EPA's ability to establish a sound technical foundation to perform step 1 (identify problem receptors) and step 2 (determine linkages to upwind states), EPA's arbitrary choices for applying step 2 and step 3 (determine control measures necessary to address obligations) lead to punitive outcomes for all states involved, particularly Missouri. There is no reasoned basis for EPA to apply a 1 percent of the standard threshold for establishing upwind state linkages at step 2, and EPA's application of step 3 to determine what constitutes cost effective controls for the purpose

[10] https://www.regulations.gov/comment/EPA-R06-OAR-2021-0801-0025
[11] https://www.regulations.gov/comment/EPA-R04-OAR-2021-0841-0017
[12] https://www.regulations.gov/comment/EPA-R07-OAR-2021-0851-0021

of addressing upwind state contributions is also flawed. Both of these arbitrary criteria selected by EPA raise the major questions doctrine where EPA is flexing its new-found authority to assume control over state energy choices.

The State of Mississippi characterized the error is EPA's actions as follows:

In the proposed disapproval of Mississippi's infrastructure SIP (iSIP), EPA arbitrarily, and we believe incorrectly, states that MDEQ did not adequately address all steps necessary to satisfy the Clean Air Act interstate transport provisions demonstrating emissions occurring within Mississippi do not significantly contribute to nonattainment or interfere with maintenance of the O3 NAAQS in other states. MDEQ worked collaboratively with EPA Region 4 to properly respond to interstate transport, or "good neighbor," requirements and submitted what we believed EPA considered an approvable iSIP in September 2019. However, EPA did not act on that submittal for nearly two and a half years. Now, within one week of proposing to disapprove the "good neighbor" portion of Mississippi's 2015 O3 NAAQS iSIP, the EPA administrator has signed a proposed Federal Implementation Plan (FIP) to impose on the state. The imposition of the FIP is premature and unnecessary as MDEQ has demonstrated its commitment to develop and submit an approvable iSIP and has historically strived to meet and exceed its obligations.

A very similar concern was offered by the State of Tennessee when it stated[13]:

On September 13, 2018, Tennessee submitted a SIP revision to EPA containing its plan to fulfil its Good Neighbor obligations under the interstate transport requirements of the 2015 8-hour ozone NAAQS. On December 30, 2019, EPA proposed approval of Tennessee's 2018 infrastructure SIP submission. More than three years after the original SIP submission and two years after proposing its approval, EPA now proposes disapproval of Tennessee's infrastructure SIP submittal, along with that of Alabama and Mississippi, regarding the interstate transport requirements for the 2015 8-hour ozone standard (the "iSIP Disapproval"). In doing so, EPA based its proposed disapproval of Tennessee's 2018 submission in large part on data that EPA collected, analyzed, and published many years after the fact—in March 2021 and February 2022.

…

EPA's proposed disapproval of Tennessee's Infrastructure SIP ("iSIP") relative to Prong 1 is not only arbitrary and capricious in that it lacks any factual merit, but it also lends evidence to support Tennessee's concern, discussed throughout these comments, that EPA intends to set an impossible standard whereby states are held accountable for technical data that has yet to be produced and cannot be known to states at the time they develop and submit their iSIPs.

The State of Alabama described[14] EPA's error as follows:

[13] https://www.regulations.gov/comment/EPA-R04-OAR-2021-0841-0016
[14] https://www.regulations.gov/comment/EPA-R04-OAR-2021-0841-0022

> The Alabama Department of Environmental Management (ADEM) timely submitted a proposed SIP to EPA in August 2018 regarding the 2015 ozone ambient air quality standard. This proposal was based on all available information at the time of submittal. All portions of the SIP were approved except for transport, Prongs 1 and 2. EPA later approved the transport portion of the proposed SIP (prongs 1 and 2}; however, the approval was never published in the Federal Register.
>
> Since the original timely submittal of ADEM's SIP, EPA has changed its position. As a result of this change, ADEM has withdrawn its 2018 SIP submission and has submitted a new proposed SIP which addresses EPA's perceived issues. . . ADEM's withdrawal of its 2018 SIP revisions necessitates that EPA not proceed with its proposed disapproval.

Finally, we offer the comment that was filed by the State of Oklahoma[15] in response to EPA proposed disapproval of its SIP:

> The states' good faith reliance on EPA—not just reliance on the 2018 Tsirigotis memos, but reliance on EPA itself, through ordinary avenues of cooperative federalism—in ozone transport SIP development has now put states at a disadvantage. Oklahoma acted in good faith during its SIP development process by continually paddling the channels of communication with EPA Region 6, apprising EPA of Oklahoma's SIP development plans as both a courtesy and to avoid a disapproval. At no point during the SIP development process was Oklahoma on notice that its proposed SIP would be disapproved on the grounds that reliance on the 2018 Tsirigotis Memos was inappropriate. EPA has, without explanation, arbitrarily and capriciously changed its policy position through its refusal to acknowledge the legitimacy of states' good faith reliance on EPA guidance memoranda.

For these and other reasons stated in these comments, MOG asserts it is legally necessary and appropriate that EPA revise its proposals to allow states the Clean Air Act's enumerated opportunity to respond to EPA's findings of deficiency before proposing a FIP, essentially in tandem with the SIP denials.

4. EPA's intention to revise its emission inventory and to conduct new air quality modeling without allowing an appropriate opportunity for stakeholder review and comment is inappropriate.

EPA's references to revising the emission inventory used in the modeling it previously has conducted for historic transport rules raises an administrative concern about public review and comment. MOG has actively engaged in modeling and review of model inputs relative to ozone NAAQS. It is very concerning that EPA is not providing assurances of a reasonable opportunity for actively engaged commenters to review potential additional emission inventory development and modeling.

EPA notes in the proposed SIP disapprovals that, after the modeling it conducted in support

[15] https://www.regulations.gov/comment/EPA-R06-OAR-2021-0801-0026

of earlier transport rules, e.g., CAIR, CSAPR, CSAPR Update, CSAPR Closeout, and Revised CSAPR Update, the agency revised the emission inventory used in the modeling to assess the efficacy of prior transport rules. EPA conducted new modeling using the revised inventory. The agency describes the process as follows:

> Following the Revised CSAPR Update final rule, the EPA made further updates to the 2016 emissions platform to include mobile emissions from the EPA's Motor Vehicle Emission Simulator MOVES3 model 17 and updated emissions projections for electric generating units (EGUs) that reflect the emissions reductions from the Revised CSAPR Update, recent information on plant closures, and other sector trends. The construct of the updated emissions platform, 2016v2, is described in the emissions modeling technical support document (TSD) for this proposed rule. (Emphasis added).[16]

In December 2021 in response to EPA requests for inventory review and updates[17,18,19], MOG and other stakeholders submitted detailed comments on the 2016v2 emission inventory platform to correct errors that existed in that platform. EPA's declared efforts to revise this emission inventory platform at this time raises the question about whether EPA intends to update the modeling that has been used as the basis for the SIP disapprovals and the proposed FIP - but only in support of the final rule.

While MOG urges EPA to rely on modeling that accurately reflects current on-the-books regulatory requirements and up-to-date emission inventories, we strenuously object to the possibility that EPA would conduct any such additional modeling to support a final rule and not provide the opportunity for those data to be reviewed, analyzed, commented upon and having those comments addressed by EPA in advance of any final decision on the subject SIP disapproval (or for that matter the related proposed FIP). These concerns were also expressed earlier, in July 2021, by several MJOs (Westar, LADCO, SESARM, MARAMA, and CENSARA).[20] It is noteworthy that EPA provided for 90-day day comment for the purpose of review of the 2015 Ozone NAAQS Preliminary Transport Data"[21]. The agency's departure from allowing reasonable time to assess the context of this rule is inappropriate.

5. The CAA Good Neighbor Provisions do not impose on an upwind state any obligation to attain the 2015 ozone NAAQS in any downwind state.

During the public hearing on this proposal held on April 21, 2022, comments were offered

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[16] See: IN, IL, MN, OH, and WI proposal at 87 Fed. Reg. 9,838 at 9,840.
[17] http://views.cira.colostate.edu/wiki/wiki/11208#September-21-2021
[18] https://cleanairact.org/wp-content/uploads/2021/10/Wayland_Monitoring-Modeling-and-Emission-Inventory-Updates_9-30-21-1.pdf
[19] https://www.epa.gov/air-emissions-modeling/2016v2-platform
[20] See the attachment "EPA Decisions Final" to Wyoming's comments on proposed Downwinders. https://www.regulations.gov/comment/EPA-HQ-OGC-2021-0692-0012
[21] Preliminary Interstate Ozone Transport Modeling Data for the 2015 Ozone National Ambient Air Quality Standard, 82 Fed. Reg. 1773 (January 6, 2017).

that urged EPA to impose additional control requirements in the final version of this rule that would be sufficient to bring downwind monitors into attainment with the 2015 ozone NAAQS. As is clear from the provisions of CAA, judicial interpretations of the CAA and EPA's own assessment of its authority, comments on this point should be rejected as being without any legal authority. As a matter of law, EPA must specifically reject these comments in its written response.

The CAA provides for the implementation, maintenance, and enforcement of the NAAQS for areas designated as nonattainment for the relevant NAAQS and in §§110(a)(1) and 110(a)(2) for all states to develop and implement infrastructure SIPs to be submitted to and approved by EPA, regardless of whether the State includes areas designated nonattainment for the relevant NAAQS. 42 U.S.C. §7410(a)(1), (a)(2).

CAA §110 requires states, after a NAAQS revision, to submit recommendations regarding each area's attainment status (either attainment, nonattainment, or unclassifiable) for EPA approval. Upon a final determination of attainment status by EPA, each State is responsible for developing plans to demonstrate as "expeditiously as practicable"[22] how standards will be achieved, maintained, and enforced. The plans must take into consideration unique air pollution problems in the State and significantly contribute to other "downwind" states.

CAA §110(a)(2)(D)(i)(I) establishes a so-called "good neighbor provision" that requires each State to include in its SIP provisions that prohibit emissions in amounts that will contribute significantly to nonattainment in or interfere with maintenance by another State concerning any NAAQS. *Id*. at (a)(2)(D)(i)(I).

In connection with the proposed Rule, EPA invoked CAA §110(a)(2)(D)(i)(I), which requires each State 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]."

EPA has been using a four-step process to determine the appropriateness of imposing ozone-season NOx emission budgets on upwind states to satisfy CAA §110(a)(2)(D)(i)(I). 87 Fed. Reg. 20,054. These four steps are as follows:

Step 1: Identify downwind [air-quality] receptors expected to have problems attaining or maintaining [NAAQS];

Step 2: Determine which upwind states contribute to these identified problems in amounts sufficient to "link" them to the downwind air quality problems;

Step 3: For states linked to downwind air quality problems, identify upwind emissions that significantly contribute to downwind nonattainment or interfere with downwind maintenance of a [NAAQS]; and

Step 4: For states that are found to have emissions that significantly contribute to nonattainment or interfere with maintenance of the NAAQS downwind, implement the necessary emission reductions through enforceable measures.

Id.

[22] 42 U.S.C. §7502(c)(1).

EPA has consistently taken the position that the Good Neighbor Provisions of the CAA do not require full resolution of downwind air quality concerns. As stated in the preamble to final Revised CSAPR Update:

> EPA is not obligated to fully resolve downwind nonattainment and maintenance issues through the good neighbor provision, as some commenters assert. EPA considers the changes in receptor status in this analysis informative in the context of the step 3 multi-factor test. However, that does not mean EPA agrees that good neighbor obligations may only be considered fully addressed when all downwind receptors have reached attainment.

86 Fed. Reg. 23,054 at 23108 f/n 155 (April 30, 2021).

In addition, in the response to comment related to the final Revised CSAPR Update Rule EPA offered the following explanation of its authority under the Good Neighbor Provision:

> Section 110(a)(2)(D)(i)(I) only requires that upwind states prohibit those emissions that "contribute significantly to nonattainment" or "interfere with maintenance of the NAAQS." It does not require that the upwind states bear the full burden of bringing downwind states into attainment or that a threshold ppb improvement from upwind states emission reductions be met in order for them to be required (once the one percent threshold has been satisfied).

Revised Cross-State Air Pollution Rule Update – Response to Comment, EPA-HQ-OAR-2020-0272-0219 p. 335.

EPA's position that rules implementing the Good Neighbor provisions of CAA need only address emissions that contribute significantly to nonattainment or interfere with maintenance of the NAAQS, has been consistently upheld by the Courts. See: *EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584 (2014); *Wisconsin v. EPA*, 938 F.3d 303 at 310 (D.C. Cir. 2019).

6. EPA improperly asserts that its three 2015 ozone NAAQS Good Neighbor SIP flexibility guidance memoranda should no longer be considered applicable to implementation of the Good Neighbor Provisions.

The proposed transport FIP is intended to address the 2015 ozone NAAQS. The process of attaining that NAAQS involves state infrastructure (downwind) and good neighbor (upwind) planning in advance of a FIP. In proposing this transport FIP, EPA fails to acknowledge and implement the guidance it provided to states in 2018 to assist them in preparing their Good Neighbor SIPs. States relied upon EPA's guidance at the time and were never reasonably informed of changed agency policy to allow them to respond and revise. EPA has failed to extend the courtesy to the states an acknowledgment that its historic policies were no longer to be honored by EPA nor cited by states.

In 2018, EPA published three guidance documents describing the process by which upwind states could incorporate various "flexibilities" into their Good Neighbor SIPs to attain the 2015

ozone NAAQS. Each of the guidance documents were issued by the USEPA Director of Office of Air Quality Planning and Standards, Peter Tsirigotis and therefore were received by states as administratively authorized and directed guidance.

The March 27, 2018, Tsirigotis memo, styled "Information on Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards Under Clean Air Act Section 110(a)(2)(D)(i)(I)," was addressed to EPA Regional Air Directors in all EPA Regions. The memo states,

> [t]he purpose of this memorandum is to provide information to states and the Environmental Protection Agency Regional offices as they develop or review state implementation plans (SIPs) that address section 110(a)(2)(D)(i)(I) of Clean Air Act (CAA), also called the "good neighbor" provision, as it pertains to the 2015 ozone National Ambient Air Quality Standards (NAAQS). Specifically, this memorandum includes EPA's air quality modeling data for ozone for the year 2023, including newly available contribution modeling results, and a discussion of elements previously used to address interstate transport. In addition, the memorandum is accompanied by Attachment A, which provides a preliminary list of potential flexibilities in analytical approaches for developing a good neighbor SIP that may warrant further discussion between EPA and states.

The August 13, 2018, Tsirigotis guidance memo, styled "Analysis of Contribution Thresholds for Use in Clean Air Act Section 110(a)(2)(D)(i)(I) Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards," also was addressed to EPA Regional Air Directors in all EPA Regions. The memo states,

> …[t]he purpose of this memorandum is to provide analytical information regarding the degree to which certain air quality threshold amounts capture the collective amount of upwind contribution from upwind states to downwind receptors for the 2015 ozone National Ambient Air Quality Standards (NAAQS). It also interprets that information to make recommendations about what thresholds may be appropriate for use in state implementation plan (SIP) revisions addressing the good neighbor provision for that NAAQS . . . [t]his document does not substitute for provisions or regulations of the Clean Air Act (CAA), nor is it a regulation itself. Rather, it provides recommendations for states using the included analytical information in developing SIP submissions, and for the Environmental Protection Agency (EPA) Regional offices in acting on them. Thus, it does not impose binding, enforceable requirements on any party. State air agencies retain the discretion to develop good neighbor SIP revisions that differ from this guidance.

The October 19, 2018, Tsirigotis guidance memo titled "Considerations for Identifying Maintenance Receptors for Use in Clean Air Act Section 110(a)(2)(D)(i)(I) Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards," (Maintenance Guidance") also was addressed to EPA Regional Air Directors in all EPA Regions. As in the first two memoranda, the memo states:

> [t]he purpose of this memorandum is to present information that states may consider as they evaluate the status of monitoring sites that the Environmental Protection Agency (EPA) identified as potential maintenance receptors with respect to the 2015 ozone national Ambient Air Quality Standards (NAAQS) based on EPA' s 2023 modeling. States may use this information when developing state implementation plans (SIPs) for the 2015 ozone AAQS addressing the good neighbor provision in Clean Air Act (CAA) section 11 0(a)(2)(D)(i)(I). In brief this document discusses (1) using alternative technical methods for projecting whether future air quality warrants identifying monitors as maintenance receptors and (2) considering current monitoring data when identifying monitoring sites that although projected to be in attainment as described below, should be identified as maintenance receptors because of the risk that they could exceed the NAAQS due to year-to-year (i.e., inter-annual) variability in meteorological conditions. (Emphasis added).

EPA had reason to know states would be relying on the three 2018 guidance documents to develop their Good Neighbor SIP submittals but failed to advise the states that the agency had changed its opinion about its guidance. Nineteen Good Neighbor SIPs were pending before the EPA awaiting EPA review for three or more years since EPA issued the 2018 Good Neighbor SIP guidance. Only one EPA review was proposed for action in March 2020. EPA proposed approval of Iowa's Good Neighbor SIP that incorporated the 2018 guidance. 85 Fed. Reg. 12,232 (March 2, 2020). With the event of this proposed FIP, EPA also is proposing to characterize these documents as archival in nature and to walk back the proposed Iowa approval (*See*, 87 Fed. Reg. 9,477, February 22, 2022).

On February 22, 2022, EPA proposed to disapprove 19 Good Neighbor SIP submittals using eight proposed rulemakings.[23] Many of the 19 state implementation plans incorporated and

[23] See:

- Air Plan Disapproval; Maryland; Interstate Transport Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standard. 87 Fed. Reg. 9,463, February 22, 2022.
- Air Plan Disapproval; New York and New Jersey; Interstate Transport Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standard. 87 Fed. Reg. 9,484, February 22, 2022.
- Air Plan Disapproval; Kentucky; Interstate Transport Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standard. 87 Fed. Reg. 9,498, February 22, 2022.
- Air Plan Disapproval; West Virginia; Interstate Transport Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standard. 87 Fed. Reg. 9,516, February 22, 2022.
- Air Plan Disapproval; Missouri; Interstate Transport Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standard. 87 Fed. Reg. 9,533, February 22, 2022.
- Air Plan Disapproval; AL, MS, TN; Interstate Transport Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standard. 87 Fed. Reg. 9,545, February 22, 2022.
- Air Plan Disapproval; Arkansas, Louisiana, Oklahoma, and Texas; Interstate Transport Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standard. 87 Fed. Reg. 9,798, February 22, 2022.

relied upon the flexibilities articulated in the 2018 Good Neighbor SIP guidance memoranda.

EPA's disavowal of its standing guidance in both the proposed disapproval of the 19 Good Neighbor SIPs and the proposed FIP is an arbitrary abuse of authority. EPA's actions demonstrate disregard for good faith efforts by the regional offices and state agencies to effectively implement Good Neighbor obligations. The text of CAA section 110(c)(1) is given short shrift by EPA in this proposal relative to opportunity for a state to correct either (1) a finding of failure to make a required submission, (2) failure to satisfy plan minimum criteria or (3) disapproval of a plan. Having proposed disapprovals and this proposed FIP within weeks of each action with shortened comment periods, EPA has abused its authorities in a manner that rejects the cooperative federalism embedded as primary theme of the CAA. This proposal runs roughshod over the States. EPA's inaction relative to its relationship with air program managers demonstrates its failure to foster meaningful stakeholder involvement. MOG's members and the communities within which they operate deserved the courtesy of federal agency narrative about the 2018 Good Neighbor SIP guidance memoranda. The words offered by EPA within its proposals of denial and federal oversight are as follows:

> The EPA issued a memorandum in October 2018, providing additional information to states developing interstate transport SIP submissions for the 2015 8-hour ozone NAAQS concerning considerations for identifying downwind areas that may have problems maintaining the standard at Step 1 of the 4-step interstate transport framework. *See* Considerations for Identifying Maintenance Receptors for Use in Clean Air Act Section 110(a)(2)(D)(i)(I) Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards, October 19, 2018 ("October 2018 memorandum"), available in Docket No. EPA–HQ–OAR–2021–0663 or at https://www.epa.gov/airmarkets/memo-and-supplemental-information-regarding-interstate-transport-sips-2015-ozone-naaqs.
>
> The EPA does not propose to adopt the information or suggested analytical approaches in that memorandum in this proposed rule proposing FIPs. Potential alternative approaches would introduce unnecessary and substantial additional analytical burdens that could frustrate timely and efficient implementation of good neighbor obligations. In addition, the information supplied in that memorandum is now outdated due to several additional years of air quality monitoring data and updated modeling results. EPA's current approach to defining "maintenance" receptors has been upheld and continues to provide an appropriate approach to addressing the "interference with maintenance" prong of the Good Neighbor provision. *See EME Homer City*, 795 F.3d 118, 136–37; *Wisconsin,* 938 F.3d at 325–26. (Emphasis added)

- Air Plan Disapproval; Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin; Region 5 Interstate Transport Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standard. 87 Fed. Reg. 9,838, February 22, 2022.

87 Fed Reg at 20,067.

> The EPA recognizes that in 2018 it issued a memorandum indicating the potential for states to use a higher threshold at Step 2 in the development of their good neighbor SIP submissions where it could be technically justified. The August 2018 memorandum stated that "it may be reasonable and appropriate" for states to rely on an alternative 1 ppb threshold at Step 2.127 (The memorandum also indicated that any higher alternative threshold, such as 2 ppb, would likely not be appropriate.) Here, the EPA proposes to fulfill its role under CAA section 110(c) in promulgating FIPs to directly implement good neighbor requirements, and in this role, the EPA notes that it is authorized to exercise discretion in making policy determinations such as the appropriateness of a particular contribution threshold that would otherwise have been exercised by states. Further, as the EPA has explained in several notices proposing transport SIP disapprovals, see, e.g., 87 FR 9498 and 87 FR 9510 (Feb. 22, 2022), its experience since the issuance of the August 2018 memorandum regarding use of alternative thresholds leads the Agency to now believe it may not be appropriate to continue to attempt to recognize alternative contribution thresholds at Step 2, either in the context of SIPs or FIPs. (Emphasis added)

87 Fed Reg at 20,073.

In conclusion, EPA's 2018 flexibility memos have become such an integral part of the development of Good Neighbor SIPs that EPA is legally and ethically obligated to allow states and stakeholders the opportunity to meaningfully assess EPA's new regulatory perspectives and actions.

7. EPA should make it clear that its action under the CAA Good Neighbor Provisions effectively precludes action under Section 126 of the CAA.

In this proposed rule, EPA attempts to create a cleared path for subsequent §126 petitions related the 2015 ozone NAAQS good neighbor remedy as an effort to maintain a lawless opinion that the agency's actions (in this case the proposed FIP) to remedy good neighbor SIP obligations are always open for review pursuant to CAA §126. EPA is improperly attempting to assert the agency and downwind states have a continuously open door to seek additional emissions reductions from upwind states related to SIP/FIP development, after a complete remedy has been promulgated. EPA places its overreach narrative in a footnote:

> This is not to discount the potential effectiveness of these or other NOx mitigation strategies outside the context of this rulemaking to address regional ozone transport on a nationwide basis. States and local jurisdictions may find such measures particularly impactful or necessary in the context of local attainment planning or other unique circumstances. Further, while the EPA proposes this rule as a complete remedy to the problem of interstate transport for the 2015 ozone NAAQS, the EPA has in the past recognized that circumstances may arise after the promulgation of remedies under CAA

> section 110(a)(2)(D)(i)(I) in which the exercise of further remedial authority against specific stationary sources or groups of sources under CAA section 126 may be warranted. *See* Response to Clean Air Act Section 126(b) Petition From Delaware and Maryland, 83 FR 50444, 50453–54 (Oct. 5, 2018).

87 Fed. Reg. 20,095, f/n. 203. Upon a review of the referenced October 5, 2018, Federal Register, one is directed to the D.C. Circuit discussion of EPA implementation of §126 relevant to the 1997 ozone NAAQS, as appealed by Pennsylvania. *Appalachian Power v. EPA*, 249 F.3d 1032, 1067 (D.C. Cir. May 15, 2001). Pennsylvania sought appeal of EPA's action because the June 2000 NOx SIP call failed to list all the downwind states Pennsylvania asserted were significantly contributing to nonattainment. The Court noted "The problems arise from two circumstances, Pennsylvania at the time of the rulemaking appeared to be on the verge of being reclassified as attainment for the 1-hour standard, but also on the verge of being subject to the more stringent 8-hour rule." *Id*. EPA's response was that even had it assessed each state listed by Pennsylvania, the scope of its rule would not have changed. The Court denied the Pennsylvania appeal by stating, "It seems reasonable for EPA to refrain from investigating whether upwind emissions "significantly contribute" to nonattainment that, according to evidently undisputed data, does not exist, rather than to march forward on the basis of a formal classification that it believed to be outdated and was in the process of revoking." *Id*. The Court offers to Pennsylvania the following olive branch of the option for a new §126 petition due to the changed law:

> Developments in the Pittsburgh area after the close of the present rulemaking record of course cannot be a basis for faulting EPA's decision on that record. . . . Because the EPA policy in May 1999 was to supplant the 1-hour standard with the 8-hour standard as soon as an area met the 1-hour standard, it made sense to decline all petitions seeking findings of interference with maintaining the 1-hour standard, there was then every reason to suppose that such findings will almost immediately become obsolete. Once again, Pennsylvania can respond to later developments by submitting another §126 petition.

Id. The "later developments" referenced by the Court were changes in the ambient air quality standards and data that would inform of the emissions reductions required in response to the changed law.

EPA's theory about new data and information serving as cause for renewal of a §126 petition that has already been acted upon is not supported by the *Appalachian Power v. EPA* case. EPA misapplies the case as illustrated with the following statement:

> If a petitioner produces new data or different information showing a different level of contribution or other facts not considered when the SIP or FIP was promulgated, compliance with a SIP or FIP may not be determinative regarding whether the upwind sources would emit in violation of the prohibition of CAA section 110(a)(2)(D)(i)(I). See 64 FR 28274 n.15; 71 FR 25335 n. 6; *Appalachian Power*, 249 F.3d at 1067 (later

> development can be provide the basis for another CAA section 126(b) petition). Thus, in circumstances where a SIP or FIP addressing CAA section 110(a)(2)(D)(i)(I) is being implemented, the EPA will evaluate the CAA section 126(b) petition to determine if it raises new information that merits further consideration.

83 Fed. Reg. at 50,453.

The CAA establishes a path for development of all state implementation plans after a new NAAQS is promulgated. States are required to develop implementation plans within three years after promulgation of a national ambient air quality standard pursuant to CAA §110(a)(1). Each plan is required to meet the criteria for enforceable emissions limitations, operations of devices, and enforcement of such measures against all sources. CAA §110(a)(2)(A)-(C). The "Good Neighbor" provision at CAA§110(a)(2)(D) requires states to develop their plans to prohibit emissions from contributing significantly to nonattainment in, or interference with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard. To manage interstate pollution abatement, the CAA §126(b) provides a state may petition for a finding that any major source or group of sources emits or would emit any air pollutant in violation of 110(a)(2)(D)(ii), the Good Neighbor provision. Therefore, downwind states have the statutory option to petition for a finding that an upwind state or group of states has not properly designed its plan for managing source impact on significant contribution to nonattainment. Implicit in the CAA plan development process is timely implementation within 3 years of a new NAAQS. EPA's suggestion that the NAAQS implementation plan administrative process is an open docket, subject to subsequent "developments" other than change in the underlying law governing the applicable NAAQS is not supported by administrative law, the CAA, or relevant case law. MOG raises significant concerns for the agency's statutory misinterpretation that the 126 process is open ended for each NAAQS after it has been determined by EPA that a full remedy has been promulgated.

EPA's proposal contains a statement that addresses the relationship between an action involving the Good Neighbor Provisions of Section 110 of the CAA and an action involving the provisions of Section 126 of the CAA. 87 Fed. Reg. 20,095 f/n 203. While EPA's statement refers generally to its Response to CAA Section 126(b) Petition from Delaware and Maryland, 83 Fed. Reg. 50,444, 50,433-54 (October 5, 2018), it stops short of specifically stating the limited basis upon which a 126 petition might be appropriate to address interstate transport issues related to the 2015 ozone NAAQS. If EPA or a state has adopted adequate provisions that eliminate any significant contribution to nonattainment or interference with maintenance of the NAAQS in downwind states, there are no grounds upon which a Section 126(b) petition could be granted. *Id.* It is only in the case of a petitioner producing new data or information not considered pursuant to a CAA Section 110 SIP or FIP action, that a Section 126(b) petition could be considered. *Id.* In such an event, EPA would be obligated to evaluate the petition to determine if it raises new information that merits further review. *Id.*

We urge EPA to make it clear that action under Section 110 approving a FIP or state SIP effectively prohibits Section 126(b) petitions addressing the same NAAQS.

II. Step 1. Identify Downwind Problem Monitors.

The next section of these comments will address factors related to Step 1 of EPA's four-step process to satisfy CAA §110(a)(2)(D)(i)(I) (87 Fed. Reg. 20,054) which EPA describes as follows:

> [I]dentify downwind [air-quality] receptors expected to have problems attaining or maintaining [NAAQS.

8. The problem monitors in Connecticut, Wisconsin, and Illinois are not properly addressed by EPA's air quality modeling since they are located at the interface between land and water.

EPA's ozone attainment modeling guidance states that:

> [t]he most important factor to consider when establishing grid cell size is model response to emissions controls. Analysis of ambient data, sensitivity modeling, and past modeling results can be used to evaluate the expected response to emissions controls at various horizontal resolutions for both ozone and $PM_{2.5}$ and regional haze. If model response is expected to be different (and presumably more accurate) at higher resolution, then higher resolution modeling should be considered. If model response is expected to be similar at both high and low(er) resolution, then high resolution modeling may not be necessary. The use of grid resolution finer than 12 km would generally be more appropriate for areas with a combination of complex meteorology, strong gradients in emissions sources, and/or land-water interfaces in or near the nonattainment area(s). (emphasis added)

EPA's modeling in support of the proposed disapprovals simulated a national domain using a 12km grid resolution domain wide. While this makes running a national, regional simulation easier from a technical perspective, it neglects the important issue of the complex meteorology and/or land-water interfaces in or near the nonattainment or maintenance monitors of interest. Indeed, EPA's choice of a 12 km grid is an arbitrary choice in contravention of its own guidance when modeling Illinois, Wisconsin, and Connecticut monitors because these monitors are at land-water interfaces.

Photochemical modeling along coastlines is complex for two reasons. First, the temperature gradients along land/water interfaces can lead to localized on-shore/off-shore flows; and secondly, the photochemical model formulation spreads the emissions in a grid cell throughout the full grid volume of the cell.

Figure 1 and Figure 2 present two unique areas in the eastern U.S. that are challenged by these complex meteorologic issues at land-water interfaces. For each monitor associated with this proposed rule and located in Connecticut along the Long Island Sound (Figure 1) and in Wisconsin and Illinois along the shore of Lake Michigan (Figure 2), EPA's published model performance evaluation (MPE) metrics for ozone have been reviewed on a day specific basis.

Figure 1. Long Island Sound shoreline monitors located on land/water interface.

Figure 2. Lake Michigan shoreline monitors located on land/water interface.

Studies indicate that air quality forecast models typically predict large summertime ozone abundances over water relative to land and that meteorology around Lake Michigan and the Long Island Sound is distinctly unique; both shortcomings warrant individualized attention and a finer grid resolution to best explore actual conditions.

The 3x3 neighborhood of grid cells used in determining the design values of the relative response factor (RRF) at land-water interface monitors extends into the noted water bodies. Under current guidance, the top ten modeled days within this 3x3 matrix are used in determining this RRF for each monitor with any cell identified as 50 percent or more water, except for cells including monitors, which are omitted from the calculations.

When the individual days selected for RRF calculation are reviewed at many of these monitors, it is seen that the performance of the model to replicate observed concentrations are outside of comparable acceptable ranges.

Table 1 below provides a list of top 10 days at the Kenosha monitor in Wisconsin and comparisons of daily modeled maximum daily average 8-hour ozone concentrations (highlighted in green) and observations on the same date in 2016. These are the dates selected in EPA's modeling to represent highest modeled days used in estimating future year design values. As can be seen in Table 1, several days were selected by EPA for RRF calculation that have modeled ozone concentrations that fall outside of normally acceptable normalized bias (NBias) boundaries (±15%), either because of over (positive bias) or under (negative bias) predictions compared to observed concentrations on those days. For the Kenosha monitor, four of the ten selected days fall outside of the ±15% bias metric (highlighted in orange in the table below).

Monitor 550590019 **Kenosha County, Wisconsin** **Chiwaukee Prairie Stateline**

Top 10 RRF - Base Dates (Modeled) - No Water - 3x3

Order	Date	Obs	Base DV	Future DV	RRF	NBias (%)
1	20160804	90.25	82.86	78.65	0.9492	-8.19
2	20160727	71.71	77.14	69.79	0.9048	7.57
3	20160615	80.50	73.45	69.34	0.9440	-8.76
4	20160707	58.00	72.30	68.05	0.9413	24.65
5	20160625	77.38	71.67	66.24	0.9243	-7.38
6	20160810	63.00	69.13	63.98	0.9256	9.72
7	20160720	80.75	68.53	66.27	0.9670	-15.13
8	20160619	83.13	67.97	62.10	0.9136	-18.23
9	20160723	56.75	66.95	62.41	0.9322	17.97
10	20160722	67.63	66.19	61.94	0.9357	-2.13
	Average		**71.62**	**66.88**	**0.9338**	

Table 1. List of top 10 days at the Kenosha monitor (550590019) in Wisconsin used in RRF calculations.

The LMOS 2017 study[24] (which is attached to these comments and identified as Exhibit B) also shows that for Lake Michigan coastal monitors the air quality model even at a 4 km resolution does not simulate the proper timing and structure of the land/lake breeze or the inland penetration of elevated ozone concentrations. A review of this LMOS study[25] states "To reproduce the timing and magnitude of the ozone time series at coastal monitors, ozone production over the lake must be correctly simulated; furthermore, details of the lake breeze must be accurate—timing, horizontal extent, and vertical structure." Based on recommendations from the LMOS 2017 study research team, a horizontal resolution of at most 1.3 km is required to reasonably resolve the complex meteorology of the air/water interface for the great lakes and coastal ocean areas. The LMOS 2017 Study researchers believe that a 1.3 km grid spacing will assist in the resolution of the large ozone concentration gradients that often occur along the shoreline as well as the inland penetration of the lake breeze circulation.

Similar results are seen at the example Fairfield, Connecticut nonattainment monitor (

Table 2) where again four of the ten days are outside of the ±15% normalized bias range; including the top modeled day at the receptor (modeled value of 91.64 ppb and an observed value of 67.13 ppb).

Monitor 090013007 Fairfield County, Connecticut Stratford

Top 10 RRF – Base Dates (Modeled) – No Water – 3x3

Order	Date	Obs	Base DV	Future DV	RRF	Nbias (%)
1	20160725	67.13	91.64	82.52	0.9005	36.52
2	20160526	76.25	87.17	82.02	0.9409	14.32
3	20160706	75.25	84.54	76.36	0.9032	12.35
4	20160718	83.13	83.80	76.74	0.9158	0.80
5	20160528	70.00	81.65	73.98	0.9060	16.64
6	20160813	69.88	80.82	68.29	0.8450	15.66
7	20160722	96.75	80.46	72.51	0.9012	-16.83
8	20160717	79.00	79.83	70.04	0.8774	1.06
9	20160831	75.13	78.44	74.83	0.9540	4.41
10	20160824	76.50	77.48	70.96	0.9159	1.28
	Average		**82.58**	**74.83**	**0.9060**	

Table 2. List of top 10 days at the Fairfield monitor (90013007) in Connecticut used in RRF calculations.

As these examples show, days where modeled ozone was predicted at concentrations

[24] https://www.ladco.org/wp-content/uploads/Research/LMOS2017/LMOS_LADCO_report_revision_apr2019_final.pdf

[25] Stanier, C. O., & et al. (2021, November). Overview of the Lake Michigan Ozone Study 2017. BAMS, 19.

differing up to ± 24 ppb are being used to estimate future year ozone concentrations and to make determinations of nonattainment, maintenance, and significant contribution from upwind sources.

Furthermore, to adequately capture the inland penetration of the lake breeze, the LMOS report also cites the need for accurate Lake Michigan water temperatures and correct model physics options. EPA's use of the Pleim-Xiu Land Service Model (LSM) [26] does not adequately capture the lake breeze inland penetration. A review of wind vector observations (from the Meteorological Assimilation Data Ingest System (MADIS) network[27]) compared to modeled wind vectors on RRF and significantly contributing days at nonattainment monitors highlights the differences in wind direction and speed during many hours of these predicted high ozone episodes.

On many days with relatively simple meteorology, EPA-developed wind fields using the Weather Research and Forecasting (WRF) Model agree with the MADIS observed winds. However, the modeled winds have strong disagreement with the observed meteorology on June 15, July 7, July 27 and August 4, 2016, the four days when the CAMx model predicted the highest ozone concentrations and are thus used in estimating RRFs and future year ozone design values. The following presents an example on August 4, 2016, the day with the highest model estimated MDA8 ozone concentrations at the Kenosha, Wisconsin monitor.

In Figure 3 through Figure 7 below, the black wind vectors are the wind fields used in the CAMx model. For clarity only every third grid cell is presented. The red vectors are the hourly observed wind vectors from the MADIS archive. The hourly results from 1200 CDT through 1600 CDT are presented in these Figures. The observations clearly show a broad persistent land to lake flow long the Wisconsin shoreline while the model shows a persistent lake to land flow in this same region during this same period. For this timeframe, when the model is estimating the highest ozone for the ozone season at this receptor, the model has the winds flowing from the lake to the shore while the observations are winds flowing from the shore to the lake.

Each of Figures 3 through 7 demonstrate that observed winds (red arrows) are seen moving from land to lake along the western shoreline of Lake Michigan, typically associated with clearing events and lower ozone in areas north of Chicago and into southeastern Wisconsin. In contrast, the model (black arrows) shows a lake to land flow, typically associated with higher model predicted ozone concentrations due to the higher reactive photochemistry over water bodies.

These large differences in observed and modeled wind directions are altering the source/receptor relationships (e.g., determining which sources are “upwind”) of the Wisconsin and Illinois monitors. As a result, the model cannot accurately reproduce the chemical processes involved with ozone formation. The erroneous modeled meteorological conditions fundamentally change the ozone formation chemistry and modeled source contributions as the chemical transport model predicts more emissions coming from the Chicago urban area than likely the case consistent with the observed wind fields. When the model is having difficulty resolving fundamental flow patterns in this region with this grid size resolution, EPA needs to reconsider the merit of using the model with this configuration to determine nonattainment status as well as linked significant

[26] EPA-HQ-OAR-2021-0668-0099
[27] https://madis.ncep.noaa.gov/

contributors at receptors in this region under Step 2.

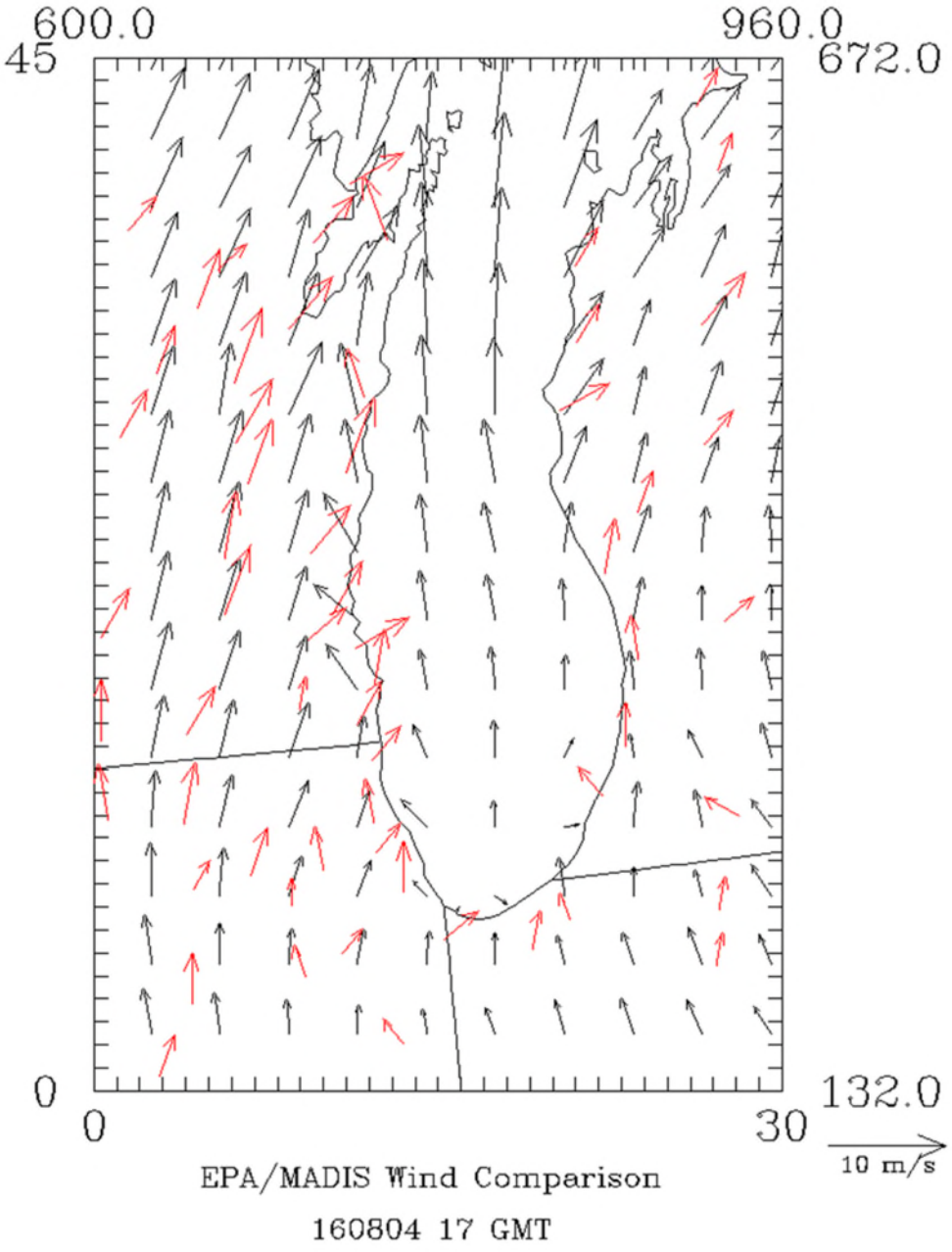


Figure 3. Model estimated (black) and observed (red) winds in the Lake Michigan area at 1200 CDT on August 4, 2016.

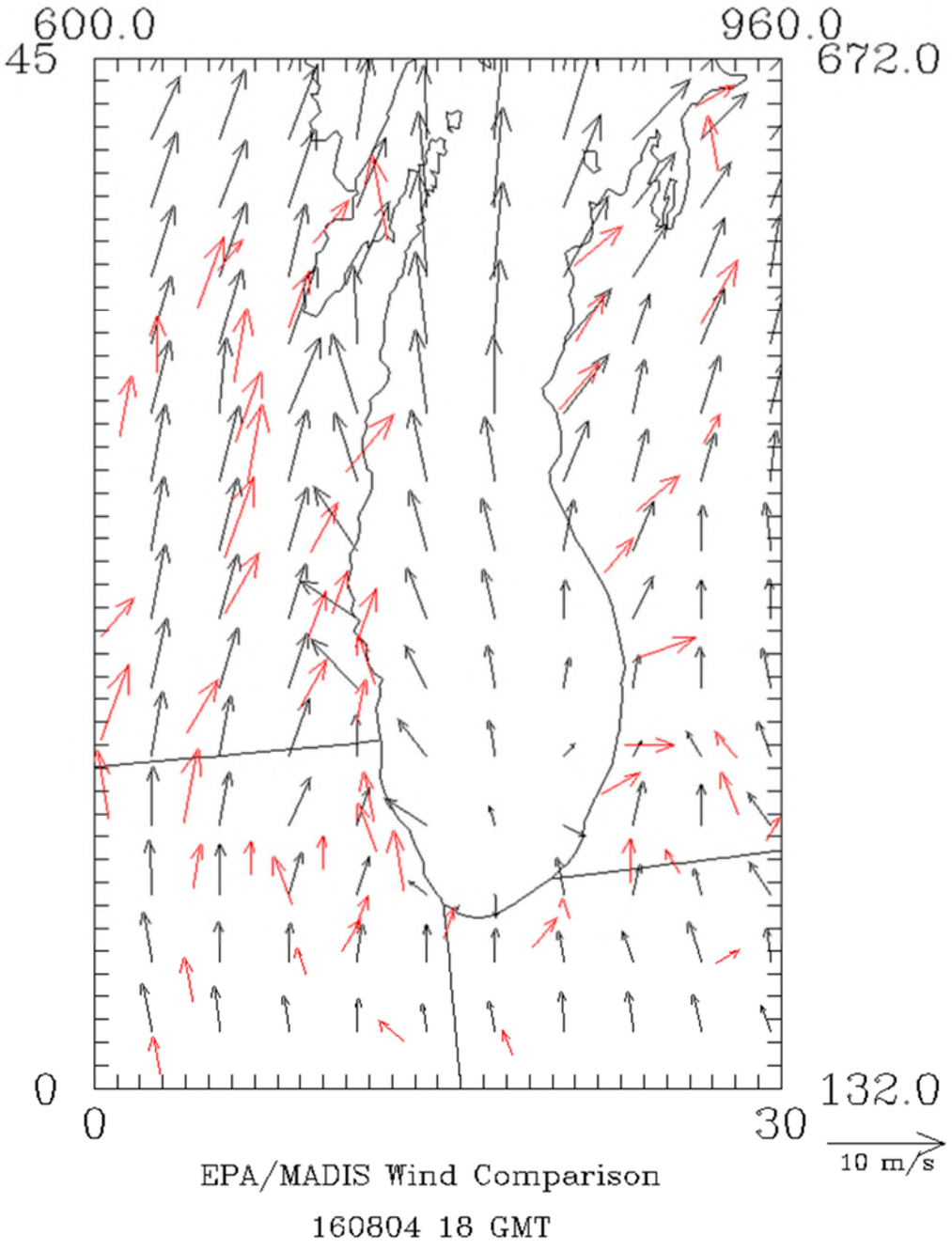


Figure 4. Model estimated (black) and observed (red) winds in the Lake Michigan area at 1300 CDT on August 4, 2016.

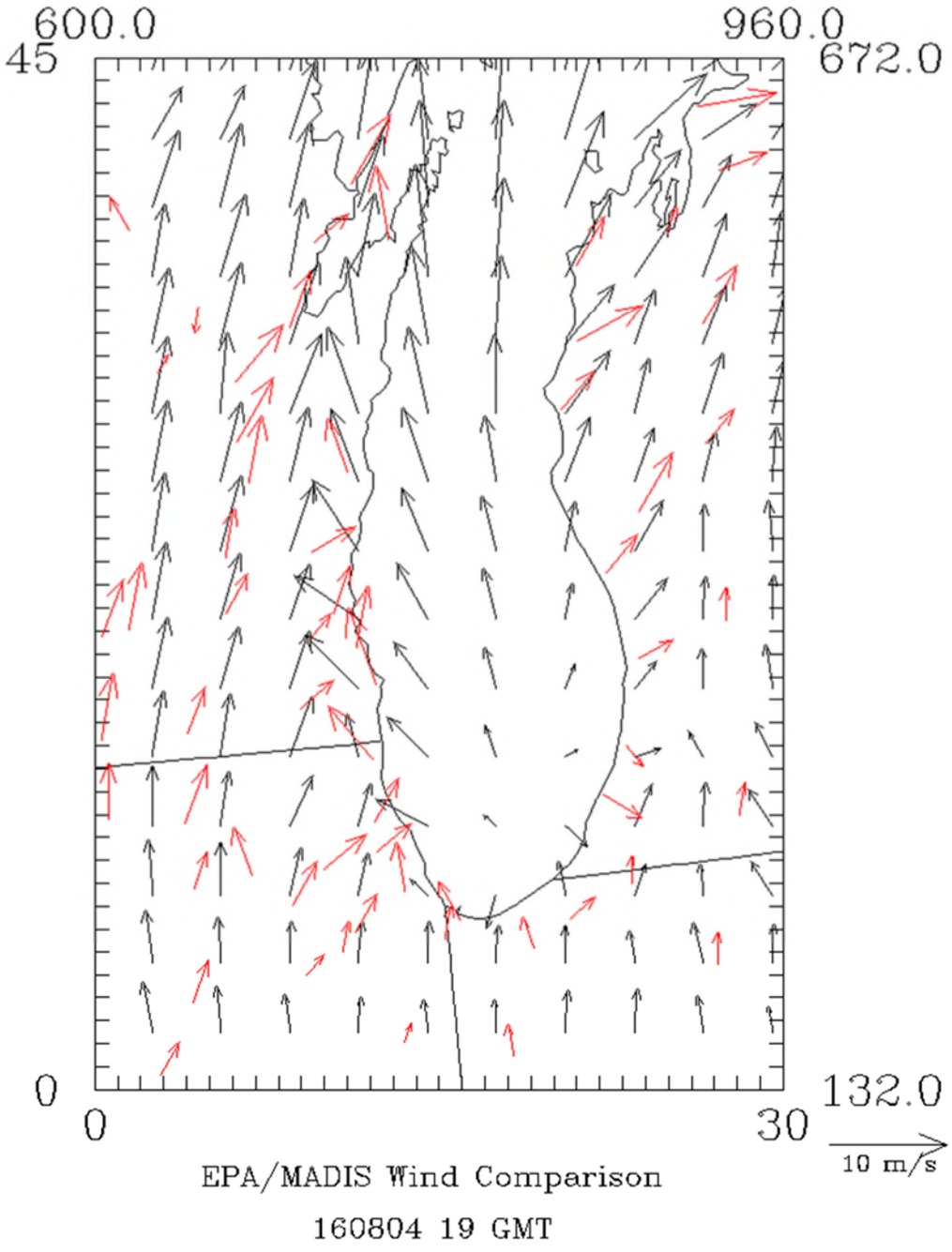


Figure 5. Model estimated (black) and observed (red) winds in the Lake Michigan area at 1400 CDT on August 4, 2016.

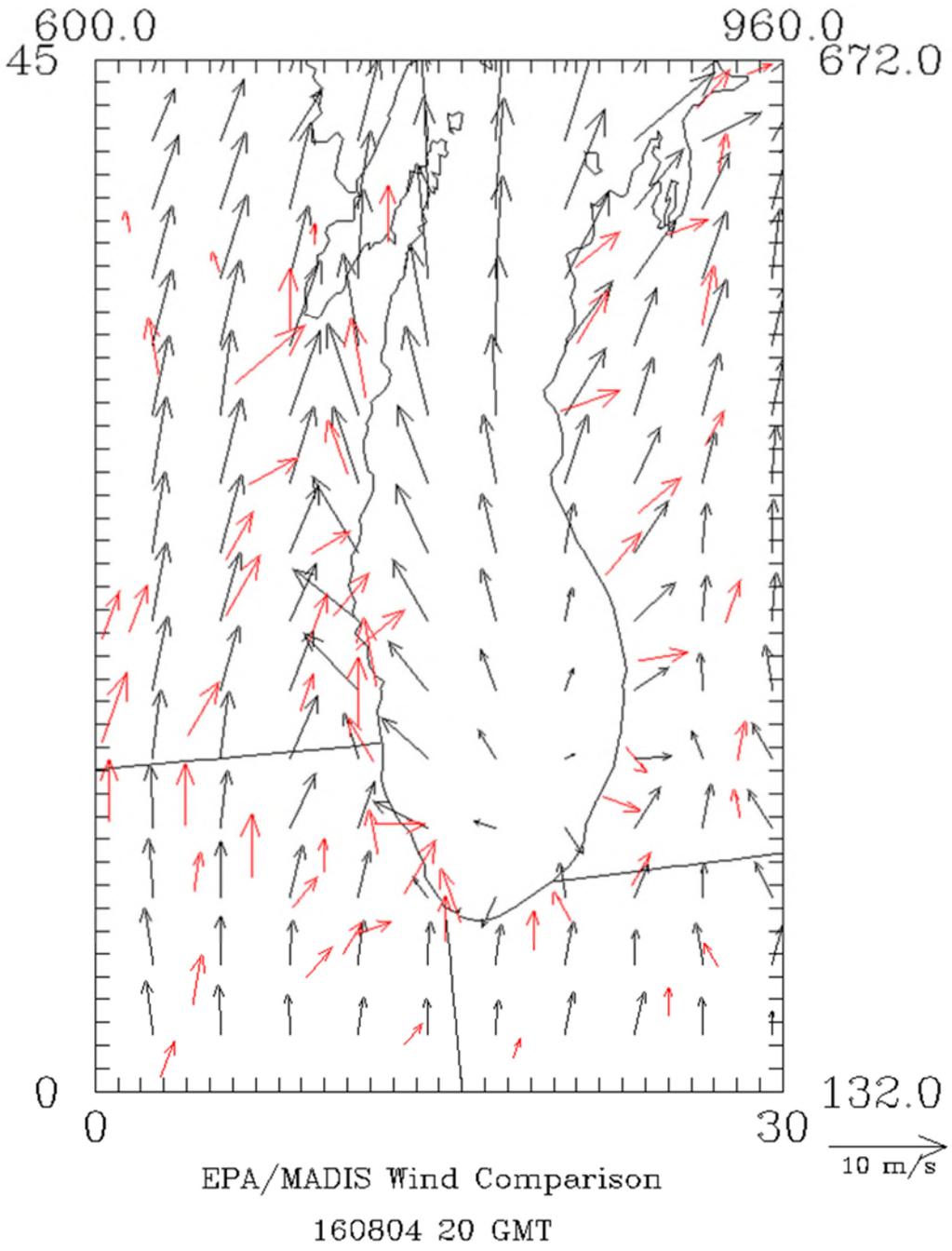


Figure 6. Model estimated (black) and observed (red) winds in the Lake Michigan area at 1500 CDT on August 4, 2016.

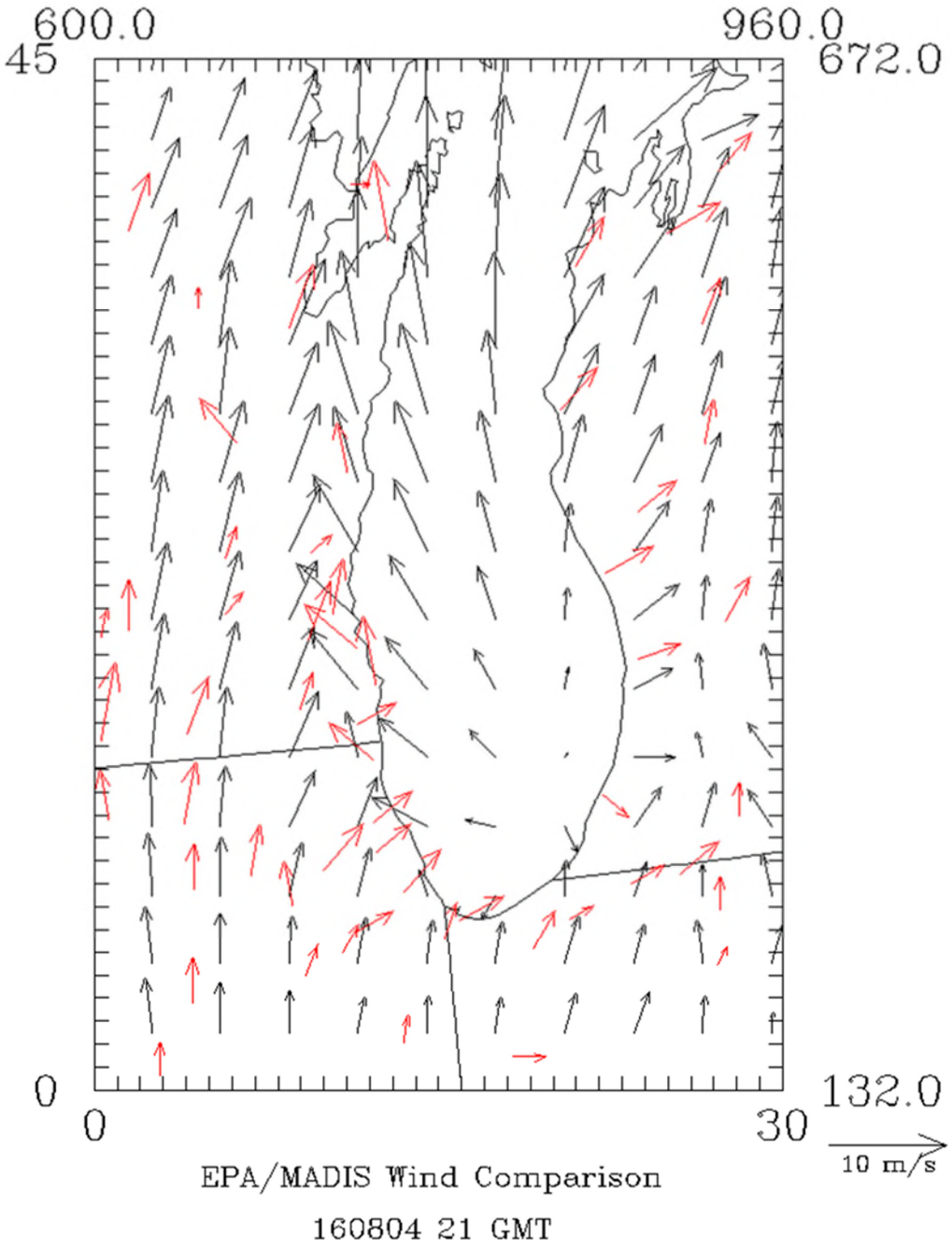


Figure 7. Model estimated (black) and observed (red) winds in the Lake Michigan area at 1600 CDT on August 4, 2016.

EPA must consider finer grid resolution modeling over the Lake Michigan domain to adequately capture ozone formation and significant contribution at receptors located on complex land-water interfaces, because model evaluation shows that the model fails to adequately characterize ozone production at these monitors. Absent a wholesale revision of EPA's modeling protocol, MOG believes that EPA's use of modeling with poor performance at critical monitors is an arbitrary and capricious action which mandates that the proposed rule not be finalized as

proposed.

9. EPA is obligated to address VOC emissions as a critical factor that is influencing ozone nonattainment/maintenance monitors in Wisconsin, Illinois and Connecticut.

As this comment will demonstrate, VOC emissions are a factor that is influencing ozone nonattainment and maintenance monitors in Wisconsin, Illinois, and Connecticut.

In addition to grid size resolution and complex meteorology issues, modeling performed by EPA[28] and the LMOS 2017 study (Exhibit B) both showed a negative bias in predicted ozone concentrations in the Lake Michigan region. LMOS 2017 study researchers have experimented with increasing anthropogenic VOC emissions and decreasing anthropogenic NOx emissions. These emission changes improved air quality model performance reducing the negative bias. VOC speciation and spatio-temporal release patterns should also be reviewed. This evaluation by the LMOS 2017 research scientists indicate there are significant errors in the quantity and speciation of the VOC/NOx emissions used in the EPA's air quality modeling platform to characterize Step 1 nonattainment as well as state contribution to ozone in Step 2 of EPA's analyses linking these states to critical nonattainment monitors.

Several downwind nonattainment monitors in urban areas around Lake Michigan recently have been shown to be largely unresponsive to ozone reduction strategies consisting of regional interstate NOx control and that high ozone days in the region were predominantly VOC-limited in nature. This was demonstrated in multiple ozone episodes extensively evaluated in the Lake Michigan Air Directors Consortium (LADCO) Lake Michigan Ozone Study (LMOS) 2017 study[29] where ozone precursor measurements indicated relative increases in VOC concentrations with increases in ozone and where biogenic VOC increases outpaced those of anthropogenic VOC.

In contrast to the peer reviewed research resulting from the 2017 LMOS data collection effort, EPA recently documented its support for additional NOx controls in stating that its "review of the portion of the ozone contribution attributable to anthropogenic NOX emissions versus VOC emissions from each linked upwind state leads the Agency to conclude that the vast majority of the downwind air quality areas addressed by the proposed rule under are primarily NOX-limited, rather than VOC-limited."[30] However, the current situation is that the modeling as conducted does not accurately characterize ozone levels on high ozone days, underpredicting by 10 + ppb, which is a huge error. Other studies indicate that, to better match actual conditions, the model needs less NOx and higher windspeeds at lower levels. The model is therefore demonstrating that less NOx means more ozone and higher ozone concentrations. That further means that, proportionally, the attribution of ozone to out of state NOx predicts a higher impact than is occurring.

The modeled VOC and NOx emission tracers in EPA's Anthropogenic Precursor

[28] EPA-HQ-OAR-2021-0668-0099.
[29] https://www.ladco.org/wp-content/uploads/Research/LMOS2017/LMOS_LADCO_report_revision_apr2019_final.pdf
[30] 87 Fed. Reg. 20,076.

Culpability Assessment (APCA) modeling can give a general indication of the VOC/NOx sensitivity, but EPA assigning definitive numerical values to that sensitivity provides inaccurate projections, especially using APCA that is known to have a bias toward attributing ozone to NOx emitting anthropogenic sources under VOC sensitive conditions. As documented in the CAMx v 7.10 User's Guide[31], "when ozone formation is due to biogenic VOC and anthropogenic NOx under VOC-limited conditions (a situation where OSAT would attribute ozone production to biogenic VOC), APCA attributes ozone production to the anthropogenic NOx present. Using APCA instead of OSAT results in more ozone formation attributed to anthropogenic NOx sources and less ozone formation attributed to biogenic VOC sources." Here, it is believed that as applied in this case (with biogenic emissions as an uncontrollable source group), EPA has overestimated the efficacy of NOx controls on these receptors as modeled results have a bias toward attributing more ozone formed to NOx emissions than VOC emissions.

Furthermore, an independent review of EPA's own NOx and VOC contributions challenges the Agency's statement that "[o]ur analysis of the ozone contribution from upwind states subject to regulation under this proposed rule demonstrates that the vast majority of the downwind air quality areas are NOX-limited, rather than VOC-limited.." [32] This statement is based on all anthropogenic NOx and VOC emissions from all upwind states and is defined as having NOx emissions contribute to 80% or more of the ozone concentrations modeled at each receptor[33]. EPA further goes on to state that "[t]his review of the portion of the ozone contribution attributable to anthropogenic NOX emissions versus VOC emissions from each linked upwind state leads the Agency to conclude that the vast majority of the downwind air quality areas addressed by the proposed rule under are primarily NOX-limited, rather than VOC-limited."[34]

[31] https://camx-wp.azurewebsites.net/Files/CAMxUsersGuide_v7.10.pdf, page 177.
[32] 87 Fed. Reg. 20,053.
[33] 87 Fed. Reg. 20,076.
[34] Id.

The review of EPA's modeled NOx and VOC contributions, by upwind state, focusing on the future year modeled days used in each receptor's Step 2 linkage calculation provides a slightly different picture for monitors around Lake Michigan and the Long Island Sound. As demonstrated in

Table **3**, of the top future year modeled days impacting significant contribution calculations at the Kenosha, Wisconsin monitor (550590019), half of the days are shown to have NOx emission contributions from Illinois below the 80% threshold noted by EPA in determining NOx-limited regions. This is an indicator that on those days, and from anthropogenic sources from those states, VOC controls may demonstrate meaningful impact on ozone concentration reductions at these receptors.

		2023 O3	O3N / O3N+O3V Contribution							
Top Day	**Date**	**(ppb)**	**All**	**IL**	**IN**	**MI**	**MO**	**OH**	**TX**	**WI**
1	08/04/23	74.111	79.6%	71.4%	84.1%	82.8%	90.6%	88.5%	86.1%	76.1%
2	07/27/23	71.003	81.4%	77.0%	81.3%	85.9%	-	-	100.0%	89.5%
3	06/15/23	68.451	83.0%	79.9%	84.8%	93.3%	91.4%	70.7%	88.1%	81.1%
4	08/10/23	63.983	85.9%	82.4%	89.0%	92.6%	96.7%	89.1%	95.3%	87.4%
5	07/20/23	62.702	81.1%	76.5%	83.0%	78.0%	95.9%	68.0%	93.3%	82.3%
6	07/23/23	62.407	84.0%	81.8%	83.9%	91.5%	83.7%	-	87.9%	83.2%
7	06/19/23	62.103	85.2%	80.1%	83.2%	85.3%	97.1%	92.0%	88.1%	77.6%
8	07/22/23	61.935	85.5%	78.4%	85.6%	93.3%	88.1%	-	90.6%	86.5%
9	06/25/23	60.795	85.5%	83.6%	86.6%	83.7%	95.1%	83.7%	87.5%	84.2%
10	07/07/23	60.415	87.5%	82.3%	93.4%	94.9%	92.6%	-	92.3%	86.2%

Table 3. Modeled ozone contributions to Kenosha, Wisconsin monitor (550590019) by percent of emissions from anthropogenic NOx (O3N) compared to emissions from anthropogenic NOx and VOC (O3N+O3V). Yellow cells indicate contributions of anthropogenic VOC emissions greater than EPA identified "NOx-limited" areas.

Comparable findings are shown in Table 4 and Table 5 at the nonattainment Fairfield, Connecticut monitor (090010017) and maintenance monitor in Cook County, Illinois (17031001) also indicating that reductions of anthropogenic VOC emissions may generate meaningful ozone concentration reductions at this receptor.

		2023 O3	O3N / O3N+O3V Contribution						
Top Day	Date	(ppb)	All	CT	MI	NJ	NY	OH	PA
1	05/26/23	90.181	73.9%	72.0%	85.5%	70.7%	63.6%	83.6%	85.4%
2	07/06/23	88.484	88.8%	90.6%	95.0%	85.4%	85.3%	92.1%	91.2%
3	07/25/23	84.580	87.5%	89.8%	94.5%	86.3%	80.9%	92.9%	92.7%
4	07/28/23	80.901	88.3%	90.4%	97.9%	82.8%	86.2%	92.2%	96.1%
5	08/24/23	80.835	81.7%	90.8%	94.8%	73.3%	74.6%	92.2%	91.6%
6	07/21/23	80.710	82.2%	86.4%	95.3%	78.0%	77.0%	90.0%	92.8%
7	08/31/23	80.112	73.0%	80.3%	87.1%	68.0%	63.8%	78.5%	87.4%
8	07/18/23	79.777	86.8%	90.8%	87.9%	84.8%	76.8%	94.2%	93.0%
9	07/17/23	76.624	93.2%	93.8%	95.9%	90.3%	91.1%	97.2%	96.5%
10	05/25/23	75.368	79.4%	74.2%	91.7%	72.4%	67.7%	88.8%	93.4%

Table 4. Modeled ozone contributions to Fairfield, Connecticut monitor (090010017) by percent of emissions from anthropogenic NOx (O3N) compared to emissions from anthropogenic NOx and VOC (O3). Yellow cells indicate contributions of anthropogenic VOC emissions greater than EPA identified "NOx-limited" areas.

		2023 O3	O3N / O3N+O3V Contribution						
Top Day	Date	(ppb)	All	IL	IN	MI	OH	TX	WI
1	07/25/16	70.922	82.4%	81.2%	83.4%	100.0%	-	72.7%	84.1%
2	07/18/16	70.682	69.4%	64.3%	75.6%	-	-	85.9%	67.1%
3	07/19/16	70.668	79.9%	76.7%	83.7%	90.5%	-	80.5%	89.2%
4	08/10/16	67.487	79.4%	70.0%	82.4%	90.4%	86.4%	90.3%	90.6%
5	07/26/16	66.803	80.8%	72.7%	84.0%	90.7%	-	-	90.8%
6	07/23/16	63.295	84.9%	81.2%	84.0%	66.7%	-	89.7%	85.2%
7	08/03/16	61.342	88.8%	84.0%	90.9%	90.4%	92.3%	94.2%	93.8%
8	06/18/16	59.494	86.7%	72.8%	89.4%	90.1%	91.0%	90.9%	89.5%
9	06/03/16	58.730	71.5%	63.2%	73.6%	58.8%	-	74.5%	78.0%
10	08/04/16	58.241	95.0%	92.5%	96.0%	94.7%	97.1%	96.4%	94.9%

Table 5. Modeled ozone contributions to Cook, Illinois monitor (170310001) by percent of emissions from anthropogenic NOx (O3N) compared to emissions from anthropogenic NOx and VOC (O3). Yellow and green cells indicate contributions of anthropogenic VOC emissions greater than EPA identified "NOx-limited" areas.

Researchers at the University of Maryland (UMD) have also found in a study of chemical transport model results that by 2023, model predictions of ozone formed under VOC-limited conditions are substantial near the Long Island Sound and the Great Lakes. In a recent

presentation[35], they document a source apportionment simulation, conducted with CAMx/APCA on future-year 2023 to determine the major contributing sources and states to air quality within non-attainment areas. Their findings indicate that ozone production under VOC-limited conditions is important at coastal locations near Long Island Sound and the Great Lakes.

Figure 8 presents UMD's findings for model predictions of ozone formation under NOx-limited conditions excluding the influence of boundary and initial conditions from the modeling input. As can be seen in these figures, regions around Lake Michigan and the Long Island Sound demonstrate a significantly higher percentage of ozone formed by VOC (blue in color) compared to NOx than most of the eastern US. This observation is seen both on modeled days greater than 60 ppb and on the top ten days of the ozone season (days used in RRF and significant contribution calculations).

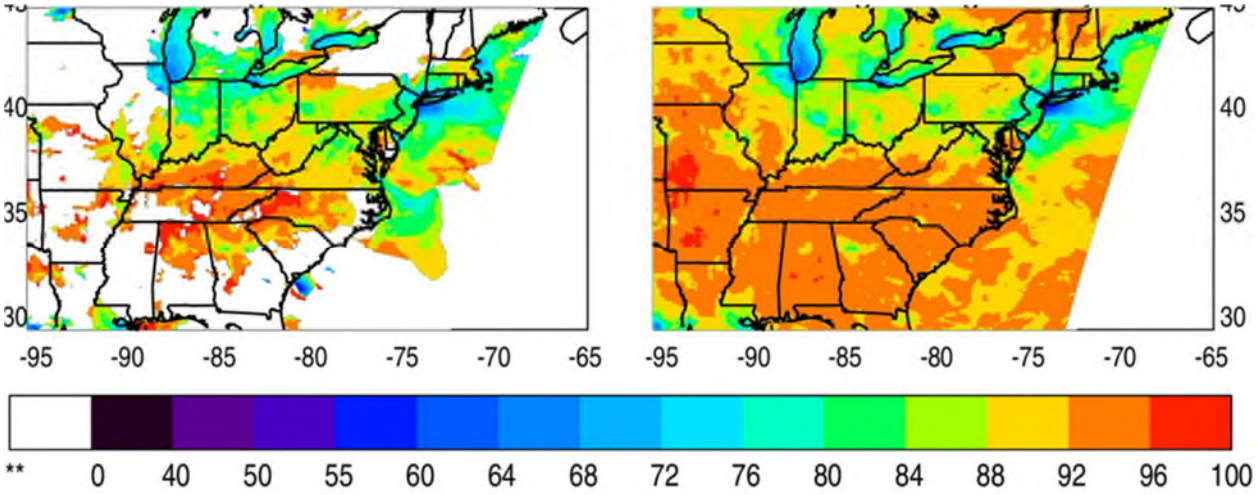


Figure 8. Percent of ozone formed under NOx-limited conditions excluding boundary and initial conditions on all days of MDA8 ozone > 60 ppb (left) and on top ten modeled days (right).

It is also noted that these estimates are a very conservatively high estimate of NOx limited conditions for these coastal areas. In addition to the previous comments highlighting that APCA is known to have a bias toward attributing ozone to NOx emitting anthropogenic sources under VOC sensitive conditions, the UMD analysis[36] footnotes that the APCA run used to generate the results presented in Figure 8 suggests that model configuration led to an underestimation of the contribution of anthropogenic sources to ozone formation, especially during periods of VOC-limited chemistry.

As a result of these findings, EPA is obligated to address the concern that has been expressed that VOC emissions are a factor that is influencing ozone nonattainment and maintenance monitors in Wisconsin, Illinois, and Connecticut.

[35] https://www.cmascenter.org/conference/2021/slides/allen-northeast-ambient-ozone-2021.pdf
[36] Id.

10. EPA's modeling and emission inventories must include on-the-books control programs and related permitted emission limits on ozone precursors that significantly impact air quality design values in 2023 and beyond.

Downwind states and regulated entities are on an ever-changing path to manage the complex implementation of emissions reductions programs to address local and regional impacts on ambient air quality. EPA's modeling of applicable emission control programs to assess attainment strategies supports the iterative nature of these programs. 87 Fed. Reg. 20054. Private sector and government investments in emission reduction strategies are considerable. As EPA engages in developing a transport rule, the agency has the burden and obligation to assess both upwind and downwind emissions reductions programs. The modeling relied upon for this proposal fails to provide a wholistic assessment of these emission control requirements.

The following examples are illustrative of the types of emission control programs that EPA must include in the emission inventory that modeled to support the transport proposal:

- The Illinois Environmental Protection Agency, as reflected on its website, is currently promulgating several new and older Cook County (ozone nonattainment) pending permit applications (Title V and Federally Enforceable State Operating Permits) to address gas-fired generators, to include emergency generators that had previously not been permitted or recently had been replaced. In certain instances, enforcement actions were initiated to bring the emergency and demand response generators within the regulatory program. EPA does not explain its assessment methodology for these types of emissions reductions relative to Good Neighbor SIP review and assessment. It appears that EPA did not take into account "The Illinois Energy Law, AKA, Climate and Equitable Jobs Act (CEJA)" as an applicable control program. This new law became effective in September 2021 and significantly limits the emissions of NOx from all existing gas fired EGUs in Illinois. Each unit >25 MW cannot exceed its 3-year (2018-2020) baseline actual emissions on a 12-month rolling basis beginning Oct. 1, 2021. Significantly, the law also requires all coal fired plants to retire no later than 2030.

- The New York State Department of Environmental Conservation ("NYDEC") has developed recent controls for simple cycle and regenerative combustion turbines ("SCCT"), or "peaking units" noted by the agency as being inefficient and approaching 50 years of age. Yet, while the agency has estimated controls will result in a 4.8 ppb significant air quality improvement to nonattainment monitors within the New York Metropolitan Nonattainment Area (NYMA), implementation is delayed until 2025 and beyond. NYDEC also recently has imposed NOx controls on distributed generation units, which as with peaking units, has been structured to delay implementation of controls beyond the applicable attainment date as part of the attainment plan proposed for approval by EPA. 87 Fed. Reg. 4,530 (Jan. 28, 2022).

- The Wisconsin Department of Natural Resources, Air Management Program has initiated a number of permitting actions in response to designation of Kenosha County as serious nonattainment. Many of those actions have been implemented as recently as the last 24 months imposing new NOx and VOC emission reductions. It is also noteworthy that some

regulated facilities are seeking relief from additional non-attainment reductions in advance of EPA approval of a partial redesignation of Kenosha County as attainment for the 2008 ozone standard. EPA does not explain its methodology for assessing these types of downwind emissions reduction strategies relative to review of Good Neighbor SIP.

- On April 7, 2022, EPA announced its intent to make findings that certain states have failed to submit regional haze implementation plans for the second planning period. The delay in implementing the Regional Haze program results in delay in emission reductions for SO2, NOx, and Particulate Matter. But for those plans submitted there are references to emissions reductions programs that must be reviewed and included in development of an emission inventory to ambient air quality assessments and modeling.

EPA's failure to have considered such programs that may have been adopted after 2021, and failure to provide an opportunity to address such programs as they are implemented exceeds the legal obligation to provide balance.

EPA's failure to have properly accounted for on-the-books controls is compounded by the fact that in proposing this FIP rule, EPA significantly relied on modeling performed in connection with the Revised CSAPR Update Rule[37] which did consider any emission reduction program adopted after 2019.[38]

EPA's attention also is directed to examples of state and federal air program elements that warrant review by EPA for impact on the efficacy of attainment strategies. The Wisconsin Department of Natural Resources regulations include Chapter NR 436 titled, "Emission Prohibition, Exceptions, Delayed Compliance Orders and Variances." NR 436.03(2)(c) provides,

> Emissions in excess of the emission limitation set in chs. NR 400 to 499 may be allowed in the following circumstances:
>
> (c) The use of emergency or reserve equipment needed for meeting high peak loads, testing of the equipment or other uses approved by the department. Such equipment must be specified in writing as emergency or reserve equipment by the department. Upon startup of this equipment notification must be given to the department which may or may not give approval for continued equipment use.

The Wisconsin regulation is just one example of an exemption that could impact attainment strategies. It is likely there are several other similar provisions in other state programs that warrant careful assessment by EPA.

Consideration of these upwind and downwind state control programs is critical not only to assure the correct modeling results in the future analytical year, but also to allow an assessment of the alignment of the emission reduction burdens of the upwind and downwind states. As discussed in detail throughout these comments, the *Wisconsin* court clarifies the need to align deadlines

[37] 87 Fed. Reg. at 20,083.
[38] 86 Fed. Reg. 23,075.

among upwind and downwind states. If a downwind state delays its emissions reduction program, then a similar delay in assessing significant contribution by the upwind state is the only method that delivers an "on par" attainment strategy among all states. *Wisconsin* at 315- 316. The *Wisconsin* remand explained, "In sum, under our decision in *North Carolina*, the Good Neighbor Provision calls for elimination of upwind States' significant contributions on *par* with the relevant downwind attainment deadlines." *Id.* (emphasis added). The *Wisconsin* remand summarizes that "it is the statutorily designed relationship between the Good Neighbor Provision's obligations for upwind states and the statutory attainment deadlines for downwind areas that generally calls for parallel timeframes." *Id.* at 316.

MOG strongly objects to EPA's failure to have considered such on-the-books programs. MOG urges EPA to remedy the ultimate imbalance among upwind and downwind states that shifts the burdens to upwind states when downwind programs have been unaccounted for or when those programs are delayed in implementation. EPA needs to provide an opportunity to address such programs' impact on delayed attainment and assessment of significant contribution.

11. The days selected by EPA for modeling and analysis are not appropriate.

EPA's analysis erroneously relies on air quality monitoring data that is known to have been influenced by exceptional events. Failure to have accounted for the impact of these exceptional events overstates the ozone design values for the problem monitors involved and the contribution of upwind states and results in over-control that is prohibited under the CAA.

CAA §319 (42 U.S. Code § 7619) requires that EPA promulgate regulations that remove the impact of air quality data that is affected by what is known as "exceptional events." The following statutory requirements are established in Section 319 (b) (2)(B):

> Not later than 1 year after the date on which the Administrator publishes proposed regulations under subparagraph (A)…the Administrator shall promulgate final regulations governing the review and handling o[f] air quality monitoring data influenced by an exceptional event that are consistent with paragraph (3).…
>
> (3)(A) …In promulgating regulations under this section, the Administrator shall follow—
> …
> (v)the principle that air quality data should be carefully screened to ensure that events not likely to recur are represented accurately in all monitoring data and analyses.

EPA has published three guidance documents describing the process by which the impacts of exceptional events are to be managed. In 2018, a memorandum by Peter Tsirigotis, Director of Office of Air Quality Planning and Standards on the development of Good Neighbor SIPs provided a discussion of exceptional events and the importance of downwind states seeking available regulatory relief before turning to upwind states. Consideration of exceptional events allows certain monitoring data impacted by exceptional events to be removed from inclusion in the determination of design values related to determining compliance with the NAAQS.

In April of 2019, Richard Wayland, the Director of the Air Quality Assessment Division, and Anna Marie Wood, Director of the Air Quality Policy Division, published a memorandum titled "Additional Methods, Determinations, and Analyses to Modify Air Quality Data Beyond Exceptional Events." Their memo notes that the "2016 Exceptional Events Rule specified that it applies to the treatment of monitoring data showing exceedances or violations of any NAAQS for the purpose of [a number of] types of regulatory determinations by the Administrator," including "other actions on a case-by-case basis as determined by the Administrator." The memorandum also noted that "EPA included 'other actions on a case-by-case basis'… to provide a degree of flexibility for addressing other possible regulatory determinations," adding that "the case-by-case provision is not intended to serve as a data-exclusion mechanism for determinations by the Administrator not influenced by exceedances or violations of the NAAQS, nor for non-regulatory purposes."

The Wayland, Wood memo provided guidance to EPA Regions and state agencies regarding three types of determinations and analyses under which the exclusion, selection, or adjustment of air quality monitoring data may be appropriate. Significantly, one of the types of determinations and analyses is certain modeling analyses using EPA's Guideline on Air Quality Models (see 40 CFR Part 51, Appendix W) …estimating base and future year design values for ozone and PM2.5 SIP attainment demonstrations.

On August 8, 2019, Scott Mathias, Acting Director of the Air Quality Policy Division and Richard Wayland, Director of the Air Quality Assessment Division published a memorandum titled "Exceptional Events Guidance: Prescribed Fire on Wildland that May Influence Ozone and Particulate Matter Concentrations," that provided guidance to all EPA Regions regarding the manner in which ozone monitoring data measured on days impacted by both prescribed fires and wildfires, should be analyzed. The guidance recognized that exceptional event data may be affected by fire events and therefore improperly bias ozone design values.

Several states including Nevada, New Jersey, Massachusetts, Rhode Island, Maryland, Colorado, Pennsylvania, Louisiana, and Connecticut have made requests for air masses impacted by the numerous wildfires that occurred in 2016 and 2017 be declared Exceptional Events – thus allowing monitored data influenced by those events to be excluded from the calculation of the design value for the affected monitor. The exceptional events demonstrations of all of these states have been approved in whole or in part by EPA using the guidance applicable at the time the demonstrations were submitted.

The Connecticut demonstration related to the May 2016 exceptional event showed that a Canadian wildfire caused the event and noted that ". . . the exceedances of May 25-26th cannot be attributed to EGUs operating on high electric demand days as is more typically the case later in the ozone season." EPA concurred in that demonstration on July 31, 2017. For the three Connecticut monitors upon which the Revised CSAPR Update was based (Stratford/Fairfield, 90013007; Westport/ Fairfield, 90019003; and Madison/New Haven, 90099002), accounting for the 2016 exception event resulted in a significant change in the ozone DV for each monitor. This is illustrated in Figure 9 for Stratford, Figure 10 for Westport and Figure 11 for Madison below in which the red bars reflect monitor values that occurred during the exceptional events that occurred

in May and July of 2016.

AQS_SITE_ID 90013007 | Fairfield, Connecticut

Date	Daily MDA8 (ppm)
7/22/2016	0.096
5/25/2016	0.089
7/15/2016	0.084
7/18/2016	0.083
8/11/2016	0.082
7/21/2016	0.081
8/12/2016	0.079
7/17/2016	0.079
8/24/2016	0.076
5/26/2016	0.076

Value	Ozone MDA8 (ppb)
2016 4th (fire)	83
2016 4th (no fire)	79
2014-16 DV (fire)	81
2014-16 DV (no fire)	79

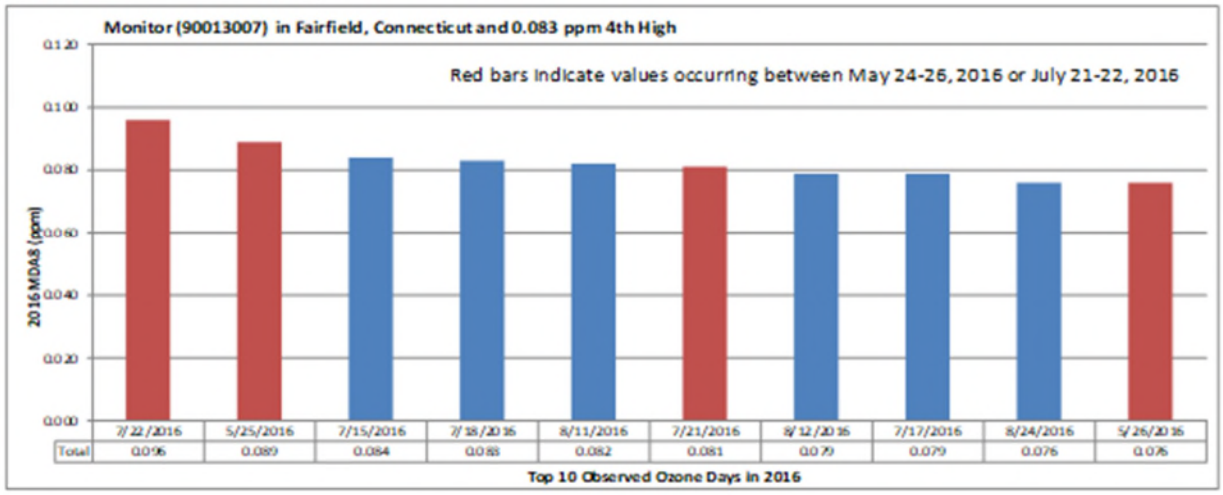


Figure 9. 2016 Exceptional Event for Stratford.

AQS_SITE_ID 90019003

Fairfield, Connecticut

Date	Daily MDA8 (ppm)
7/22/2016	0.097
5/26/2016	0.090
5/25/2016	0.087
7/21/2016	0.087
8/11/2016	0.087
5/28/2016	0.081
7/18/2016	0.080
8/24/2016	0.079
8/31/2016	0.076
7/17/2016	0.076

Value	Ozone MDA8 (ppb)
2016 4th (fire)	87
2016 4th (no fire)	79
2014-16 DV (fire)	85
2014-16 DV (no fire)	82

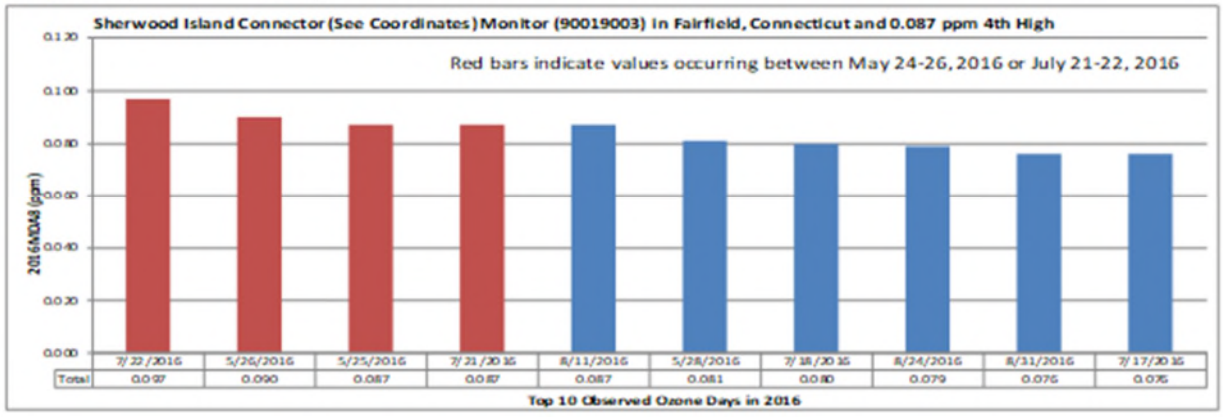


Figure 10. 2016 Exceptional Event for Westport

AQS_SITE_ID 90099002 New Haven, Connecticut

Date	Daily MDA8 (ppm)
5/25/2016	0.089
5/26/2016	0.086
7/18/2016	0.082
9/14/2016	0.080
6/7/2016	0.078
7/22/2016	0.078
8/13/2016	0.077
8/12/2016	0.075
7/21/2016	0.074
6/21/2016	0.071

Value	Ozone MDA8 (ppb)
2016 4th (fire)	80
2016 4th (no fire)	77
2014-16 DV (fire)	76
2014-16 DV (no fire)	75

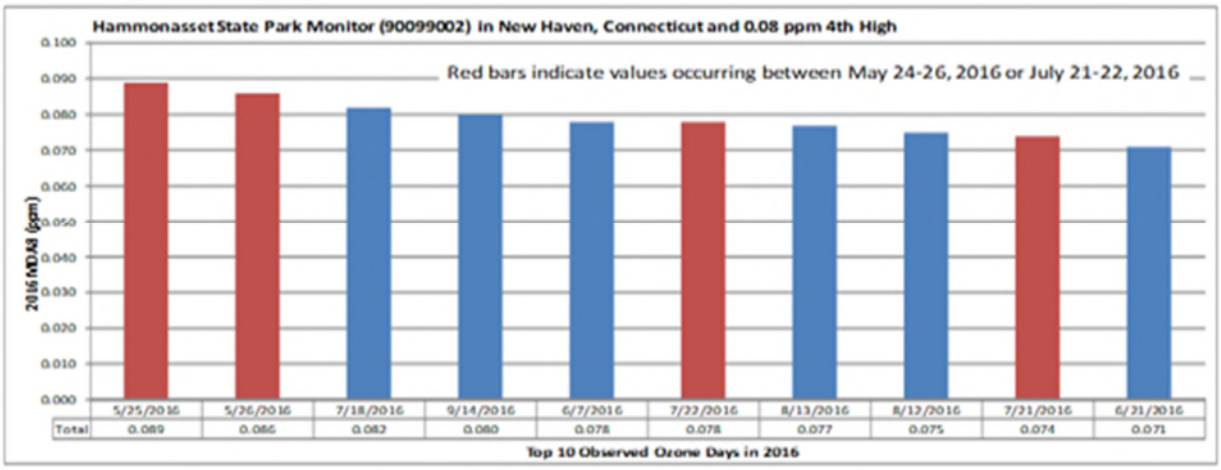


Figure 11. 2016 Exceptional Event for Madison.

It is also noted that in the Connecticut exceptional events demonstration for the May 2016 episode there were nine total monitors which were shown to have been impacted by the wildfire event. Of those nine, only four were shown to have immediate regulatory significance - Abington, Westport, Cornwall, and East Harford. Each of these monitors, with exceptional event exclusion, were determined to demonstrate attainment with the 1997 (Westport) or 2015 (Abington) ozone NAAQS or potentially prevent impediment of attainment with the 2008 ozone NAAQS (Cornwall and East Hartford). Two monitors not included in CT DEEP's demonstration request or in EPA's concurrence are the Stratford and Madison monitors, currently listed as nonattainment in EPA's modeling.

In the CT DEEP demonstration, the Stratford monitor would have had a 2016 4th high ozone value reduced by 1 ppb (83 ppb to 82 ppb) and the Madison monitor would have had a 2016 4th high ozone value drop 2 ppb (from 80 ppb to 78 ppb) because of the wildfire's impact. At the time, this change in resulting 2014-2016 design value was 1 ppb at Stratford and negligible at the Madison monitor due to truncation of the 3-year average, however, now that these 2016 4th high values are also being used in the proposed rule's projection of EPA's 2016 platform to 2023 and 2026, these adjustments now have regulatory significance.

CT DEEP has recognized the potential future impact of the exceptional event analysis on other additional monitors as follows:

Based on the severity of the difference in critical value, and the expectation that

> those sites with the largest differences will be controlling in any assessment of attainment status, DEEP has decided to focus this demonstration on the four sites with the greatest difference in critical value. If future assessments of attainment status based on inclusion of sites with lower critical differences prove to be controlling, then DEEP will revisit this analysis. (emphasis added)

The potential change in 2016-impacted 4th high concentrations at these two monitors has the potential to generate alternate average and maximum future year design values that would impact nonattainment or maintenance status in the 2023 and 2026 modeled results. The revisions in design values could reduce the significant contribution calculation of one or more upwind states linked to those monitors if dates selected for the top 10 base year (RRF) or future year (significant contribution) days were excluded with an exceptional events concurrence. It is imperative that EPA consider these significant events, recalculate the projected design value excluding these event day concentrations, and determine the attainment status and significant contribution metrics resulting from the new values under step 1 and step 2 of the 4-step interstate transport framework.

In addition, there have been multiple fire and other exceptional events episodes in the 2014-2018 period. Multiple fire and other exceptional events between 2018 and the present clearly fall within the ambit of EPA's guidance that have resulted in a significant impact on the design values of identified nonattainment and maintenance monitors. EPA has an ongoing obligation to undertake an examination of the exceptional events that impacted the monitoring data. Where appropriate EPA must assess new modeling analysis before concluding that any of the monitors relied upon to support this proposal are considered either nonattainment or maintenance. EPA must also assess the merit of a multistate transport rule in light of such monitors. Failure to undertake this necessary additional analysis creates a fatal flaw in the final rule in the proposed rule and individual state SIP denials.

At multiple monitors, the days that EPA has selected for relative response factor (RRF) and used in future year design value and significant contribution calculations have back trajectories that do not largely support influence from upwind states. In fact, many trajectories indicate a localized flow and associated impact from local sources. Additionally, two of the days used in the calculation have been identified in Connecticut's exceptional events demonstration for the episode related to the Fort McMurry wildfires in May 2016.

As noted earlier, the Connecticut demonstration related to the May 2016 event showed that Canadian wildfire caused the event and noted that ". . . the exceedances of May 25-26th cannot be attributed to EGUs operating on high electric demand days as is more typically the case later in the ozone season." EPA concurred in that demonstration on July 31, 2017.

EPA selects the top ten days from the base year (2016) modeling platform to calculate the RRF used in the projection year design value calculation and to determine significant contribution from upwind states to downwind receptors.

Table 6 presents the top ten modeled days selected for three Connecticut monitors from EPA's recent Revised CSAPR Update modeling.

Top Day	Stratford (90013007)	Westport (90019003)	Madison (90099002)
1	7/25/2016	7/25/2016	7/25/2016
2	5/26/2016*	7/6/2016	7/18/2016
3	7/6/2016	5/26/2016*	5/26/2016*
4	7/18/2016	7/18/2016	7/22/2016
5	7/22/2016	7/28/2106	7/6/2016
6	8/31/2016	7/21/2016	5/25/2106*
7	5/28/2016*	7/17/2016	9/14/2016
8	7/17/2016	8/24/2106	7/17/2016
9	8/24/2016	7/22/2016	6/7/2017
10	7/21/2016	8/31/2016	8/31/2016

**dates referenced by Connecticut DEEP as impacted by wildfire smoke in exceptional events demonstration*

Table 6. Top ten base year modeled days used in EPA RRF and significant calculation determinations for three Connecticut monitors.

Figure 12, Figure 13, and Figure 14 below present the 48-hour back trajectories from the Stratford, Westport, and Madison monitors, respectively. These figures arranged in order from highest base year modeled day (top left) to tenth highest (lower right) show the flow of the air packets influencing the modeled ozone concentrations on the dates listed in Table 6.

Except for May 26 (a wildfire smoke exceptional event influenced day) and July 16, none of the trajectories at any of the three monitors reaches farther west in the U.S. than western Pennsylvania. In many cases, a localized recirculation is noted in the region or initiating over the Atlantic Ocean. An additional transport pattern is noted to arrive via upstate New York and southeastern Canada and others reach south along the mid-Atlantic coast. According to these patterns, significant flow initiating over many upwind states is not present indicating negligible influence from sources within those states.

In addition, a trajectory analysis for the top 10 modeled days used in EPA's significant contribution calculations show that few of the trajectories at the three Connecticut monitors passed over many upwind states, questioning whether units located within the region truly were significant contributors to the monitors on the days selected for nonattainment and maintenance determination and used to inform the calculation for significant contribution.

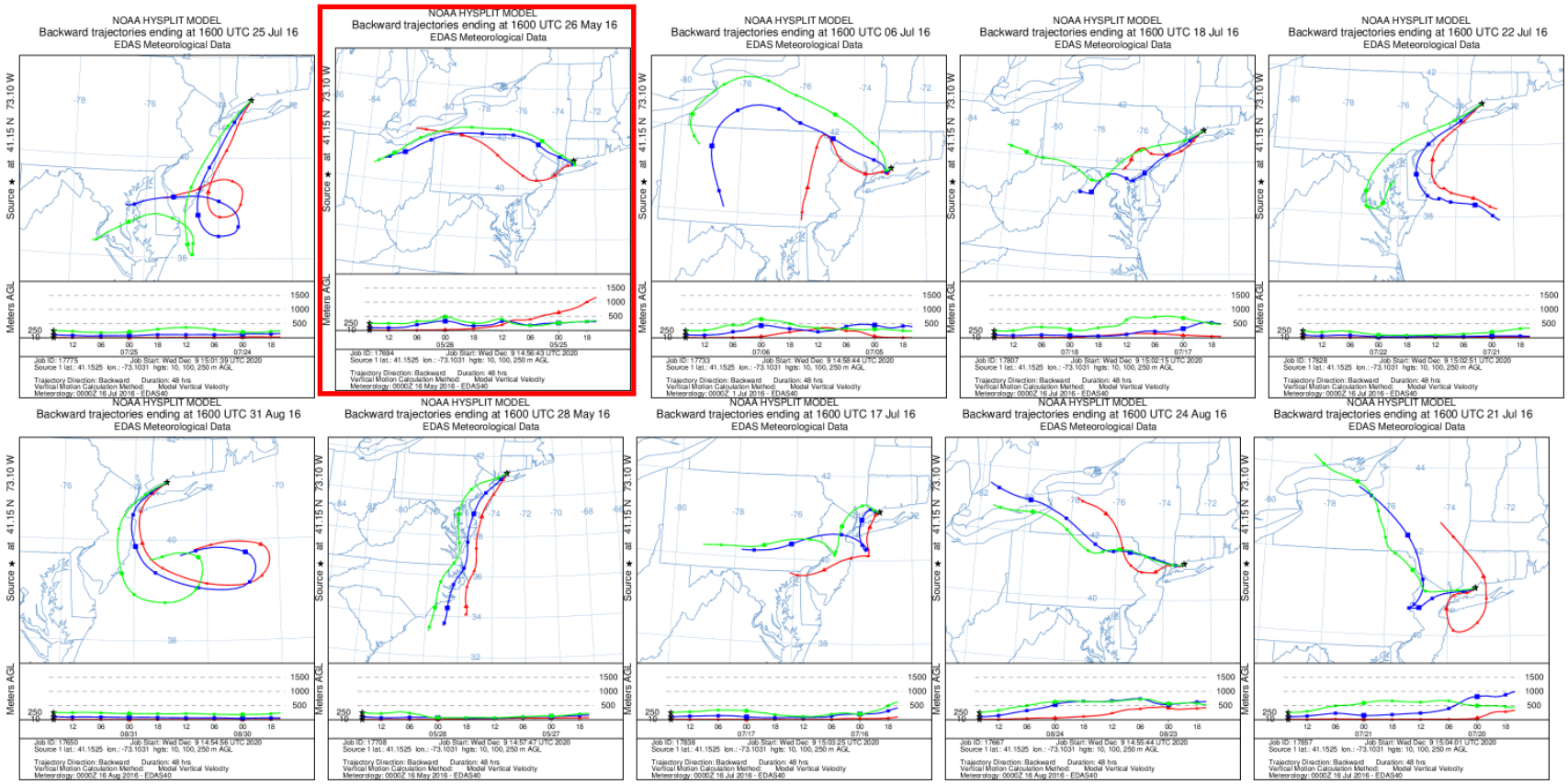


Figure 12. 48-hour back trajectories from Stratford (090013007) monitor on top 10 days used in RRF and significant contribution calculations in order of highest base year modeled value (top left to bottom right). Red outlined trajectories indicate exceptional events days.

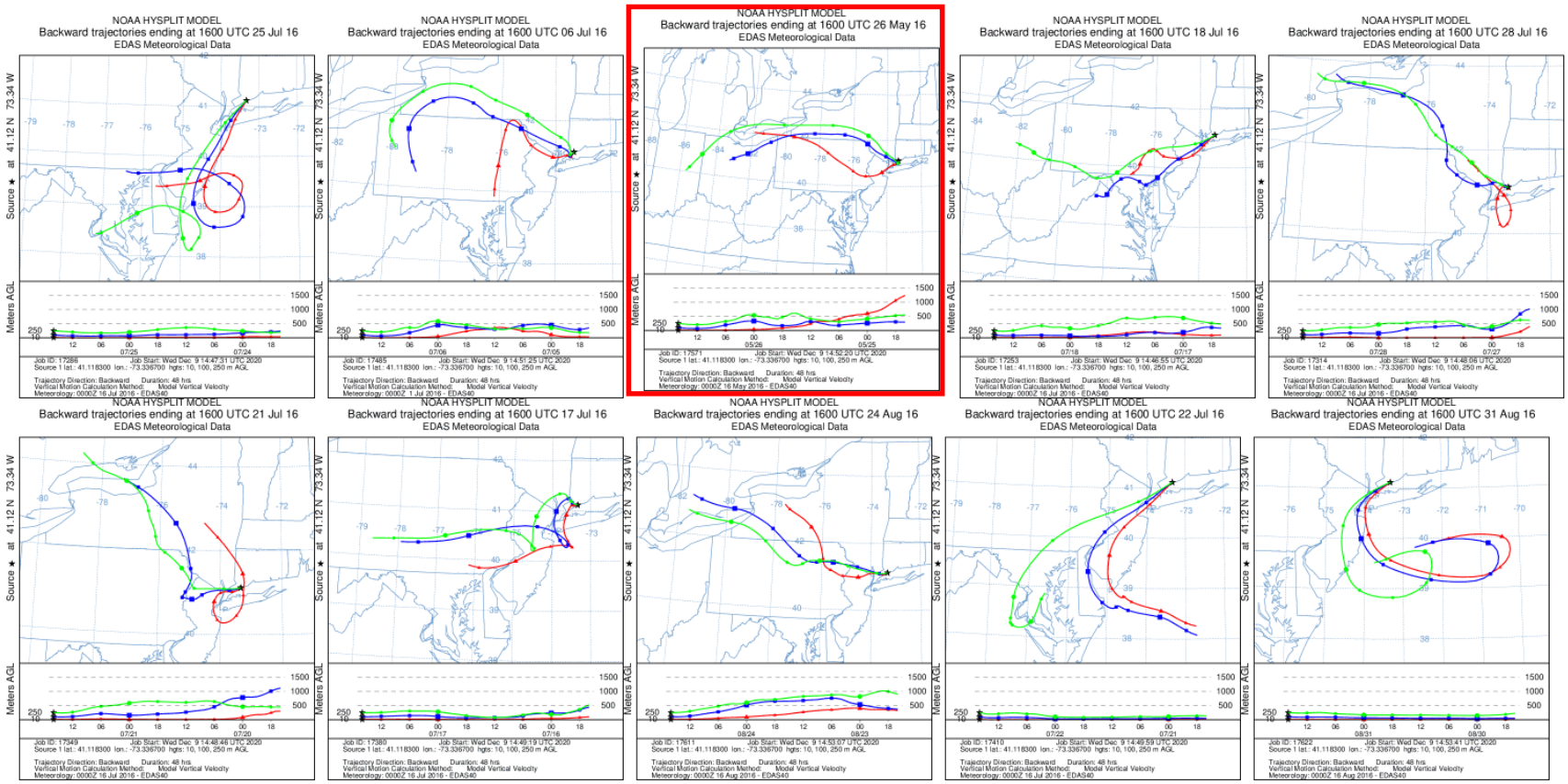


Figure 13. 48-hour back trajectories from Westport (090019003) monitor on top 10 days used in RRF and significant contribution calculations in order of highest base year modeled value (top left to bottom right). Red outlined trajectories indicate exceptional events days.

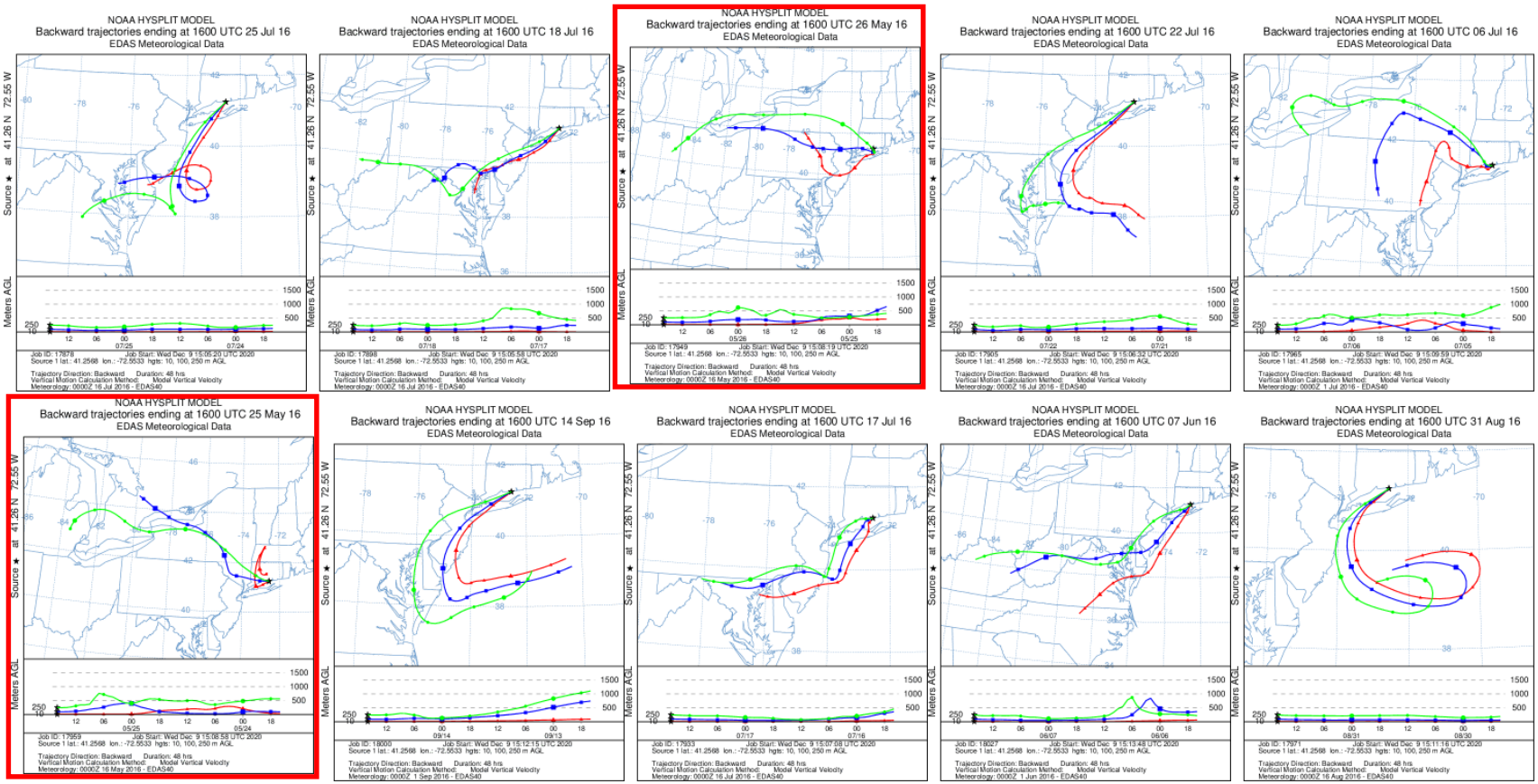


Figure 14. 48-hour back trajectories from Madison (090099002) monitor on top 10 days used in RRF and significant contribution calculations in order of highest base year modeled value (top left to bottom right). Red outlined trajectories indicate exceptional events days.

These results call into question EPA's proposed wholesale disapproval of 19 upwind state Good Neighbor SIPs because they are inconsistent with EPA's significant contribution analyses at Step 2.

MOG also finds it to be significant that the enforcement action brought by the State of New Jersey against USEPA involved the operation of certain boilers and emergency generators at USEPA's facility in Edison, New Jersey on days which were forecasted to be unhealthy air days. Edison, New Jersey is, of course, located within the New York-New Jersey-Connecticut Nonattainment Area. Specifically included among the days of this noncompliance were May 26, 2016, and July 6, 2016. In addition to being forecasted "unhealthy air quality days" as described in the settlement agreement between New Jersey and USEPA and as documented in the Tables and Figures above, May 26, 2016, and July 6, 2016, are among the top ten days that are associated with critical nonattainment and maintenance air quality monitors located in the New York-New Jersey-Connecticut Nonattainment Area.

Set out below is data taken from the data files of EPA's Final Revised CSAPR Update Rule ("Rule")[39] that were used by EPA to determine at Step 1 whether there were downwind nonattainment or maintenance monitors to be addressed in the Rule and at Step 2 whether there were upwind states that significantly contributed to the nonattainment or maintenance status of the monitors identified at Step 1. In each case you will notice that the May 26, 2016, and July 6, 2016, noncompliance dates were high among the top 10 dates that were the basis for EPA's Revised CSAPR Update.

[39] EPA-HQ-OAR-2020-072-0064_attachment_2.

				Step 1 - RRF/DVf Calculation 3x3 "No Water" Base Year			Step 2 - Significant Contribution Future Year Modeled (APCA)	
Name	**Monitor**	**Rank**		**Date**	**Ozone (ppb)**		**Date**	**Ozone (ppb)**
Stratford	090013007	1		20160725	94.43		20230725	82.70
		2		20160526	87.23		20230526	80.61
		3		20160706	87.19		20230718	77.42
		4		20160718	85.46		20230706	75.49
		5		20160722	81.02		20230722	72.68
		6		20160831	80.24		20230831	72.50
		7		20160528	79.96		20230528	72.00
		8		20160717	79.66		20230717	68.07
		9		20160824	77.89		20230824	66.71
		10		20160721	77.34		20230923	65.10

Table 7. Top 10 modeled dates and ozone concentrations at Stratford, CT monitor (090013007) as used in Revised CSAPR Update rule for nonattainment designation (Step 1) and significant contribution (Step 2) calculations

				Step 1 - RRF/DVf Calculation 3x3 "No Water" Base Year			Step 2 - Significant Contribution Future Year Modeled (APCA)	
Name	**Monitor**	**Rank**		**Date**	**Ozone (ppb)**		**Date**	**Ozone (ppb)**
Westport	090019003	1		20160725	94.43		20230725	84.43
		2		20160706	93.83		20230526	82.75
		3		20160526	87.23		20230706	78.73
		4		20160718	83.82		20230718	77.82
		5		20160728	83.07		20230831	76.84
		6		20160721	80.99		20230528	73.58
		7		20160717	80.97		20230722	72.27
		8		20160824	80.70		20230824	71.08
		9		20160722	80.68		20230717	69.39
		10		20160831	80.24		20230525	67.51

Table 8. Top 10 modeled dates and ozone concentrations at Westport, CT monitor (090019003) as used in Revised CSAPR Update rule for nonattainment designation (Step 1) and significant contribution (Step 2) calculations.

			Step 1 - RRF/DVf Calculation 3x3 "No Water" Base Year		Step 2 - Significant Contribution Future Year Modeled (APCA)	
Name	**Monitor**	**Rank**	**Date**	**Ozone (ppb)**	**Date**	**Ozone (ppb)**
Madison	090099002	1	20160725	88.56	20230718	76.54
		2	20160718	85.89	20230914	75.61
		3	20160526	84.17	20230526	75.13
		4	20160722	82.75	20230722	71.28
		5	20160706	79.44	20230525	69.91
		6	20160525	77.21	20230706	68.46
		7	20160914	76.98	20230717	67.91
		8	20160717	76.54	20230607	67.33
		9	20160607	75.82	20230831	67.11
		10	20160831	75.51	20230824	64.76

Table 9. Top 10 modeled dates and ozone concentrations at Madison, CT monitor (090099002) as used in Revised CSAPR Update rule for nonattainment designation (Step 1) and significant contribution (Step 2) calculations.

The fact that EPA's noncompliance in 2016 occurred on the same days as these three monitors in the same nonattainment area recorded top 10 ozone concentrations cannot be ignored. MOG urges that EPA's modeling be revised to assess the air quality impact of the emissions related to EPA's noncompliance on May 16, 2016, and July 6, 2016, and to assess the implications of that assessment on this proposal.

III. Step 2: Which Upwind States Significantly Contribute.

The next section of these comments will address factors related to Step 2 of EPA's four-step process to satisfy CAA §110(a)(2)(D)(i)(I) (87 Fed. Reg. 20,054) which EPA describes as follows:

> **[**D]etermine which upwind states contribute to these identified problems in amounts sufficient to "link" them to the downwind air quality problems.

12. While EPA correctly concludes at Step 2 that many upwind states contribute less than 1% to downwind problem areas and should not be subject to additional controls, its refusal to consider higher significance levels for other states is arbitrary and capricious.

There can be no argument with EPA's conclusion that upwind states that contribute less than 1% to a downwind nonattainment or maintenance area are not significant contributors for purposes of the Good Neighbor Provisions of the CAA. However, EPA's refusal to consider higher significance levels consistent with its own guidance is an arbitrary and capricious action that is a legal flaw in this proposed FIP. The *Wisconsin* court reminds EPA that while,

> the agency retains some flexibility in administering the Good Neighbor Provision. We acknowledge that the "realities of interstate air pollution . . . are not so simple," and EPA

> faces its share of "thorny ... problem[s]" in regulating it." *EME Homer II*, 572 U.S. at 514-16, 134 S.Ct. 1584. EPA, though, possesses a measure of latitude in defining which upwind contribution "amounts" count as "significant" and thus must be abated. See *Id*. at 518, 1324 S.Ct. 1584, 520 n.21. And the Supreme Court has indicated that EPA can consider, among other things, "the magnitude of upwind States' contributions and the cost associated with eliminating them." *Id*. at 518, 134 S.Ct. 1584. Additionally, in certain circumstances, EPA can grant one-year extensions of the nonattainment deadline to downwind States.

Wisconsin at 320.

The CAA does not prescribe how to establish the "significance level" applicable to interstate transport. CAA Section 110(a)(2)(d) simply requires,

> (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) …

(Emphasis added).

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 …."

MOG has raised serious concerns about the accuracy of the contribution conclusions of EPA's model. These concerns are acknowledged by EPA particularly with respect to the nonattainment monitors located on a land-water interface. Given these and other uncertainties about the reasonableness of the contribution predictions of EPA's modeling, we strongly urge that the significance level established in this proposal be reconsidered and increased to take account of these modeling limitations.

EPA's use of a one-percent-of-NAAQS threshold ignores the limits of the capability of the

Agency's air quality modeling techniques – and of ambient monitoring – to meaningfully detect and measure ambient-air contributions at the extremely low levels represented by one percent of current or possible future NAAQS. The remarkably low numerical values that result from application of EPA's one-percent contribution to 0.70 ppb used to link upwind states to downwind nonattainment or maintenance are likely below the detection capability of existing modeling and measurement tools. For that reason, EPA lacks a reasonable basis to conclude that a one-percent-of-NAAQS threshold can be deemed to reflect a "measurable contribution" to downwind nonattainment and maintenance problems, as required by the D.C. Circuit. *Michigan*, 213 F.3d at 684 (". . . *EPA must first establish that there is a measurable [air quality] contribution*. Interstate contributions cannot be assumed out of thin air.") (Emphasis in original).

EPA has failed to provide any justification or analysis for its insistence on the use of a 1% significance threshold. EPA's use of the one-percent-of-NAAQS threshold is becoming even more arbitrary and unjustified as the Agency derives lower values from more stringent and numerically lower NAAQS, like the 2015 ozone standard.

Accordingly, MOG objects to EPA's proposal to use a 1% air quality contribution threshold approach because of the absence of robust technical justification that the resulting thresholds reflect meaningful, and truly measurable, air quality contributions, consistent with the D.C. Circuit's directive in *Michigan.*

In its August 31, 2018, memo,[40] EPA compared two additional ozone concentration contribution thresholds; 1 ppb and 2 ppb. The purpose of the analysis described in the memo was to determine alternate, appropriate screening thresholds for consideration in addressing Good Neighbor provisions of the CAA. Ultimately in the memo, EPA noted that a threshold of 1 ppb may be appropriate for addressing the good neighbor provision.

As shown in Table 11, Table 12, and Table 13, we review the remaining eastern state nonattainment monitors as defined in the proposal. In this, we have also included EPA's 2023 OSAT/APCA contributions documented in the docket[41] for those monitors where EPA presents relative contribution calculations.

[40] https://www.epa.gov/sites/default/files/2018-09/documents/contrib_thresholds_transport_sip_subm_2015_ozone_memo_08_31_18.pdf
[41] EPA-HQ-OAR-2021-0668-0069.

				APCA Relative Contribution (ppb)																
Site ID	State	County	2023 Avg DV	AL	AR	IL	IN	KY	LA	MD	MI	MS	MO	NJ	NY	OH	PA	TX	VA	WV
90010017	CT	Fairfield	73.0	0.02	0.08	0.46	0.69	0.54	0.11	0.63	1.07	0.05	0.20	6.90	16.81	1.18	5.44	0.29	0.50	0.66
90013007	CT	Fairfield	74.2	0.10	0.14	0.53	0.75	0.77	0.25	1.10	0.94	0.10	0.31	7.43	13.56	1.87	6.37	0.51	1.19	1.30
90019003	CT	Fairfield	76.1	0.11	0.14	0.53	0.76	0.82	0.25	1.13	0.92	0.09	0.31	8.85	14.36	1.90	6.90	0.53	1.19	1.34
90099002	CT	New Haven	71.8	0.11	0.13	0.66	0.87	0.83	0.18	1.29	1.27	0.08	0.29	5.67	11.54	1.94	4.74	0.35	1.77	1.45
482010024	TX	Harris	75.2	0.18	0.67	0.01	0.01	0.01	4.31	0.00	0.00	0.37	0.30	0.00	0.00	0.00	0.00	30.28	0.00	0.00
482010055	TX	Harris	71.0	0.88	1.00	0.13	0.19	0.26	5.39	0.00	0.00	1.04	0.50	0.00	0.00	0.03	0.00	28.25	0.01	0.00
550590019	WI	Kenosha	72.8	0.01	0.19	18.13	6.60	0.27	0.13	0.05	1.07	0.01	1.08	0.04	0.24	1.67	0.46	1.72	0.10	0.23
551010020	WI	Racine	71.3	0.01	0.21	13.86	6.60	0.38	0.18	0.07	1.02	0.01	0.92	0.05	0.24	1.00	0.42	1.34	0.14	0.23

Table 10. EPA 12km OSAT/APCA contributions to nonattainment monitors. Yellow + orange + red cells indicate states contributing with 1% threshold. Orange + red cells indicate states contributing with > 1ppb threshold. Red cells indicate states contributing with > 2 ppb threshold.

Site ID	State	County	2023 Avg No Water	Monitor State Contribution	Total Upwind State Contribution	Upwind Contribution @ 1%	Upwind Contribution @ 1ppb	Upwind Contribution @ 2ppb
90010017	Connecticut	Fairfield	73.0	9.53	37.18	31.40	31.40	29.15
90013007	Connecticut	Fairfield	74.2	4.33	40.45	35.28	32.82	27.36
90019003	Connecticut	Fairfield	76.1	2.95	43.42	38.17	35.67	30.11
90099002	Connecticut	New Haven	71.8	4.05	36.58	31.37	29.67	21.95
482010024	Texas	Harris	75.2	30.28	7.01	4.31	4.31	4.31
482010055	Texas	Harris	71.0	28.25	11.93	8.31	7.43	5.39
550590019	Wisconsin	Kenosha	72.8	6.06	34.83	30.27	30.27	24.73
551010020	Wisconsin	Racine	71.3	11.13	29.63	24.74	23.82	20.46

Table 11. Total contribution and the sum of upwind contribution at each eastern state nonattainment receptor captured using alternative threshold (units are ppb).

Site ID	State	County	2023 Avg No Water	% of Upwind Contribution Captured by 1%	% of Upwind Captured by 1ppb	% of Upwind Captured by 2ppb
90010017	Connecticut	Fairfield	73.0	84%	84%	78%
90013007	Connecticut	Fairfield	74.2	87%	81%	68%
90019003	Connecticut	Fairfield	76.1	88%	82%	69%
90099002	Connecticut	New Haven	71.8	86%	81%	60%
482010024	Texas	Harris	75.2	61%	61%	61%
482010055	Texas	Harris	71.0	70%	62%	45%
550590019	Wisconsin	Kenosha	72.8	87%	87%	71%
551010020	Wisconsin	Racine	71.3	83%	80%	69%

Table 12. Percent of the upwind contribution captured by alternative threshold at each receptor.

Site ID	State	County	2023 Avg No Water	% Captured at 1ppb	% Captured at 2ppb
90010017	Connecticut	Fairfield	73.0	100%	93%
90013007	Connecticut	Fairfield	74.2	93%	78%
90019003	Connecticut	Fairfield	76.1	93%	79%
90099002	Connecticut	New Haven	71.8	95%	70%
482010024	Texas	Harris	75.2	100%	100%
482010055	Texas	Harris	71.0	89%	65%
550590019	Wisconsin	Kenosha	72.8	100%	82%
551010020	Wisconsin	Racine	71.3	96%	83%

Table 13. Percent of the contribution captured with a 1% threshold that is captured using 1 ppb and 2 ppb thresholds.

As can be seen in this example, should the significant contribution threshold be raised from 1% of NAAQS (0.70 ppb) to a greater than 1.0 ppb limit, several states would have their contribution linkages broken to all monitors. Additionally, even with this increase in significant contribution threshold, each monitor in Connecticut would still have over 93 percent of the original 1% contribution, Wisconsin would still have over 96 percent of the original 1% contribution, and Texas monitors would have 89 percent of the original 1 % contribution values associated from the remaining states. Should the threshold be raised to 2 ppb, the linkage from nine additional states (Arkansas, Maryland, Michigan, Mississippi, Missouri, Ohio, Texas, Virginia, and West Virginia) would be broken to all remaining eastern state nonattainment receptors with the majority of upwind contribution still captured by the remaining linked states.

IV. Step 3: Identify Upwind Emissions That Significantly Contribute.

The next section of these comments will address factors related to Step 3 of EPA's four-step process to satisfy CAA §110(a)(2)(D)(i)(I) (87 Fed. Reg. 20,054) which EPA describes as follows:

> [F]or states linked to downwind air quality problems, identify upwind emissions that significantly contribute to downwind nonattainment or interfere with downwind maintenance of a [NAAQS].

13. EPA has correctly identified several significant mitigation sources that need to be addressed in this rule – effectively resolving nonattainment in certain areas.

EPA invites comment on whether ozone-season NOx mitigation technologies other than those proposed should be considered as part of the FIP proposal. Specifically, EPA is seeking comment on whether the following classes of units should continue to be exempt from the interstate transport program:

- Units less than or equal to 25 MW,
- Solid waste incineration units, and
- Cogeneration units.

As MOG has pointed out in other comments it has filed with EPA, there are several classes of units that are not only significant contributors to nonattainment and maintenance monitors but also are likely causing nonattainment or maintenance problems at monitors in their own nonattainment areas beyond applicable attainment dates. Many of these units fall into the three categories of mitigation sources that EPA has identified above. EPA has a clear legal mandate to align its actions to implement the Good Neighbor provisions with the controls that must be placed on these sources to address their impact on ozone air quality. In the remainder of this comment, MOG will focus its concerns on:

1. Simple cycle combustion turbines,
2. Municipal waste combustors, and
3. Distributed generation.

Simple Cycle Combustion Turbines (SCCT)

Examples offered by EPA of exempt technologies include the New York Department of Environmental Conservation (NYDEC) rule adopted in January 2020 which set limits on emissions from combustion turbines that operate as peaking units and grid connected municipal waste combustors. EPA states that it has not historically considered NOx mitigation technologies for these sources in rulemakings of this kind but invites comment on their appropriateness for this rulemaking including comment on its discussion of these additional strategies in the Mitigation TSD.

In its Mitigation TSD related to the proposed FIP,[42] EPA correctly notes that on the days conducive to high ozone in the summer, high temperatures also occur resulting in a substantial increase in electricity demand. As noted in the previous section of these comments, this increased demand in Connecticut, New York, New Jersey and Maryland is satisfied by using peaking units that have relatively high NOx emission rates. Typically, these units are simple cycle combustion turbines which are attractive for the task because they are cost effective to control and easy to replace. They operate on high ozone days and can dominate EGU NOx emissions as confirmed by EPA's Mitigation TSD.

MOG notes with great interest the NYDEC rulemaking which imposes new controls on these simple cycle combustion turbines located in New York. Beyond the importance of addressing these controls generally, it is significant that these controls have been advanced by NYDEC specifically to address their impact on nonattainment monitors in Connecticut. The Regulatory Impact Statement in support of the final SCCT rule makes it very clear that emissions from these sources are the cause of the nonattainment experienced at several nonattainment monitors that EPA has used as the basis for this proposed FIP. The following excerpts are taken directly from the final version of this Regulatory Impact Statement and specifically names the two Connecticut monitors at Stratford and Westport that are among the nonattainment monitors relied upon by EPA in support of its proposal:[43]

[42] Technical Support Document (TSD) for the Proposed Federal Implementation Plan Addressing Ozone Transport for the 2015 Ozone NAAQS, Docket ID No. EPA-HQ-OAR-2021-0668, EGU NOx Mitigation Strategies Proposed Rule TSD, U.S. Environmental Protection Agency, Office of Air and Radiation, February 2022. Pp. 34 of 40 – 39 of 40.

[43] https://www.dec.ny.gov/regulations/116131.html

The current design value for the NYMA ozone nonattainment area is 0.082 ppm based upon monitors in Westport and Stratford, Connecticut which are in the shared multi-state nonattainment area.

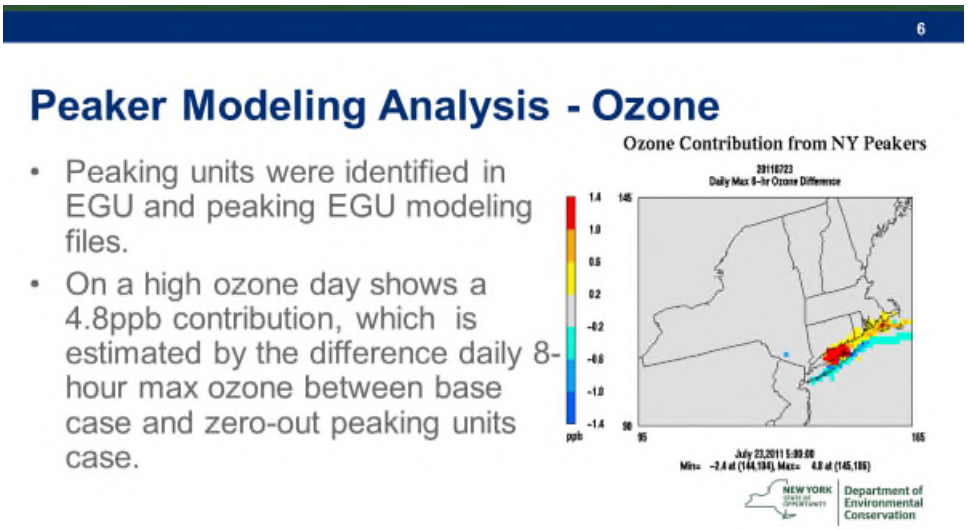
…

New York significantly contributes to nonattainment monitors in the Connecticut portion of this nonattainment area. Currently, attainment must be reached by June 20, 2021 for the 2008 ozone NAAQS and August 3, 2024 for the 2015 ozone NAAQS. DEC is currently working on a suite of regulations, both new and revised rules, in order to further reduce New York's impact on downwind ozone levels

…

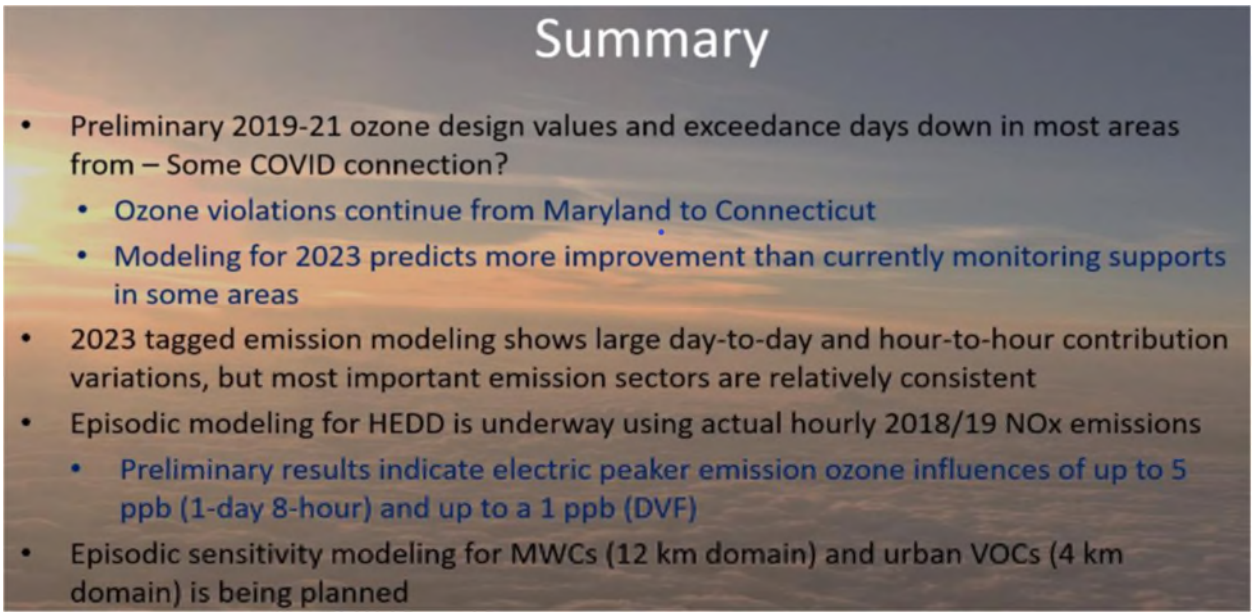
This rulemaking proposes to lower allowable emission rates for SCCTs during the ozone season with the intention to lower NOx emissions from these sources, especially on high ozone days. To better understand the impact of SCCTs on the ambient air quality, DEC used the Community Multiscale Air Quality Modeling (CMAQ) system to model one high ozone day.[6] The high ozone day modeled was July 23, 2011 and the results demonstrated that old SCCTs located in New York State contributed 0.0048 ppm to downwind monitors that currently show nonattainment. (Footnotes omitted; emphasis added.)

The following slide taken from a presentation of NYDEC[44] graphically displays the area predicted by its modeling to be impacted by emissions from these sources and confirms the NYDEC Regulatory Impact Statement conclusion that it is the Connecticut monitors that are most significantly impacted by the 4.8ppb increase in air ozone air quality concentration related to emissions from SCCT units.



Similar air quality impacts of peaking units were reported by the OTC Modeling Committee at the meeting held on April 14, 2022, as is stated on the following slide:

[44] http://www.midwestozonegroup.com/files/New_York_Peakers.pptx



In its May 17, 2019, comments[45] on the New York SCCT rule, Connecticut reinforced New York's admission of responsibility for Connecticut's ozone non-attainment and maintenance concerns as follows:

> Excessive and unnecessary levels of air pollution from these units contribute to unhealthy ozone levels in Connecticut, particularly on days most conducive to high ozone levels in the region . . .
>
> Connecticut cannot attain the ozone standards without further emission reductions occurring in the New York metropolitan area. Connecticut currently exceeds the 70 parts per billion (ppb) ozone standard with design values of 82 ppb at the Stratford and Westport monitors.

It is worthwhile to note that Stratford and Westport are among the non-attainment monitors relied upon by EPA to support the proposed FIP.

It is also significant that beyond Connecticut's recognition that non-attainment at its Stratford and Westport monitors are being caused by emissions from these SCCT units, Connecticut's comments also are critical of the New York SCCT rule as not assuring that these sources will be prevented from significantly contributing to non-attainment in downwind states. The Connecticut comments state:

> The proposed rule will not begin its first phase until May 2023 and allows for compliance extensions up to four years. Delaying requirements for emission reductions from some of the <u>most inefficient</u> and <u>dirtiest</u> units in the region only helps to assure extended non-attainment of the standards. The timeframe for the implementation of the rule should be condensed to be

[45] Tracy Babbidge, Chief, Bureau of Air Management, CTDEEP letter to Ona Papageorgiou, NYDEC dated October 7, 2019. https://portal.ct.gov/DEEP/Air/Planning/Ozone/Ozone-Planning-Efforts

more consistent with attainment dates for the non-attainment area. (emphasis added).[46]

Even though NYDEC acknowledges that New York's SCCT units are causing the nonattainment at the Connecticut monitors, New York has elected to defer the implementation of required controls beyond the attainment date mandated by the CAA. As EPA has noted in its Mitigation TSD, the controls established by NYDEC call for subject units to meet a NOx emission rate of 100 ppmvd by May 1, 2023 and a more stringent limit by May 1, 2025. When challenged by those commenting on its SCCT rule to condense the timeline for implementation to be more consistent with the attainment dates for nonattainment areas, NYDEC responded by stating that it deferred the compliance dates for other reasons not related to the applicable attainment date.[47]

EPA's independent analysis of SCCT units as set forth in the Mitigation TSD confirms the conclusions reached by both New York and Connecticut, that units of this kind which are operated for only a small number of hours on high energy demand days produce emissions "that cause, help cause or exacerbate exceedances of the NAAQS."[48] EPA's analysis also concludes that:

- In the 12 states addressed in the CSAPR Update Revisions 102 SCCT units had capacity factors below 10% in 2019, but actually produced an average of 13% of their gross generation in high energy demand hours and for 18 of those units electric production in higher energy demand hours accounted for 20% of total generation of those units in 2019.[49]

- Emission rates of SCCT units can be 118 times their respective state averages.[50]

- In New York, these peaker units were found to be "highly emissions-intensive" but "provide relative minimal generation in peak hours.[51]

It is important to note that a 25 MW peaker at 50 ppm NOx emissions has the same emissions of NOx as a new 625 MW natural gas combined cycle unit if one assumes an identical heat rate (Btu/kWh) for both facilities. However, if the assumed heat rate of a new natural gas combined cycle plant is 6,000 Btu/kWh and the assumed heat rate of the simple cycle unit is 13,000 Btu/kWh, typical heat rates for these types of units, then the 25 MW peaker has NOx emissions consistent with a 1, 354 MW natural gas combine cycle facility. While MOG urges EPA to address New York's failure to properly address these and similar sources by mandating mitigation measures, our larger concern is that EPA's proposed FIP has failed to address in any manner its CAA obligation to align the upwind state obligations and that of the downwind states when they

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[46] *Id.*
[47] 6 NYCRR Subpart 227-3, Ozone Season Oxides of Nitrogen (NOx) Emission Limits for Simple Cycle and Regenerative Combustion Turbines, Assessment of Public Comment, Comments received from February 26, 2019 through 5:00 P.M., May 20, 2019, page 46 of 50. https://www.dec.ny.gov/docs/air_pdf/siprevision2273.pdf
[48] Mitigation TSD at p. 37 of 40
[49] *Id* at 35 of 40.
[50] *Id.*
[51] *Id*. at 36 of 40.

elect to delay controlling sources such as these.

Municipal Waste Combustion (MWC)

Beyond addressing SCCT units, MOG welcomes the opportunity to address the air quality benefit and merit of controlling emissions from Municipal Waste Combustion (MWC). It is significant that historically EPA has determined emissions from MWC combustors "significantly contribute to ozone levels" in the NY-NJ-CT non-attainment area.[52] This conclusion is particularly relevant in connection with the proposed FIP because these non-attainment monitors (and one maintenance monitor) are a major portion of the basis for the proposal.

We direct our comments to the regulatory program of New York with respect to the MWC units, which according to EPA's analysis is less stringent than Connecticut and New Jersey – the other states in the NYMA.[53]

It is obvious that the significance of the emissions from MWC and their impact on the monitors upon which the proposed FIP is based makes these sources candidates for the imposition of new controls by the next applicable attainment date of 2023. Failure to require emissions controls by 2023 on these sources further shifts emissions reductions obligation to the upwind states.

Distributed Generation

In addition to inviting comment on SCCT and MWC units, EPA also invites comment on other EGUs not covered by the existing CSAPR programs.[54] In that regard, MOG urges EPA to consider utilizing the proposed FIP as the opportunity to address new mitigation measures for Distributed Generation (DG) units. While New York has undertaken the regulatory process related to DG units, its approach to addressing the emissions from these sources is inadequate with respect to both the timing and degree of emission reduction control.

EPA promulgated a final approval of the NY SIP revisions to Title 6 of the New York Code of Rules and Regulations (NYCRR), Part 222, "Distributed Generation Sources." 87 Fed. Reg. 33,438 (June 2, 2022). Within that approval, EPA acknowledges that "Because this SIP revision relates to criteria pollutants and strengthens the preexisting requirements in the New York SIP, EPA has determined it is appropriate to approve the SIP revision." *Id.* at 33,439. EPA's acknowledgment of the merit and benefits of controls on distributed generation sources is evident in this action. EPA's failure to require New York to implement controls on these DG units by 2023 obligates EPA to align upwind state obligations with its decision to delay controls on these units.

New York had proposed a revision to 6 NYCRR Subpart 222 in September 2019. The Regulatory Impact Statement in support of the proposal concedes that additional controls on these sources "is a critical component" in the state's strategy to meet ozone NAAQS requirements. New

[52] Technical Support Document (TSD) for the Proposed Revised CSAPR Update for the 2008 Ozone NAAQS, Docket ID No. EPA-HQ-OAR-2020-0272, EGU NOx Mitigation Strategies Proposed Rule TSD, U.S. Environmental Protection Agency, Office of Air and Radiation, October 2020. Pp. 20 of 22

[53] *Id*. at p. 21 of 22

[54] *Id.* at p. 20 of 21

York concedes its significant contribution to non-attainment monitors in Connecticut. Considering these facts, it is difficult to understand New York's proposed rule[55] that defers full implementation of control requirements until May 1, 2025 – well beyond EPA's selected attainment deadline of 2023. In the absence of accelerating the imposition of these control requirements to 2023, MOG calls on EPA to harmonize the timing between the downwind and upwind sources as previously discussed in these comments by delaying the imposition of upwind controls until the date of the imposition of downwind controls.

EPA reviewed New York's RACT program and recognized the need for New York to take additional measures to properly address all three categories of sources in New York to address attainment of the 2008 ozone standard in the NYMA[56] as follows:

- With respect to SACCT units, EPA has found that New York's limits for these units are less stringent than neighboring states. Specifically, in comparison to the new limit of 100 ppmvd, effective May 1, 2023, EPA found that Connecticut had adopted a more stringent NOx limit of 50-75 ppm with a compliance date of June 2018 and 40-50 ppm with a compliance date of June 2023.
- Anticipating that the New York SCCT rule would be submitted to EPA for approval as a SIP revision, EPA offered the following comment which recognizes the need for more stringent controls on these sources.

  > The EPA will fully assess New York's recently adopted Subpart 227-3 for approvability once the rule is submitted to EPA for inclusion into the New York SIP. Inclusion into the SIP of more stringent NOx emission limits for simple cycle turbines located throughout the State, and particularly in the New York portion of NYMA, would provide additional NOx reductions to help attain the 2008 ozone NAAQS.

- With respect to Municipal Waste Combustors (MWC), EPA first pointed out that the New York limits were less stringent than those of Connecticut and neighboring states and then offered the following statement:

  > Inclusion in the SIP of more stringent NOx emission limits for MWCs located in the New York portion of NYMA would provide additional NOx reductions to help attain the 2008 ozone NAAQS.

- With respect to Distributed Generation, EPA noted that New York has undertaken the regulatory process to address NOx emissions from those units on HEED and that Connecticut had already done so. EPA encouraged New York to submit its regulation of these sources as a SIP revision "as soon as possible after completion of the regulatory process."

There can be no denying the fact that these New York SCCT, MWC and DG units are actually causing monitors to be nonattainment or maintenance. The New York rule addressing these sources acknowledges the applicable attainment dates but for other reasons elects to defer the specified controls requirements. The practical and legal effect of such a decision is ongoing

[55] NYDEC Parts 222 and 200 Revised Regulatory Impact Statement
[56] 85 Fed. Reg. 8238 (February 13, 2020)

nonattainment/maintenance status of critical monitors, forcing additional and likely unnecessary controls on upwind state's sources.

As was stated earlier in these comments, the fact that downwind states such as New York have made a conscious decision to delay implementation of nonattainment controls on the emission units that continue to cause nonattainment and maintenance problems within their own nonattainment area, places a legal obligation on EPA to align that action with the deadlines being imposed by upwind states in the proposed FIP. The D.C. Circuit made it clear in the *Wisconsin* remand that emission control programs in upwind and downwind states must be aligned to avoid shifting the burden of emission reduction from one group of states to another. In the absence of the downwind imposing controls on their sources by the next attainment date, EPA is legally obligated to delay the imposition of new controls on upwind states to align with the compliance date of downwind states.

14. Had EPA conducted source apportionment analysis of source categories rather than of total emissions from upwind states, it would have found that EGUs and non-EGUs have little or no impact on downwind air quality problem areas.

Alpine Geophysics previously assessed[57] the impact on downwind air quality of specific source sectors within the upwind states. Since that time, that modeling effort was updated using EPA's 2016v2 modeling platform.[58]

Consistent with EPA's methodology documented in the air quality TSD[59,] Alpine performed nationwide, state, source category-level ozone source apportionment modeling using the CAMx OSAT/APCA technique to quantify the contribution of future year base case NOx and VOC emissions from major source categories in each region to projected 2023 ozone concentrations at ozone monitoring sites.

In the source apportionment model run, Alpine tracked the ozone formed from each of the following contribution categories (i.e., "tags"):

- Regions –NOx and VOC emissions from each state or state group tracked individually using the additional source category "tags" listed below;
    - Biogenic/Fires;
    - On-Road Mobile;
    - Non-Road Mobile/Stationary Area;
    - EGU Point; and
    - Non-EGU Point;
- Boundary and Initial Concentrations – concentrations transported into the modeling domain (e.g., principally international transport but also including stratospheric intrusion, and domain initialization conditions);
- Canada, Mexico, and over water domains – anthropogenic emissions from sources in the

[57] http://www.midwestozonegroup.com/files/IndependentSector-SpecificSourceApportionmentModelingofthe2017CrossStateAirPollutionRuleModelingPlatform.pdf
[58] EPA-HQ-OAR-2021-0668-0068.
[59] EPA-HQ-OAR-2021-0668-0099.

portions of Canada and Mexico included in the modeling domain and from sources in the Pacific and Atlantic Oceans or from the Gulf of Mexico or Great Lakes.

The source apportionment modeling provided contributions to ozone from NOx and VOC emissions in each region and source category in a relative sense to all other regional and category combinations as noted above. This differs from EPA's modeling in that this analysis provided finer category-specific contribution resolution for components in states compared to the "all-state" total anthropogenic contribution method applied in this proposal. For example, MOG determined the relative contribution of Illinois' EGU source sector emissions on ozone concentrations at downwind monitors instead of just Illinois' total anthropogenic contribution to that same monitor. In this regard, MOG demonstrates what the relative magnitude of category-based emissions is compared to individual monitor concentrations in contrast to just regional or state total contributions.

The following Figure 15 through Figure 22 provide APCA output for the remaining eastern state nonattainment monitors using the top future year modeled days consistent with EPA methods. The figures use data consistent with the 2023v2 modeling platform from this proposal. In the following figures, the tables provide both the tabular results (scaled to proposed average 2023 design values), as well as tag-specific contributions based on the relative contribution analysis. Each cell in the table represents the ozone concentration contribution of NOx and VOC emissions for each of the regions (rows) and source categories (columns). Cells in the left hand side of the table are color coded to relative contribution (hotter colors represent higher contribution) compared to all regions and anthropogenic sectors while the last row in the table reflects total anthropogenic contribution of greater than 1% (orange) or greater than 1 ppb (red). In Figure 15, in the third numeric row of the table, in the second column from the left, Connecticut's onroad motor vehicle source emissions contribute 3.37 ppb (4.62%) to this monitor's total 2023 projected future year design value (73.0 ppb). For purposes of this presentation, we have retained the state level contributions for the states identified as linked to nonattainment or maintenance monitors in the proposal and have chosen to group all other states and regions into the "Other" source region.

Monitor	90010017		Fairfield Co, Connecticut				Average 2023 DV (ppb) ->		73.0
APCA Relative Contribution (ppb) - Scaled to 2023 Avg DV - Future Modeled Days ≥ 60 ppb									
State	Motor Vehicle	Nonroad & Area	Non-EGU Point	EGU	Natural (Fire + Bio)	Can + Mex	Boundary	Total	Total Anthro
AL	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.03
AR	0.03	0.04	0.02	0.01	0.00	0.00	0.00	0.10	0.10
CT	3.37	8.53	0.05	0.07	0.00	0.00	0.00	12.03	12.03
DE	0.08	0.19	0.07	0.06	0.00	0.00	0.00	0.40	0.40
IA	0.02	0.04	0.01	0.02	0.00	0.00	0.00	0.09	0.09
IL	0.12	0.28	0.12	0.09	0.00	0.00	0.00	0.61	0.61
IN	0.24	0.27	0.13	0.15	0.00	0.00	0.00	0.79	0.79
KS	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.07	0.07
KY	0.15	0.17	0.14	0.07	0.00	0.00	0.00	0.52	0.52
LA	0.02	0.04	0.05	0.01	0.00	0.00	0.00	0.12	0.12
MD	0.20	0.36	0.07	0.05	0.00	0.00	0.00	0.67	0.67
MI	0.26	0.45	0.21	0.15	0.00	0.00	0.00	1.07	1.07
MN	0.02	0.06	0.04	0.02	0.00	0.00	0.00	0.14	0.14
MO	0.05	0.05	0.01	0.02	0.00	0.00	0.00	0.13	0.13
MS	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.06	0.06
NC	0.04	0.06	0.03	0.05	0.00	0.00	0.00	0.19	0.19
NJ	3.06	6.76	0.65	0.68	0.00	0.00	0.00	11.15	11.15
NY	2.79	6.89	0.41	1.13	0.00	0.00	0.00	11.22	11.22
OH	0.25	0.50	0.25	0.17	0.00	0.00	0.00	1.18	1.18
OK	0.02	0.04	0.03	0.00	0.00	0.00	0.00	0.08	0.08
PA	1.23	2.16	0.60	0.40	0.00	0.00	0.00	4.39	4.39
TN	0.05	0.05	0.02	0.00	0.00	0.00	0.00	0.13	0.13
TX	0.06	0.14	0.05	0.03	0.00	0.00	0.00	0.28	0.28
VA	0.13	0.22	0.06	0.03	0.00	0.00	0.00	0.45	0.45
WI	0.04	0.05	0.02	0.01	0.00	0.00	0.00	0.12	0.12
WV	0.04	0.25	0.07	0.09	0.00	0.00	0.00	0.45	0.45
Other	0.16	0.88	0.07	0.02	0.00	0.00	0.00	1.13	1.13
Can + Mex	0.00	0.00	0.00	0.00	0.00	2.32	0.00	2.32	0.00
Natural	0.00	0.00	0.00	0.00	4.13	0.00	0.00	4.13	0.00
ICBC	0.00	0.00	0.00	0.00	0.00	0.00	18.95	18.95	0.00
Total	**13.94**	**31.94**	**3.61**	**3.75**	**4.62**	**2.60**	**21.19**	**73.00**	**47.60**

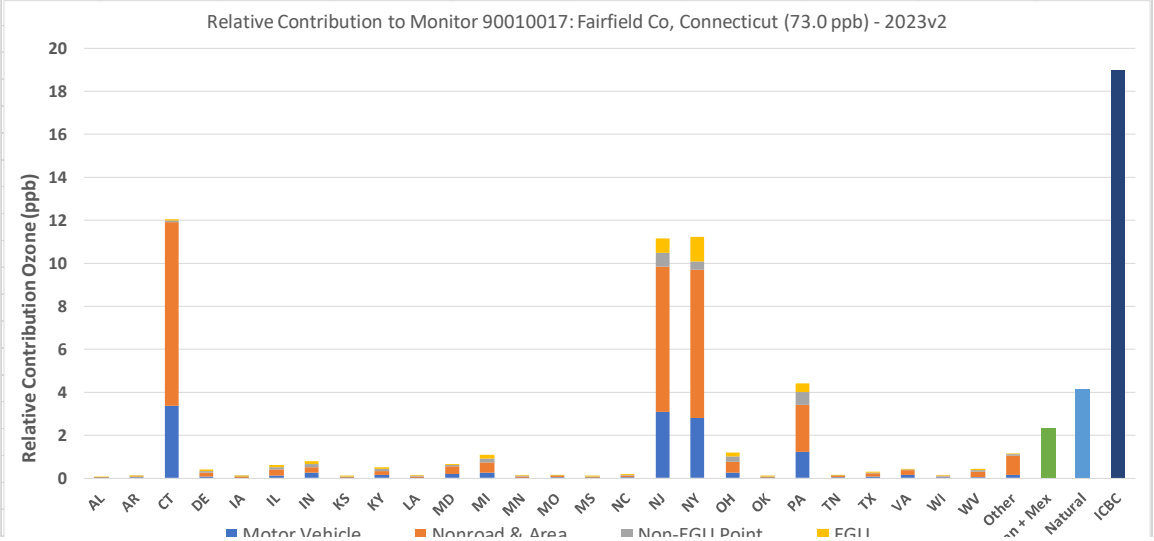


Figure 15. Relative ozone contribution in ppb by state and source sector using EPA's 2023v2 modeling platform at the Fairfield, CT (90010017) monitor.

Monitor	90013007		Fairfield Co, Connecticut				Average 2023 DV (ppb) ->		74.1
APCA Relative Contribution (ppb) - Scaled to 2023 Avg DV - Future Modeled Days ≥ 60 ppb									
State	Motor Vehicle	Nonroad & Area	Non-EGU Point	EGU	Natural (Fire + Bio)	Can + Mex	Boundary	Total	Total Anthro
AL	0.04	0.03	0.04	0.01	0.00	0.00	0.00	0.13	0.13
AR	0.04	0.07	0.03	0.02	0.00	0.00	0.00	0.17	0.17
CT	1.23	3.23	0.05	0.68	0.00	0.00	0.00	5.18	5.18
DE	0.12	0.29	0.12	0.09	0.00	0.00	0.00	0.62	0.62
IA	0.03	0.05	0.02	0.02	0.00	0.00	0.00	0.11	0.11
IL	0.14	0.31	0.15	0.12	0.00	0.00	0.00	0.72	0.72
IN	0.27	0.27	0.15	0.19	0.00	0.00	0.00	0.88	0.88
KS	0.03	0.06	0.02	0.01	0.00	0.00	0.00	0.11	0.11
KY	0.24	0.26	0.21	0.12	0.00	0.00	0.00	0.83	0.83
LA	0.05	0.09	0.10	0.03	0.00	0.00	0.00	0.27	0.27
MD	0.34	0.62	0.12	0.09	0.00	0.00	0.00	1.16	1.16
MI	0.22	0.36	0.20	0.16	0.00	0.00	0.00	0.94	0.94
MN	0.03	0.07	0.05	0.01	0.00	0.00	0.00	0.16	0.16
MO	0.09	0.07	0.01	0.02	0.00	0.00	0.00	0.20	0.20
MS	0.03	0.04	0.03	0.01	0.00	0.00	0.00	0.11	0.11
NC	0.15	0.18	0.08	0.09	0.00	0.00	0.00	0.50	0.50
NJ	2.93	6.52	0.69	0.73	0.00	0.00	0.00	10.86	10.86
NY	2.69	5.96	0.40	1.33	0.00	0.00	0.00	10.38	10.38
OH	0.43	0.77	0.39	0.36	0.00	0.00	0.00	1.95	1.95
OK	0.03	0.06	0.05	0.01	0.00	0.00	0.00	0.14	0.14
PA	1.35	2.52	0.74	0.56	0.00	0.00	0.00	5.18	5.18
TN	0.11	0.09	0.05	0.01	0.00	0.00	0.00	0.26	0.26
TX	0.11	0.24	0.09	0.05	0.00	0.00	0.00	0.49	0.49
VA	0.35	0.51	0.13	0.08	0.00	0.00	0.00	1.07	1.07
WI	0.05	0.07	0.03	0.01	0.00	0.00	0.00	0.15	0.15
WV	0.07	0.48	0.13	0.17	0.00	0.00	0.00	0.85	0.85
Other	0.43	1.73	0.19	0.10	0.00	0.00	0.00	2.45	2.45
Can + Mex	0.00	0.00	0.00	0.00	0.00	1.84	0.00	1.84	0.00
Natural	0.00	0.00	0.00	0.00	5.16	0.00	0.00	5.16	0.00
ICBC	0.00	0.00	0.00	0.00	0.00	0.00	21.23	21.23	0.00
Total	**11.35**	**24.43**	**4.18**	**4.97**	**5.05**	**1.80**	**20.80**	**74.10**	**45.87**

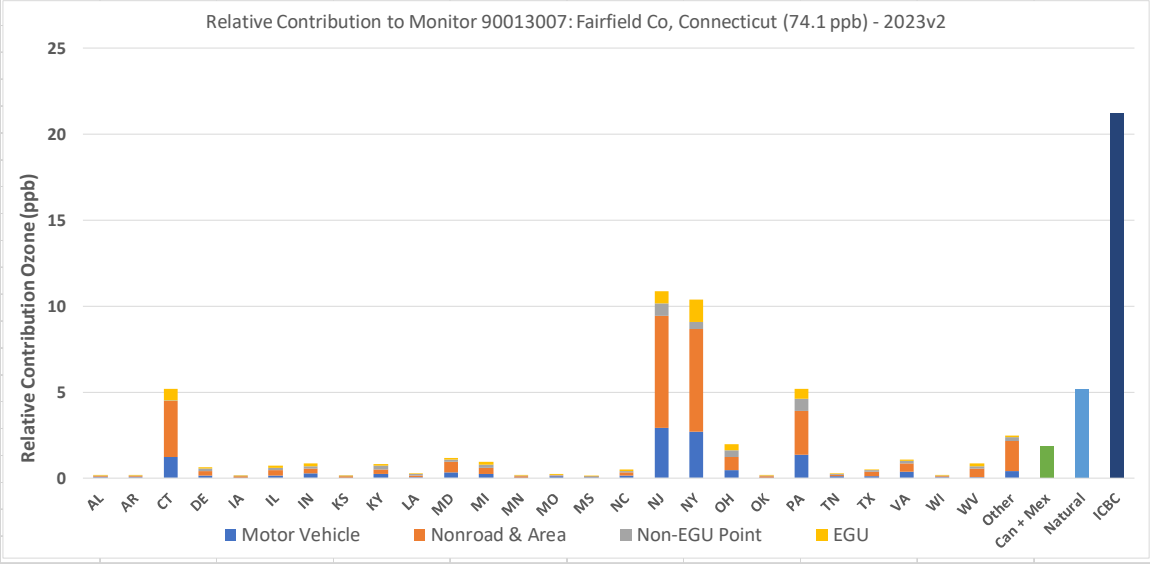


Figure 16. Relative ozone contribution in ppb by state and source sector using EPA's 2023v2 modeling platform at the Fairfield, CT (90013007) monitor.

Monitor	90019003		Fairfield Co, Connecticut				Average 2023 DV (ppb) ->		76.1
APCA Relative Contribution (ppb) - Scaled to 2023 Avg DV - Future Modeled Days ≥ 60 ppb									
State	Motor Vehicle	Nonroad & Area	Non-EGU Point	EGU	Natural (Fire + Bio)	Can + Mex	Boundary	Total	Total Anthro
AL	0.05	0.03	0.04	0.01	0.00	0.00	0.00	0.13	0.13
AR	0.04	0.07	0.03	0.02	0.00	0.00	0.00	0.17	0.17
CT	1.11	2.73	0.03	0.16	0.00	0.00	0.00	4.03	4.03
DE	0.13	0.30	0.12	0.10	0.00	0.00	0.00	0.65	0.65
IA	0.03	0.05	0.02	0.02	0.00	0.00	0.00	0.11	0.11
IL	0.14	0.31	0.15	0.12	0.00	0.00	0.00	0.71	0.71
IN	0.27	0.28	0.15	0.20	0.00	0.00	0.00	0.89	0.89
KS	0.03	0.06	0.02	0.01	0.00	0.00	0.00	0.11	0.11
KY	0.26	0.28	0.22	0.12	0.00	0.00	0.00	0.88	0.88
LA	0.05	0.09	0.11	0.03	0.00	0.00	0.00	0.27	0.27
MD	0.36	0.63	0.12	0.09	0.00	0.00	0.00	1.20	1.20
MI	0.21	0.35	0.20	0.15	0.00	0.00	0.00	0.91	0.91
MN	0.03	0.07	0.05	0.01	0.00	0.00	0.00	0.15	0.15
MO	0.09	0.08	0.01	0.03	0.00	0.00	0.00	0.20	0.20
MS	0.03	0.04	0.03	0.01	0.00	0.00	0.00	0.11	0.11
NC	0.15	0.18	0.08	0.09	0.00	0.00	0.00	0.50	0.50
NJ	3.50	7.88	0.79	0.83	0.00	0.00	0.00	12.99	12.99
NY	2.64	6.15	0.40	1.32	0.00	0.00	0.00	10.52	10.52
OH	0.44	0.78	0.39	0.36	0.00	0.00	0.00	1.97	1.97
OK	0.03	0.06	0.05	0.01	0.00	0.00	0.00	0.15	0.15
PA	1.47	2.71	0.79	0.58	0.00	0.00	0.00	5.55	5.55
TN	0.12	0.09	0.05	0.01	0.00	0.00	0.00	0.27	0.27
TX	0.11	0.26	0.09	0.05	0.00	0.00	0.00	0.51	0.51
VA	0.36	0.51	0.13	0.08	0.00	0.00	0.00	1.07	1.07
WI	0.05	0.06	0.03	0.01	0.00	0.00	0.00	0.15	0.15
WV	0.08	0.50	0.13	0.18	0.00	0.00	0.00	0.89	0.89
Other	0.43	1.62	0.19	0.10	0.00	0.00	0.00	2.36	2.36
Can + Mex	0.00	0.00	0.00	0.00	0.00	1.76	0.00	1.76	0.00
Natural	0.00	0.00	0.00	0.00	5.24	0.00	0.00	5.24	0.00
ICBC	0.00	0.00	0.00	0.00	0.00	0.00	21.61	21.61	0.00
Total	**12.00**	**25.78**	**4.38**	**4.62**	**5.17**	**1.73**	**21.28**	**76.10**	**47.49**

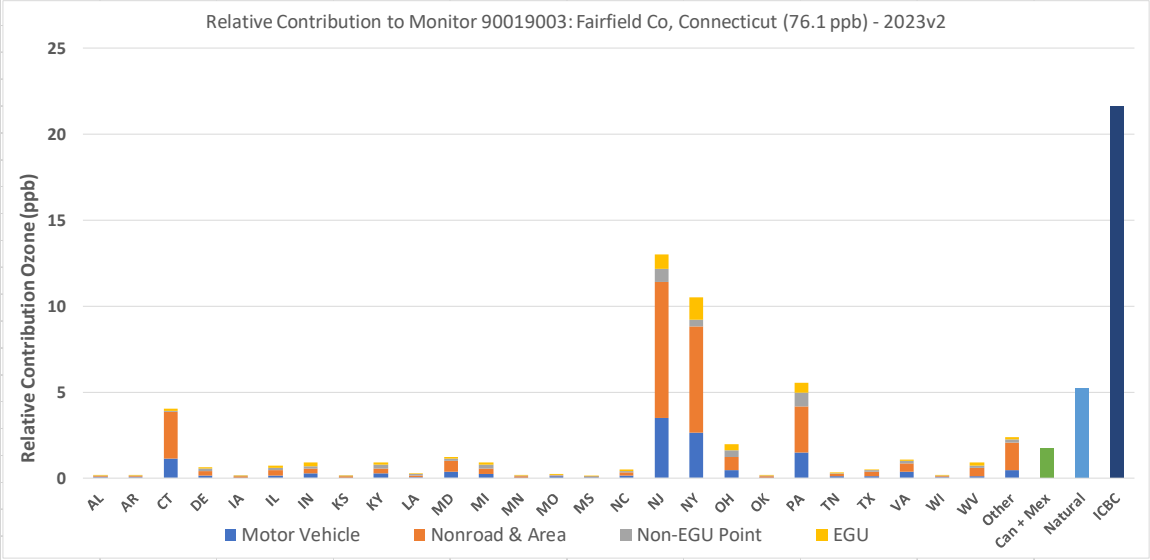


Figure 17. Relative ozone contribution in ppb by state and source sector using EPA's 2023v2 modeling platform at the Fairfield, CT (90019003) monitor.

Monitor	90099002		New Haven Co, Connecticut				Average 2023 DV (ppb) ->		71.8
APCA Relative Contribution (ppb) - Scaled to 2023 Avg DV - Future Modeled Days ≥ 60 ppb									
State	Motor Vehicle	Nonroad & Area	Non-EGU Point	EGU	Natural (Fire + Bio)	Can + Mex	Boundary	Total	Total Anthro
AL	0.04	0.03	0.04	0.01	0.00	0.00	0.00	0.12	0.12
AR	0.04	0.06	0.03	0.02	0.00	0.00	0.00	0.15	0.15
CT	1.07	2.75	0.09	0.39	0.00	0.00	0.00	4.30	4.30
DE	0.16	0.35	0.14	0.11	0.00	0.00	0.00	0.76	0.76
IA	0.04	0.08	0.03	0.03	0.00	0.00	0.00	0.18	0.18
IL	0.17	0.41	0.18	0.11	0.00	0.00	0.00	0.87	0.87
IN	0.30	0.33	0.17	0.19	0.00	0.00	0.00	0.99	0.99
KS	0.02	0.05	0.02	0.01	0.00	0.00	0.00	0.10	0.10
KY	0.23	0.27	0.20	0.11	0.00	0.00	0.00	0.81	0.81
LA	0.03	0.07	0.08	0.02	0.00	0.00	0.00	0.19	0.19
MD	0.38	0.73	0.12	0.11	0.00	0.00	0.00	1.35	1.35
MI	0.31	0.53	0.24	0.20	0.00	0.00	0.00	1.28	1.28
MN	0.04	0.11	0.07	0.02	0.00	0.00	0.00	0.25	0.25
MO	0.08	0.07	0.01	0.02	0.00	0.00	0.00	0.19	0.19
MS	0.03	0.03	0.02	0.01	0.00	0.00	0.00	0.09	0.09
NC	0.20	0.21	0.10	0.15	0.00	0.00	0.00	0.66	0.66
NJ	2.10	4.71	0.60	0.58	0.00	0.00	0.00	8.00	8.00
NY	2.56	5.89	0.37	0.90	0.00	0.00	0.00	9.72	9.72
OH	0.45	0.81	0.44	0.35	0.00	0.00	0.00	2.05	2.05
OK	0.02	0.04	0.04	0.00	0.00	0.00	0.00	0.11	0.11
PA	0.92	1.77	0.55	0.40	0.00	0.00	0.00	3.65	3.65
TN	0.09	0.08	0.06	0.01	0.00	0.00	0.00	0.24	0.24
TX	0.07	0.17	0.06	0.03	0.00	0.00	0.00	0.34	0.34
VA	0.54	0.75	0.20	0.12	0.00	0.00	0.00	1.61	1.61
WI	0.06	0.08	0.03	0.01	0.00	0.00	0.00	0.18	0.18
WV	0.09	0.57	0.15	0.19	0.00	0.00	0.00	1.00	1.00
Other	0.42	2.41	0.22	0.09	0.00	0.00	0.00	3.15	3.15
Can + Mex	0.00	0.00	0.00	0.00	0.00	2.26	0.00	2.26	0.00
Natural	0.00	0.00	0.00	0.00	5.57	0.00	0.00	5.57	0.00
ICBC	0.00	0.00	0.00	0.00	0.00	0.00	21.66	21.66	0.00
Total	**10.03**	**22.38**	**4.08**	**4.01**	**5.34**	**2.17**	**20.74**	**71.80**	**42.30**

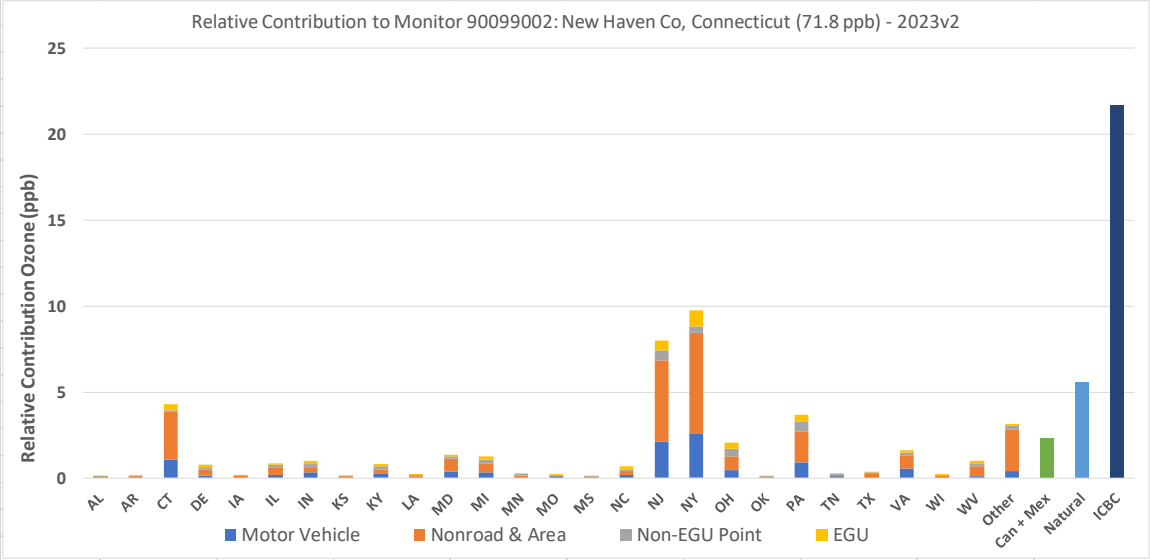


Figure 18. Relative ozone contribution in ppb by state and source sector using EPA's 2023v2 modeling platform at the New Haven, CT (90099002) monitor.

Monitor	482010024		Harris Co, Texas				Average 2023 DV (ppb) ->		75.5
APCA Relative Contribution (ppb) - Scaled to 2023 Avg DV - Future Modeled Days ≥ 60 ppb									
State	Motor Vehicle	Nonroad & Area	Non-EGU Point	EGU	Natural (Fire + Bio)	Can + Mex	Boundary	Total	Total Anthro
AL	0.13	0.15	0.26	0.01	0.00	0.00	0.00	0.56	0.56
AR	0.23	0.31	0.21	0.09	0.00	0.00	0.00	0.83	0.83
CT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IA	0.04	0.12	0.02	0.05	0.00	0.00	0.00	0.24	0.24
IL	0.01	0.03	0.02	0.01	0.00	0.00	0.00	0.07	0.07
IN	0.05	0.09	0.03	0.03	0.00	0.00	0.00	0.21	0.21
KS	0.12	0.27	0.08	0.03	0.00	0.00	0.00	0.51	0.51
KY	0.04	0.05	0.03	0.03	0.00	0.00	0.00	0.15	0.15
LA	0.78	1.69	2.59	0.54	0.00	0.00	0.00	5.60	5.60
MD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MI	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.03
MN	0.03	0.09	0.04	0.01	0.00	0.00	0.00	0.17	0.17
MO	0.10	0.11	0.02	0.01	0.00	0.00	0.00	0.25	0.25
MS	0.22	0.26	0.26	0.07	0.00	0.00	0.00	0.80	0.80
NC	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.02
NJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OH	0.05	0.08	0.03	0.01	0.00	0.00	0.00	0.17	0.17
OK	0.13	0.23	0.25	0.01	0.00	0.00	0.00	0.61	0.61
PA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TN	0.06	0.06	0.03	0.00	0.00	0.00	0.00	0.14	0.14
TX	6.52	12.74	7.39	1.85	0.00	0.00	0.00	28.50	28.50
VA	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.02
WI	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.04
WV	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Other	0.00	1.44	0.00	0.00	0.00	0.00	0.00	1.44	1.44
Can + Mex	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.23	0.00
Natural	0.00	0.00	0.00	0.00	5.13	0.00	0.00	5.13	0.00
ICBC	0.00	0.00	0.00	0.00	0.00	0.00	29.74	29.74	0.00
Total	**7.36**	**15.31**	**9.72**	**2.39**	**4.42**	**0.20**	**25.62**	**75.50**	**40.39**

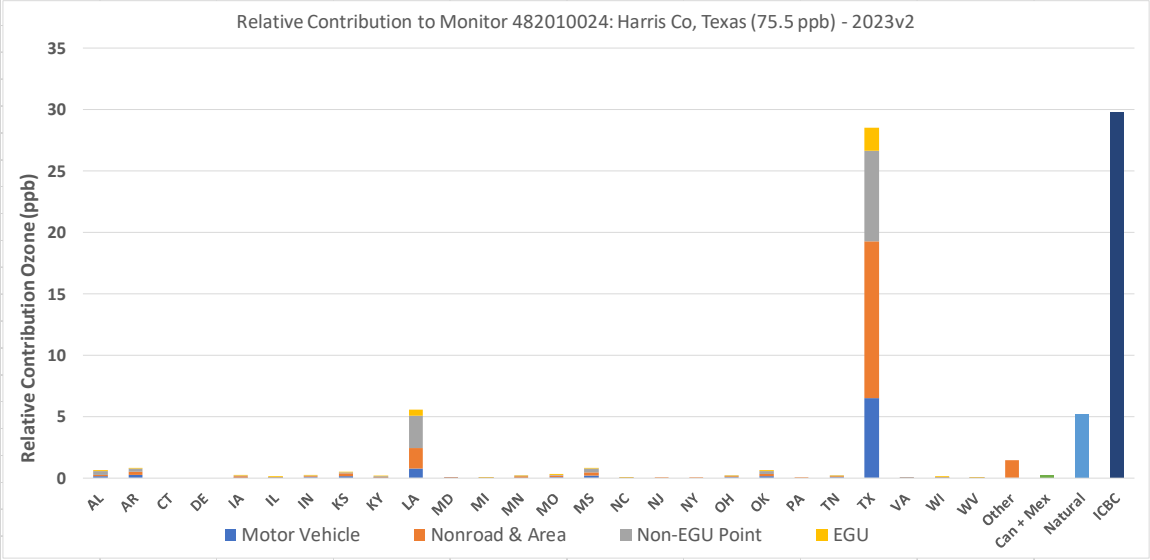


Figure 19. Relative ozone contribution in ppb by state and source sector using EPA's 2023v2 modeling platform at the Harris, TX (482010024) monitor.

Monitor	482010055		Harris Co, Texas				Average 2023 DV (ppb) ->		72.2
APCA Relative Contribution (ppb) - Scaled to 2023 Avg DV - Future Modeled Days ≥ 60 ppb									
State	Motor Vehicle	Nonroad & Area	Non-EGU Point	EGU	Natural (Fire + Bio)	Can + Mex	Boundary	Total	Total Anthro
AL	0.30	0.29	0.39	0.10	0.00	0.00	0.00	1.08	1.08
AR	0.22	0.34	0.22	0.10	0.00	0.00	0.00	0.88	0.88
CT	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01
DE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
IA	0.05	0.12	0.03	0.05	0.00	0.00	0.00	0.25	0.25
IL	0.06	0.15	0.08	0.06	0.00	0.00	0.00	0.35	0.35
IN	0.10	0.15	0.09	0.10	0.00	0.00	0.00	0.44	0.44
KS	0.12	0.26	0.08	0.03	0.00	0.00	0.00	0.48	0.48
KY	0.11	0.13	0.08	0.05	0.00	0.00	0.00	0.37	0.37
LA	0.82	1.81	3.08	0.51	0.00	0.00	0.00	6.21	6.21
MD	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.03
MI	0.02	0.04	0.02	0.01	0.00	0.00	0.00	0.09	0.09
MN	0.03	0.10	0.05	0.01	0.00	0.00	0.00	0.19	0.19
MO	0.14	0.15	0.02	0.02	0.00	0.00	0.00	0.34	0.34
MS	0.42	0.48	0.46	0.08	0.00	0.00	0.00	1.45	1.45
NC	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.05	0.05
NJ	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.04
NY	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.04
OH	0.05	0.10	0.04	0.02	0.00	0.00	0.00	0.21	0.21
OK	0.11	0.22	0.22	0.01	0.00	0.00	0.00	0.56	0.56
PA	0.02	0.07	0.01	0.01	0.00	0.00	0.00	0.11	0.11
TN	0.23	0.20	0.07	0.01	0.00	0.00	0.00	0.52	0.52
TX	6.72	11.50	5.94	1.31	0.00	0.00	0.00	25.47	25.47
VA	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.06	0.06
WI	0.03	0.04	0.02	0.00	0.00	0.00	0.00	0.08	0.08
WV	0.01	0.04	0.01	0.01	0.00	0.00	0.00	0.07	0.07
Other	0.08	2.16	0.41	0.03	0.00	0.00	0.00	2.68	2.68
Can + Mex	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.47	0.00
Natural	0.00	0.00	0.00	0.00	6.26	0.00	0.00	6.26	0.00
ICBC	0.00	0.00	0.00	0.00	0.00	0.00	23.40	23.40	0.00
Total	**8.75**	**16.62**	**10.21**	**2.30**	**5.63**	**0.42**	**21.07**	**72.20**	**42.07**

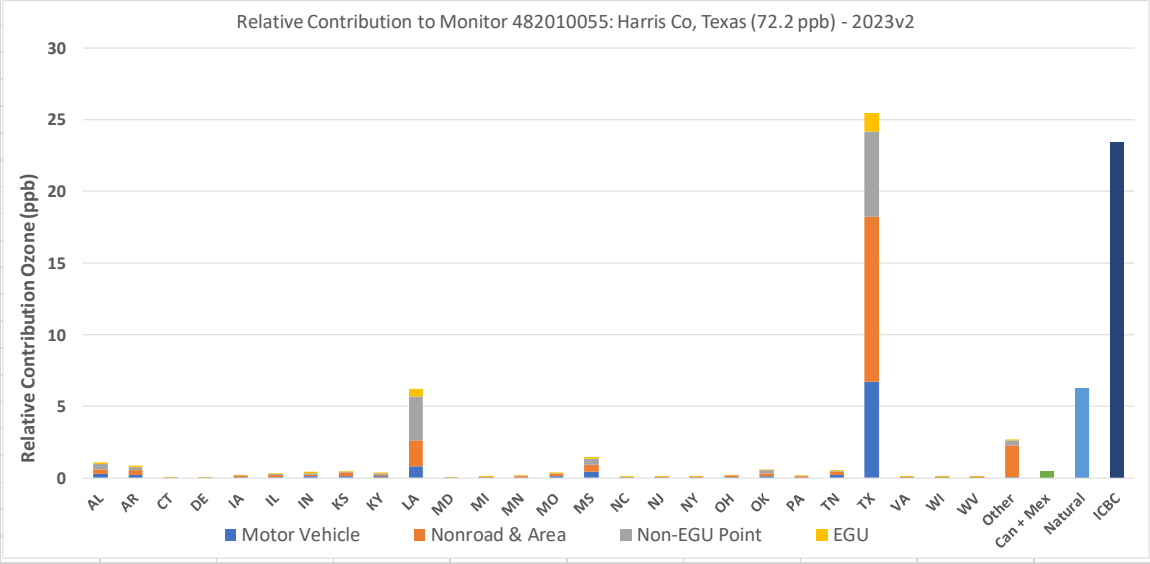


Figure 20. Relative ozone contribution in ppb by state and source sector using EPA's 2023v2 modeling platform at the Harris, TX (482010055) monitor.

Monitor	550590019		Kenosha Co, Wisconsin				Average 2023 DV (ppb) ->		72.8
APCA Relative Contribution (ppb) - Scaled to 2023 Avg DV - Future Modeled Days ≥ 60 ppb									
State	Motor Vehicle	Nonroad & Area	Non-EGU Point	EGU	Natural (Fire + Bio)	Can + Mex	Boundary	Total	Total Anthro
AL	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02
AR	0.05	0.08	0.03	0.02	0.00	0.00	0.00	0.18	0.18
CT	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.06	0.06
DE	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.04	0.04
IA	0.10	0.17	0.08	0.07	0.00	0.00	0.00	0.43	0.43
IL	5.70	10.30	2.83	0.73	0.00	0.00	0.00	19.56	19.56
IN	1.46	1.90	2.09	0.45	0.00	0.00	0.00	5.90	5.90
KS	0.11	0.23	0.08	0.06	0.00	0.00	0.00	0.48	0.48
KY	0.18	0.23	0.17	0.05	0.00	0.00	0.00	0.63	0.63
LA	0.02	0.06	0.07	0.01	0.00	0.00	0.00	0.16	0.16
MD	0.04	0.07	0.01	0.01	0.00	0.00	0.00	0.13	0.13
MI	0.33	0.46	0.22	0.15	0.00	0.00	0.00	1.16	1.16
MN	0.07	0.17	0.14	0.04	0.00	0.00	0.00	0.42	0.42
MO	0.24	0.30	0.04	0.07	0.00	0.00	0.00	0.66	0.66
MS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
NC	0.16	0.13	0.07	0.02	0.00	0.00	0.00	0.37	0.37
NJ	0.06	0.13	0.01	0.01	0.00	0.00	0.00	0.21	0.21
NY	0.11	0.24	0.03	0.02	0.00	0.00	0.00	0.40	0.40
OH	0.57	1.13	0.58	0.21	0.00	0.00	0.00	2.49	2.49
OK	0.10	0.19	0.15	0.04	0.00	0.00	0.00	0.47	0.47
PA	0.12	0.36	0.08	0.06	0.00	0.00	0.00	0.62	0.62
TN	0.03	0.03	0.05	0.00	0.00	0.00	0.00	0.11	0.11
TX	0.24	0.59	0.19	0.09	0.00	0.00	0.00	1.12	1.12
VA	0.25	0.26	0.13	0.02	0.00	0.00	0.00	0.66	0.66
WI	0.98	1.44	0.37	0.30	0.00	0.00	0.00	3.09	3.09
WV	0.07	0.41	0.10	0.11	0.00	0.00	0.00	0.70	0.70
Other	0.00	1.45	0.00	0.00	0.00	0.00	0.00	1.45	1.45
Can + Mex	0.00	0.00	0.00	0.00	0.00	1.06	0.00	1.06	0.00
Natural	0.00	0.00	0.00	0.00	10.18	0.00	0.00	10.18	0.00
ICBC	0.00	0.00	0.00	0.00	0.00	0.00	20.04	20.04	0.00
Total	**9.95**	**18.40**	**6.79**	**2.31**	**9.19**	**0.96**	**18.08**	**72.80**	**41.51**

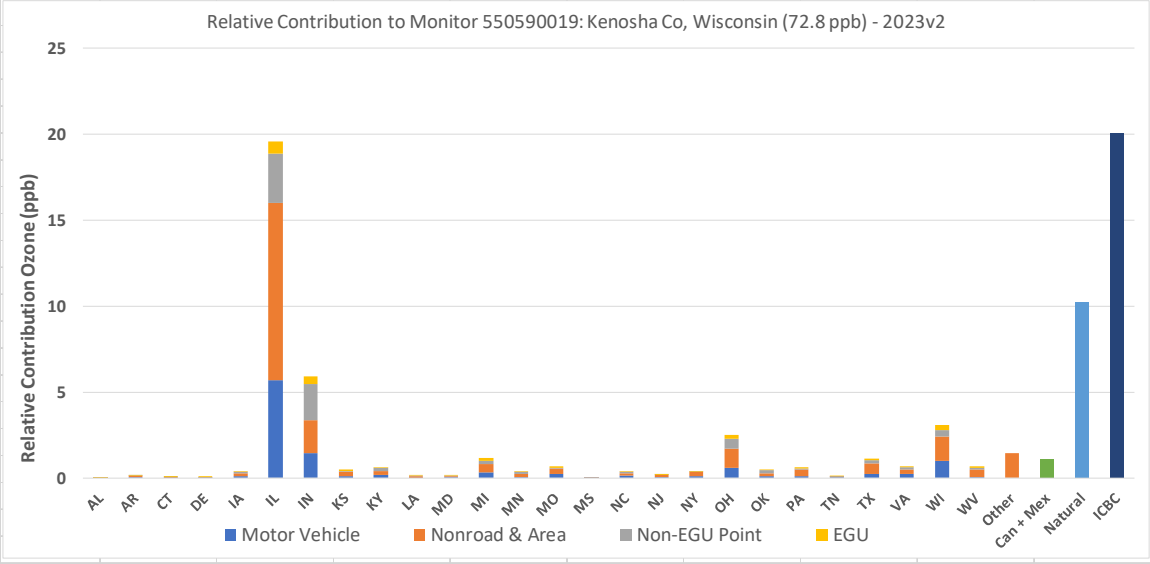


Figure 21. Relative ozone contribution in ppb by state and source sector using EPA's 2023v2 modeling platform at the Kenosha, WI (550590019) monitor.

Monitor	551010020		Racine Co, Wisconsin				Average 2023 DV (ppb) ->		71.3
APCA Relative Contribution (ppb) - Scaled to 2023 Avg DV - Future Modeled Days ≥ 60 ppb									
State	Motor Vehicle	Nonroad & Area	Non-EGU Point	EGU	Natural (Fire + Bio)	Can + Mex	Boundary	Total	Total Anthro
AL	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02
AR	0.06	0.10	0.04	0.03	0.00	0.00	0.00	0.23	0.23
CT	0.02	0.05	0.00	0.01	0.00	0.00	0.00	0.08	0.08
DE	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.05
IA	0.11	0.19	0.08	0.08	0.00	0.00	0.00	0.46	0.46
IL	4.08	7.20	2.55	0.56	0.00	0.00	0.00	14.39	14.39
IN	1.33	1.76	2.24	0.50	0.00	0.00	0.00	5.83	5.83
KS	0.13	0.22	0.08	0.05	0.00	0.00	0.00	0.48	0.48
KY	0.28	0.27	0.25	0.06	0.00	0.00	0.00	0.87	0.87
LA	0.02	0.07	0.08	0.01	0.00	0.00	0.00	0.19	0.19
MD	0.06	0.10	0.02	0.01	0.00	0.00	0.00	0.19	0.19
MI	0.34	0.48	0.17	0.14	0.00	0.00	0.00	1.13	1.13
MN	0.08	0.19	0.16	0.05	0.00	0.00	0.00	0.48	0.48
MO	0.25	0.33	0.05	0.07	0.00	0.00	0.00	0.70	0.70
MS	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.02
NC	0.26	0.22	0.07	0.02	0.00	0.00	0.00	0.57	0.57
NJ	0.07	0.17	0.02	0.02	0.00	0.00	0.00	0.27	0.27
NY	0.13	0.29	0.04	0.03	0.00	0.00	0.00	0.49	0.49
OH	0.41	0.76	0.42	0.18	0.00	0.00	0.00	1.77	1.77
OK	0.10	0.18	0.14	0.03	0.00	0.00	0.00	0.45	0.45
PA	0.13	0.38	0.08	0.06	0.00	0.00	0.00	0.65	0.65
TN	0.05	0.04	0.06	0.00	0.00	0.00	0.00	0.15	0.15
TX	0.24	0.60	0.19	0.10	0.00	0.00	0.00	1.14	1.14
VA	0.37	0.36	0.16	0.03	0.00	0.00	0.00	0.92	0.92
WI	2.36	4.41	0.93	0.53	0.00	0.00	0.00	8.24	8.24
WV	0.10	0.53	0.12	0.13	0.00	0.00	0.00	0.88	0.88
Other	0.00	1.19	0.00	0.00	0.00	0.00	0.00	1.19	1.19
Can + Mex	0.00	0.00	0.00	0.00	0.00	0.77	0.00	0.77	0.00
Natural	0.00	0.00	0.00	0.00	10.25	0.00	0.00	10.25	0.00
ICBC	0.00	0.00	0.00	0.00	0.00	0.00	18.45	18.45	0.00
Total	**10.03**	**18.34**	**7.26**	**2.46**	**9.34**	**0.71**	**16.81**	**71.30**	**41.82**

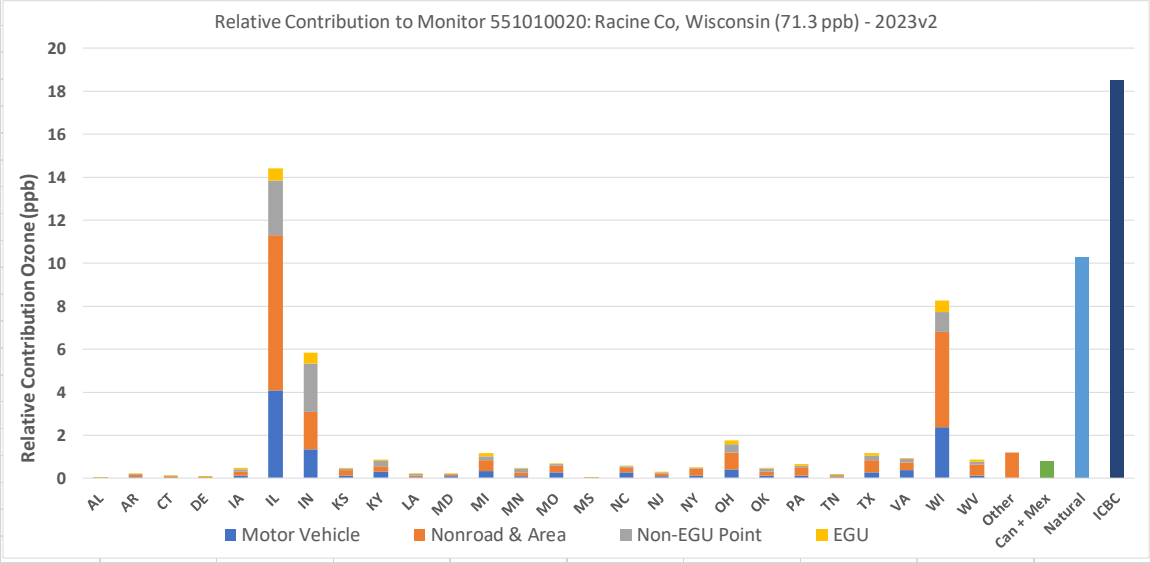


Figure 22. Relative ozone contribution in ppb by state and source sector using EPA's 2023v2 modeling platform at the Racine, WI (551010020) monitor.

The figures presented here tabularly and graphically illustrate how small the relative contribution of EGU and non-EGU emissions from many of the upwind states are compared with other source regions and sectors to each of these monitors. For example, as shown in Figure 15,

Indiana's EGUs contribution are a total of 0.15 ppb (0.21%) of the 2023 modeled ozone concentration. Total EGU contribution (across all states, linked or not) represent 3.75 ppb (5.1%) and non-EGU contribution represents 3.61 ppb (4.6%) of the total future year design value. Combined, these two category groups are only a fraction of the total onroad motor vehicle contribution (13.94 ppb or 19.1%) of the total future year design value.

Review of these data indicate that controls applied to just the EGU and non-EGU sectors in the upwind states would need to be substantial in magnitude to impact even minimally the 2023 design values calculated by EPA in this proposed rule. Because such drastic controls could not be installed nor operated in the region by the 2023 or even 2026 ozone season, EPA's proposed rule has effectively overstated the impact of the calculated remedy and inappropriately assigned the upwind remedy states.

15. Mobile sources are the primary cause of remaining air quality problems.

In this proposed FIP, EPA represents that "Future year activity data for onroad mobile sources were provided by some states and local agencies, and otherwise were projected…" using 2016 projections. 87 Fed. Reg. 20,065. 2016 data was also used to project commercial marine vessels emissions. *Id.* Nonroad mobile emission inventories were basically developed with state-submitted emissions data from California. *Id.* As discussed further below, the impacts of mobile source emissions are very significant. Absent from this transport rule is a concerted effort to depict a thorough assessment of existing and future emission reduction strategies for the mobile source sectors. States are currently implementing and developing emissions programs that warrant review relative to assessment of upwind/downwind alignment of attainment deadlines. Alignment of the mobile source controls with attainment plans for both upwind and downwind states is a CAA obligation of each that cannot be dismissed for the mobile source sector. Relevant to the dilemma of remaining air quality problems from mobile sources is EPA's footnote,

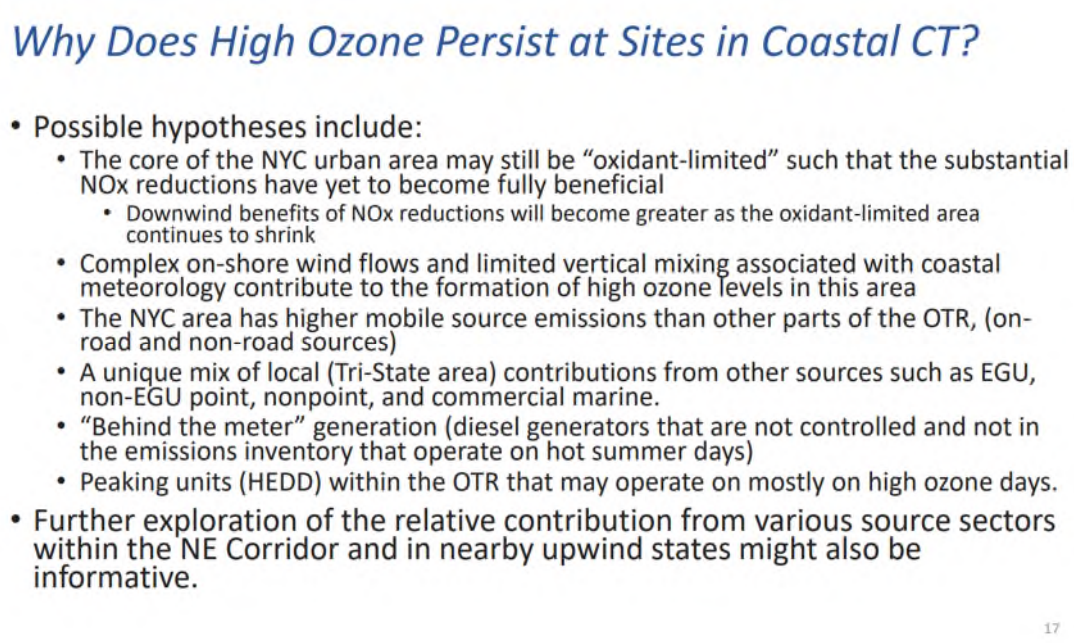
> The EPA recognizes that mechanisms exist under title I of the CAA that allow for the regulation of the use and operation of mobile sources to reduce ozone-precursor emissions. These include motor vehicle inspection and maintenance (I/M) programs, gasoline vapor recovery, clean-fuel vehicle programs, transportation control programs, and vehicle miles traveled programs. *See, e.g.*, CAA sections 182(b)(3), 182(b)(4), 182(c)(3), 182(c)(4), 182(c)(5), 182(d)(1), 182(e)(3), and 182(e)(4). The EPA views these programs as most effective and appropriate in the context of the planning requirements applicable to designated nonattainment areas.

87 Fed. Reg. 20,077, ftn. 142.

EPA's words are enhanced by the April 21, 2022, public hearing statement offered by Katherine Dykes, on behalf of the State of Connecticut, where she expressed concern that mobile sources impact nonattainment and they remain unaddressed. Source contribution assessment set forth below concerning Connecticut nonattainment illustrates mobile source controls would significantly improve ozone air quality for that state and nonattainment area.

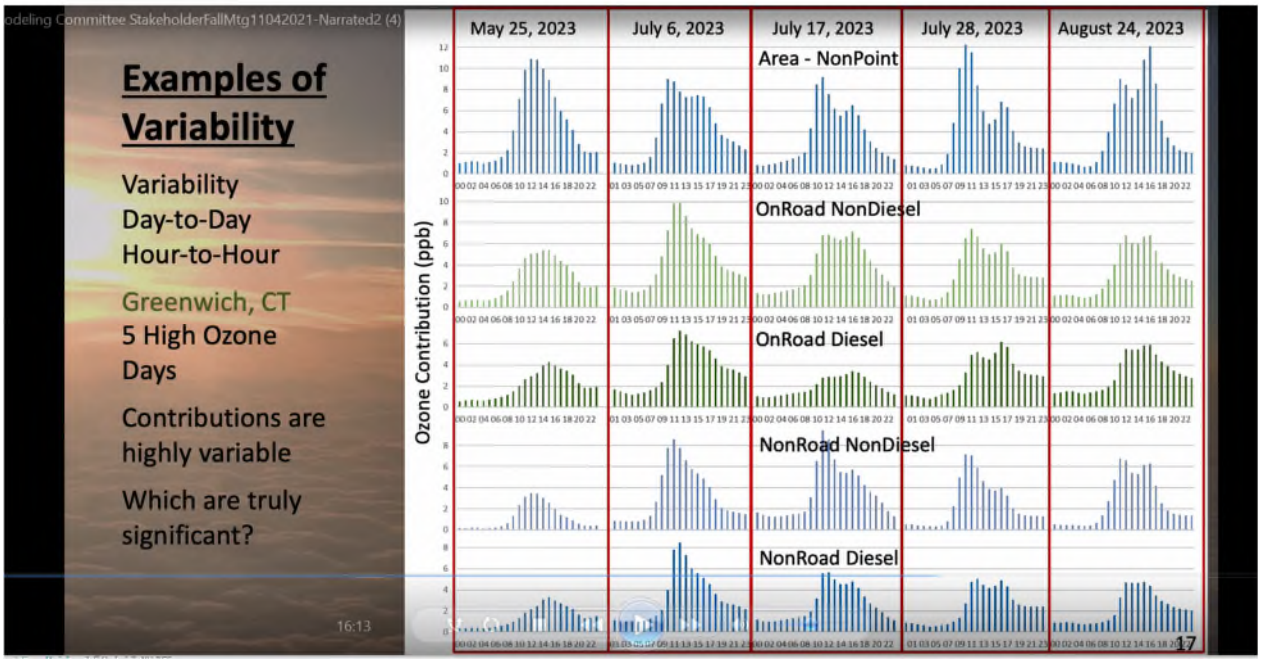
Available source apportionment data clearly shows that the most significant contributor of ozone in the East is mobile sources and accordingly these sources must be part of the aligned attainment strategy for upwind and downwind states. Even EPA recognized that mobile and other local sources are the likely cause of high ozone in Connecticut. In a May 14, 2018, presentation

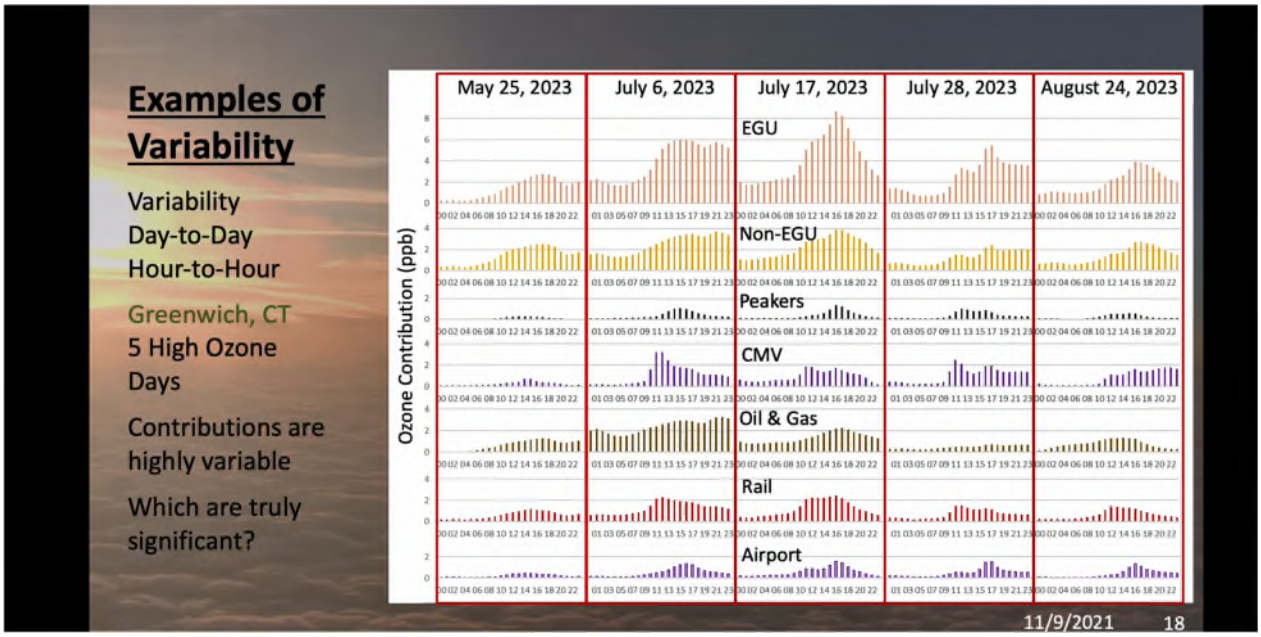
titled “Analysis of Ozone Trends in the East in Relation to Interstate Transport”, attached to these comments and identified as Exhibit C, Norm Possiel of the EPA Office of Air Quality Planning and Standards showed the following slide in which he links high ozone in costal Connecticut to mobile source emissions in the New York City area and peaking units within the OTR among other local sources in the Connecticut area:



See Exhibit C.

More recently, in a November 9, 2021, presentation to the Ozone Transport Commission (OTC), Dr. Jeff Underhill, Chair of the OTC Modeling Committee, showed the following hourly source apportionment results that demonstrate onroad and nonroad emissions dominate ozone formation in the modeled simulation at the Connecticut monitor:





Alpine Geophysics, on behalf of MOG, prepared a summary of source apportionment data in March of 2022 that documents recent ozone source apportionment modeling and associated results of the EPA 2016v2 modeling platform and associated 2023fj projections. For each monitor in the modeling domain, Alpine produced a standard set of products representing the relative contribution of region and category emissions to projected 2023 ozone concentrations.

An example of the relative contribution of EGU and non-EGU point source emissions to the downwind receptor (90099002) at New Haven, Connecticut is presented in Figure 23. Note the small contribution of both EGU and non-EGU point source emissions (6 percent) toward the total contribution of emissions forming ozone in the 2023 modeled simulation in comparison with the 47% contribution of mobile sources.

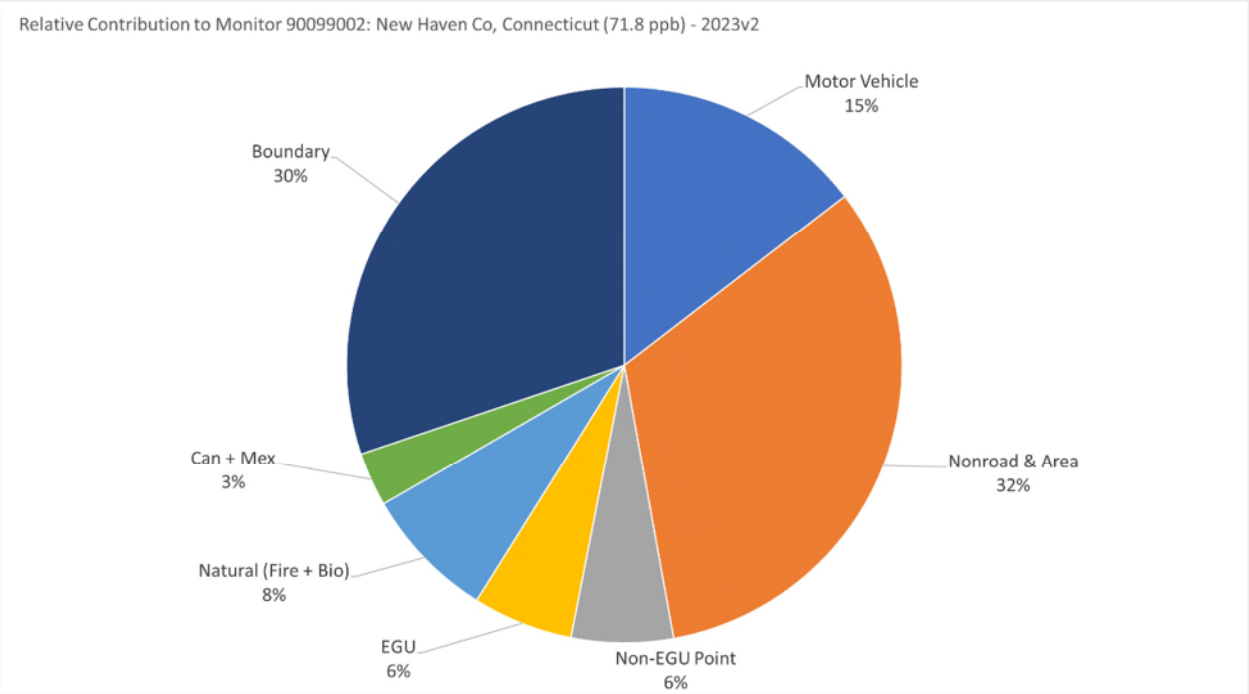


Figure 23. Relative contribution of emissions (by percent) from major source sectors to modeled ozone concentrations in 2023 at the New Haven, Connecticut monitor 90099002.

A similar level of emissions from EGU and non-EGU NOx contribution is seen in Figure 24 at the Kenosha, Wisconsin nonattainment monitor (550590019), where almost 43% of NOx contributions is from mobile and area source sectors.

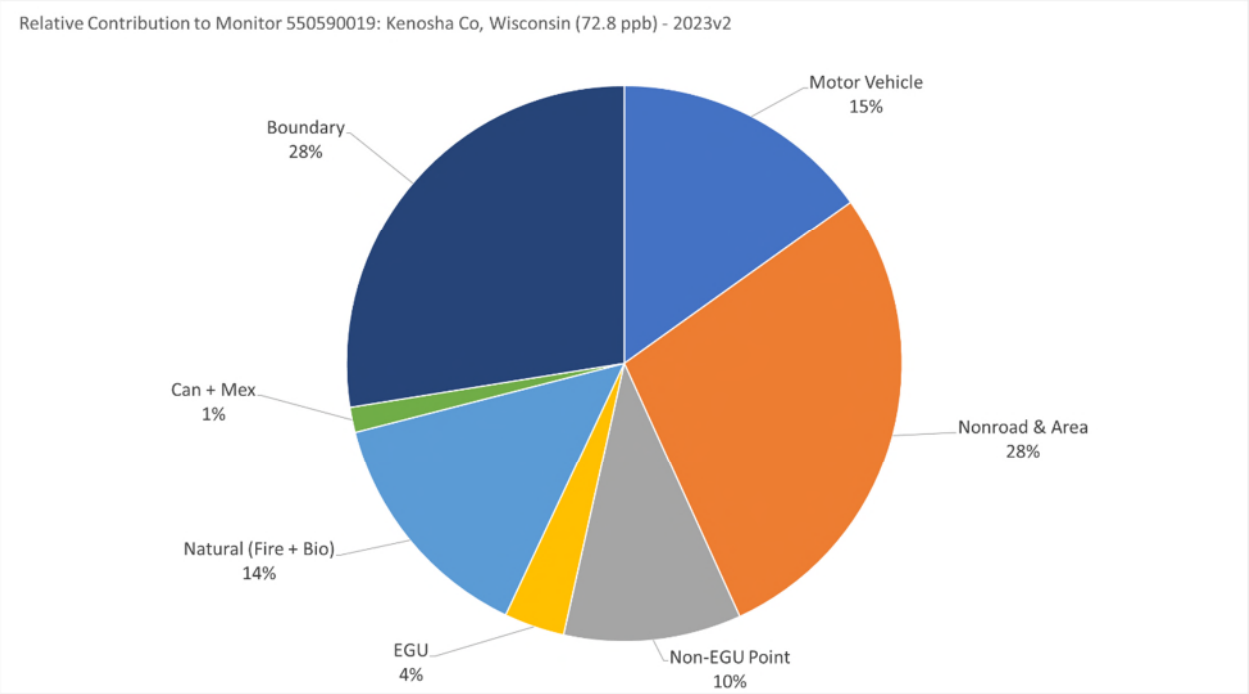


Figure 24. Relative contribution of emissions (by percent) from major source sectors to modeled ozone concentrations in 2023 at the Kenosha, Wisconsin monitor 550590019.

Based on these findings, it is questionable whether additional upwind regional ozone season NOx reductions from EGUs or non-EGU point sources would have the intended impact at downwind receptors compared to other, higher contributing, and local, source sectors. EPA is failing to target mobile sources that are significant sources impacting attainment and instead is looking to a strategy that does not align key upwind source controls and key downwind source controls to achieve a balanced attainment goal.

As can easily be seen in the data, the contribution of nearby sources, and especially mobile sources, dwarfs the contribution of upwind state point sources. The data for all monitors in the Northeast are similar. Mobile sources are the dominant source of ozone in the Northeast now and are projected to continue to dominate in 2023.

The EPA Strategic Plan at page 43 states that,

> EPA will collect and evaluate mobile source emission data to help guide future program priorities related to reducing criteria pollutant and greenhouse gas emissions from light-duty cars and trucks, heavy-duty trucks, and buses, nonroad engines and equipment, and from the fuels that power these engines. The Agency will develop the next round of multi-pollutant emission standards for light-duty and highway heavy-duty vehicles, which will improve air quality and reduce pollution near roads and other areas of high truck activity, such as warehouses and ports. EPA will also continue to work to ensure that Clean Air Act requirements are met for new transportation projects with heavy-duty diesel traffic, such that they do not worsen air quality near communities with environmental justice concerns.

> The Agency will address air quality concerns in these communities through implementing regulations, developing improved air quality models and mitigation measures, and collaborating with a broad range FY 2022-2026 EPA Strategic Plan – Objective 4.1 44 of stakeholders — including state air quality agencies and communities with environmental justice concerns — to develop targeted, sector-based, and place-based strategies for diesel fleets (including school buses, ports, and other goods movement facilities). EPA will support and oversee projects for the replacement of existing school buses with low- or zero-emission school buses funded under the Bipartisan Infrastructure Law, which will be implemented in alignment with Justice.[60]

MOG notes that EPA plans to deal with mobile sources in the future raises again the need to address alignment of the responsibilities of upwind and downwind states. Specifically, EPA has finalized "Late Model Year Light-Duty Vehicle Greenhouse Gas Emission Standards." 86 Fed. Reg. 74,434 (December 30, 2021). EPA has also proposed "Control of Air Pollution From New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards," 87 Fed. Reg. 17,414 (March 28, 2022). MOG filed comments to the proposed rule, noting the significant impact of road and nonroad vehicle emissions on monitored data. [61] The full text of MOG's May 16, 2022, comments to proposed rule referenced above are attached hereto as Exhibit D which were timely submitted to Docket ID No. EPA-HQ-OAR-0055. MOG's comments incorporate previous comments dated February 20, 2020, and the July 6, 2020, submittal of air quality modeling that directly assessed how the implementation of a CTI 90% NOx emission reduction scenario was likely to improve air quality in the continental United States. Assessment of the relative contribution Figures 22 and 23 found above, illustrate motor vehicle emissions are a significant percentage of relative contribution to 2023 ozone concentration predictions. This pattern is seen across most of the eastern United States as seen in Figure 25, motor vehicle emissions (red piece of each pie) are a significant percentage of relative contribution to 2023 ozone concentration predictions from U.S. anthropogenic sources at most monitors.

[60] As noted in the November 23, 2021, Midwest Ozone Group Comments on Environmental Justice Considerations for 2015 Ozone Transport Rulemakings, Docket No. EPA-HQ-OAR-2021-0668, EPA's historical approach to implementation of the Clean Air Act has been inconsistent with the goals of environmental justice because "mobile sources are the most significant contributors to the only remaining nonattainment monitors in the East, not emissions from power plants and industrial facilities."

[61] https://www.regulations.gov/comment/EPA-HQ-OAR-2019-0055-0983

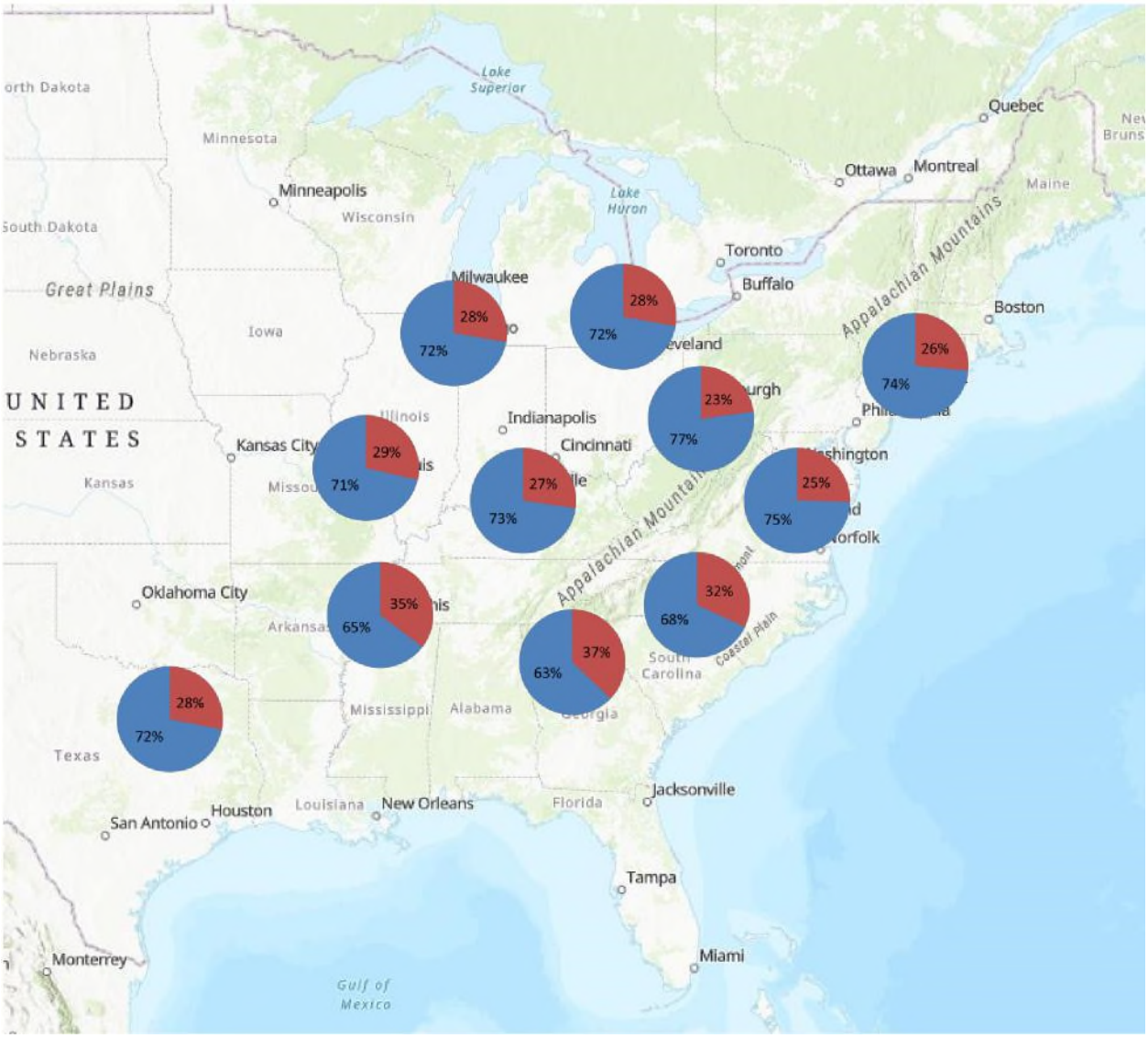


Figure 25. Relative contribution to 2023 ozone concentration predictions from U.S. anthropogenic sources. Red indicated onroad mobile source emission contribution. Blue indicates all other U.S. anthropogenic source emission contribution.

Through the sponsorship of MECA, Oak Leaf Environmental Inc. (Oak Leaf) completed a 48-state emissions impact analysis of a possible CTI scenario that would result from EPA aligning their final CTI rule to the 90% NOx emission reduction levels as proposed by the California Air Resources Board (CARB) and implemented and phased-in through fleet turnover assumed in MOVES through 2035. This Oak Leaf technical support document was attached to MOG's July 2020 comments. The report is also available on the MOG web site.[62] The basis for the CTI scenario was the most recent information – available at project commencement – from CARB (September 26, 2019, workshop proposal) with the understanding that EPA and CARB are working on a

[62] Modeling Inventory of Potential Heavy-Duty Cleaner Trucks Initiative Scenario Final Report, Prepared By: Jeremy G. Heiken Oak Leaf Environmental, Inc, June 2020 https://www.midwestozonegroup.com/wp-content/uploads/2021/11/OakLeaf-Final-Report-16June2020.pdf

nationally uniform regulatory framework.

The foundation of the evaluation was the EPA inventory projection for 2028fh[63]. The "2035 Base Case" inventory was developed to include an on-road fleet projection to 2035 with no change in the underlying regulatory context. The "2035 Control Case" inventory was developed to include both the 2035 fleet projection and the impacts of the proposed CTI on on-road vehicle emissions. Accordingly, the emissions impacts of the CTI are defined by the difference between the 2035 Control Case and 2035 Base Case inventories.

This is a consistent methodology for the development of the modeling platform compared to EPA's proposal in that both analyses maintain the 2028fh projection for non-mobile categories and updating projections for mobile sources. EPA's modeling for this proposed rule uses a 2045 projection for mobile sources, whereas Oak Leaf has projected to 2035. The Oak Leaf product also differs from the EPA proposal in that Oak Leaf's estimates assume NOx standards begin in MY 2024 compared to EPA's action that sets NOx standards beginning in MY 2027.

The modeled year of 2035 was chosen to allow as much phase-in of low NOx trucks meeting the future modeled CTI emission limits while still providing adequate confidence from the air quality perspective. Given that the new truck regulations begin implementation in 2024 and heavy-duty trucks last 20-30 years on the road, the 2035 timeframe represents an intermediate level of CTI truck penetration. It is expected that further NOx reductions will be realized beyond the 2035 modeled year as the heavy-duty truck fleet continues to turn over to the cleanest technology vehicles.

Figure 26 presents the relative, annual NOx benefit of the potential CTI scenario in 2035 at a county-level resolution. The percent benefit is estimated as a reduction in the total on-road NOx inventory (both light and heavy-duty vehicles). The range in benefit, by county, is between 4 and 60 percent.

[63] https://www.epa.gov/air-emissions-modeling/2016v1-platform

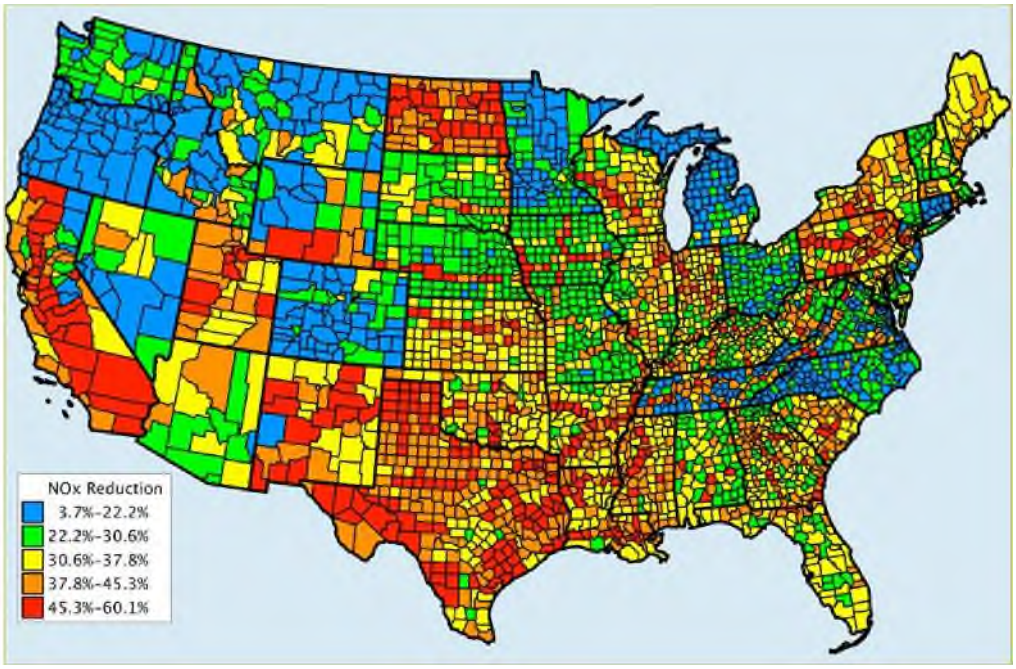


Figure 26. Annual NOx Benefit (Percent Reduction in On-Road Inventory) in 2035

Working with this 2035 scenario, Alpine Geophysics, LLC (Alpine) through the sponsorship of MOG, merged the onroad emissions data with a 2028 "base case" modeling simulation already completed. The Technical Support Document related to Alpine's 2028 "base case" is available on the MOG web site.[64] Alpine then ran photochemical grid modeling (PGM) with the Comprehensive Air Quality Model with Extensions (CAMx) model to generate future CTI scenario concentrations of ozone and $PM_{2.5}$. This modeling of the CTI scenario is described in a Technical Support Document that is attached to these comments and identified as Exhibit C and is available on the MOG web site.[65]

Together, this work assesses how the change in mobile source emissions between the 2028 base case and the CTI scenario would change the ozone and $PM_{2.5}$ ambient air quality projections at receptors in the continental United States.

As illustrated in Figure 27, the modeled 2028 base year 8-hour ozone design values were

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[64] Air Quality Modeling Technical Support Document for 12km Modeling of EPA 2028fh Base Case Technical Support Document Prepared by: Alpine Geophysics, LLC, May 2020 https://www.midwestozonegroup.com/wp-content/themes/MidwestOzoneGroup/files/Alpine_12km_Modeling_TSD_2028fh_May_2020_.pdf

[65] Cleaner Trucks Initiative Scenario Modeling Using EPA 2028fh Modeling Platform Technical Support Document Prepared by: Alpine Geophysics, LLC, June 2020 https://www.midwestozonegroup.com/wp-content/themes/MidwestOzoneGroup/files/Alpine_Geophysics_-_CTI_Scenario_Modeling_TSD_-_June_2020.pdf

found to be above the 70 ppb NAAQS in the states of California, Utah, Colorado, Texas and Connecticut.

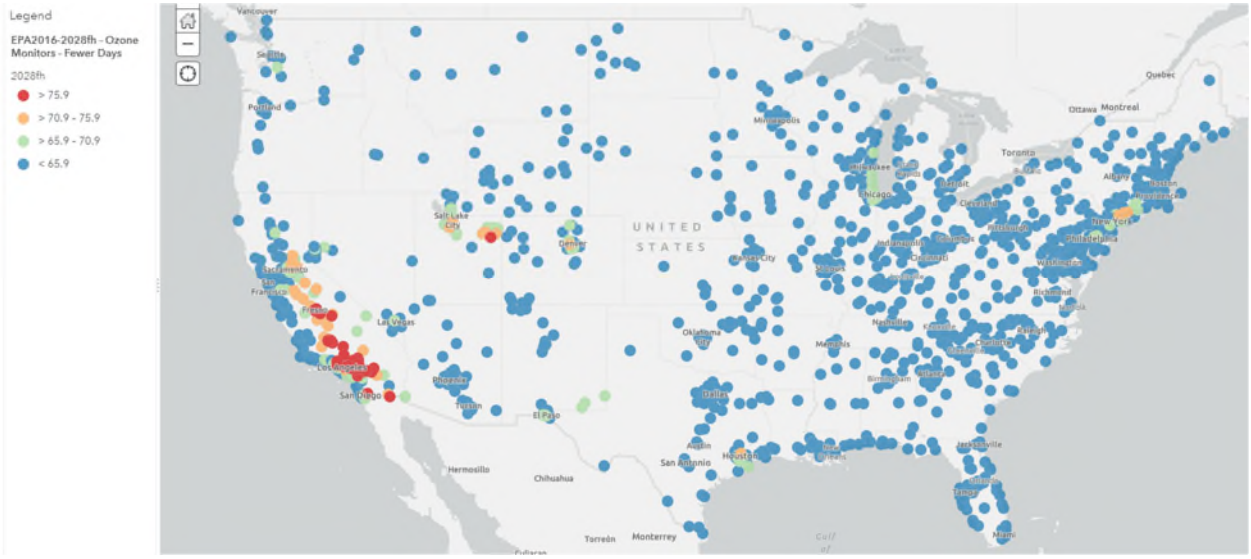

Figure 27. 2028 Base Case – Ozone Design Values (ppb)

As shown in Figure 28, applying the 90% NOx emission reduction CTI scenario to the 2028 base year eliminates ozone nonattainment everywhere east of the Rockies and in Denver and leaves only the states of California and Utah with 70 ppb 2015 ozone NAAQS nonattainment areas. Multiple monitors in California and in Salt Lake County, Utah also show modeled attainment with the CTI strategy.

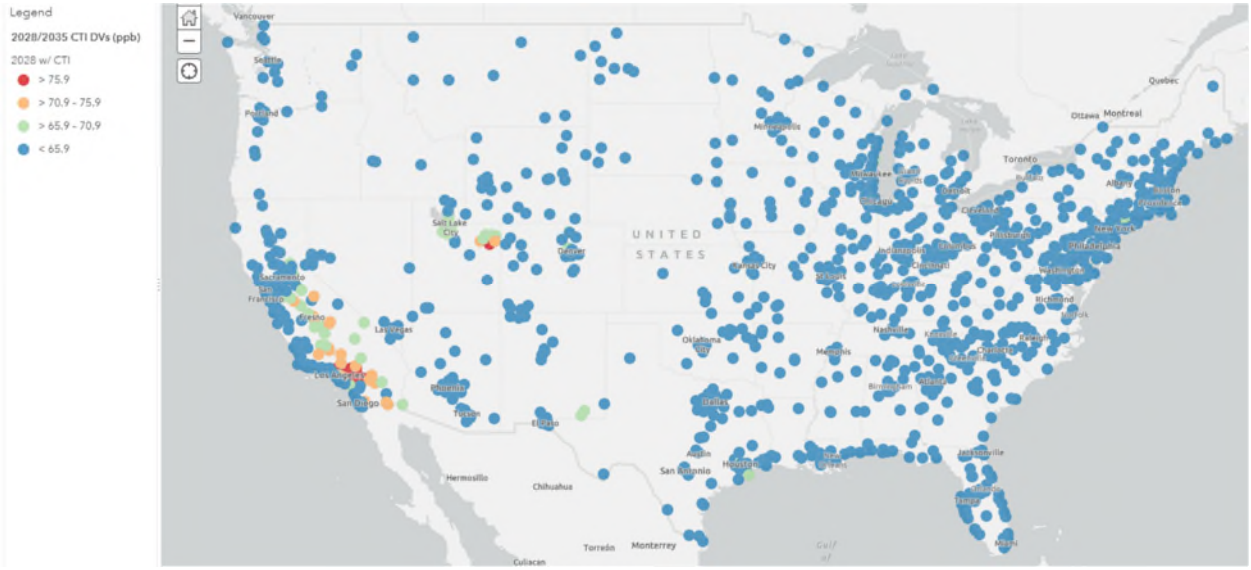

Figure 28. Calculated MDA8 Ozone Design Values (ppb) resulting from CTI strategy run.

As shown in Figure 29, the greatest ozone impact of the strategy is seen in urban areas and

along highway corridors with reductions of up to 6.5ppb seen in the west (San Bernardino) and 4.9ppb seen in the east (Atlanta).

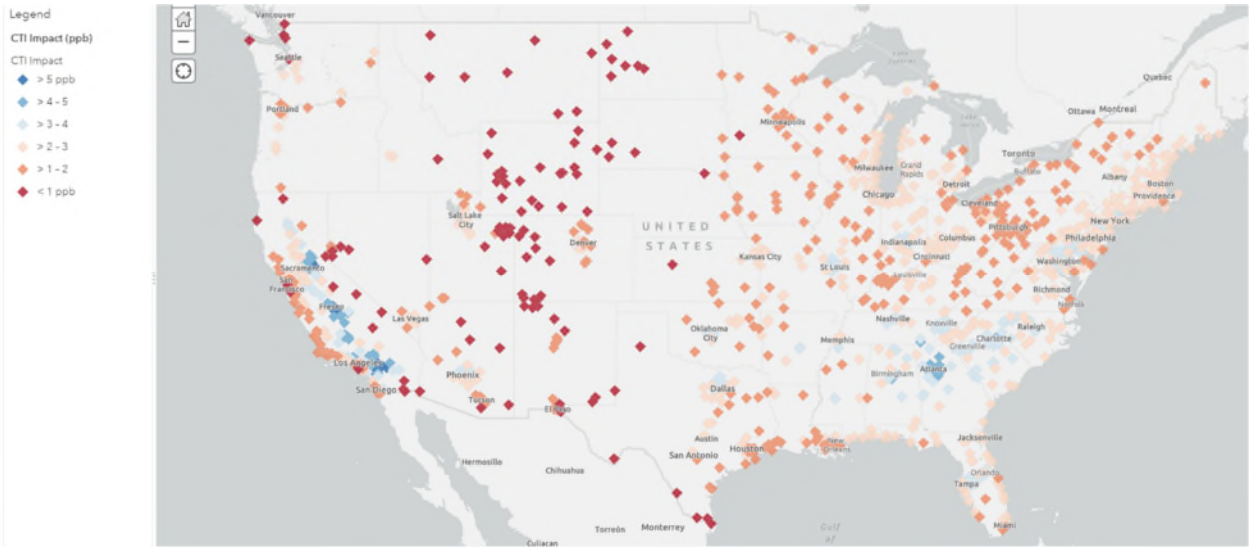

Figure 29. Calculated change in Ozone Design Values (ppb) resulting from CTI strategy run.

The CTI strategy impacts on the annual $PM_{2.5}$ design value nationwide are shown in Figure 30 with modeled attainment changes occurring at monitors in Madera, San Joaquin, and Stanislaus counties in California. The greatest annual $PM_{2.5}$ impacts are reductions of 0.64 µg/m^3 (4.1%) seen in the west (Kern County, CA) and 0.21 µg/m^3 (2.3%) reduction in the east (Chicago).

Figure 30. Annual $PM_{2.5}$ DVs (µg/m3)

From a daily (24-hour) $PM_{2.5}$ perspective, Figure 31 shows daily $PM_{2.5}$ design values nationwide. As with the annual $PM_{2.5}$ modeling, areas shown to move to modeled attainment as a result of the CTI strategy include Madera, Merced, and San Joaquin counties in California. The greatest daily $PM_{2.5}$ impacts are reductions of 4.5 $\mu g/m^3$ (9.8%) seen in the west (Tulare County, CA) and 0.9 $\mu g/m^3$ (4.5%) reduction in the east (Chicago).

Figure 31. Daily $PM_{2.5}$ DVs (µg/m3)

This modeling is consistent with EPA's proposed rule modeling[66] of 2045 with the Community Multiscale Air Quality (CMAQ) model in both geography and magnitude for ozone and PM concentrations with the implementation of the control program.

The modeling data illustrates the need for measurable improvements to environmental conditions in communities that are heavily impacted by dense traffic. Ambient improvements to PM, PM2.5, and ozone represented by this proposed rule will serve to facilitate the development of implementation outcomes of local environmental benefits attributable to controls on mobile sources like heavy duty trucks. EPA's burden is to effectively implement mobile source controls per Executive Order 12898, "Federal agencies must identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations."

Given the technical availability and cost effectiveness of achieving a 90% reduction of NOx emissions from heavy duty trucks by 2035 as established by MECA and by 2045 as demonstrated by EPA and given the remarkable improvement in air quality as demonstrated by the Alpine and EPA modeling, MOG urges that EPA work to effectively and timely regulation to achieve the 90% reduction in NOx emissions from heavy duty trucks.

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[66] Air Quality Modeling for the HD 2027 Proposal, Draft Technical Support Document (TSD), EPA-420-D-22-002, February 2022 (https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P101481P.pdf)

The following comments were filed by states concerning the proposed rule which support the need for additional mobile source controls to improve air quality and to achieve attainment.

Wisconsin Department of Natural Resources Comments[67]

- . . .recent ozone modeling done by the Lake Michigan Air Directors Consortium indicates on-road diesel vehicles, most of which are heavy-duty vehicles, contribute up to 8 parts per billion or 11% of ozone at Wisconsin's lakeshore nonattainment monitors.

- Wisconsin's ozone nonattainment areas are located downwind of major population centers, including transportation and freight hubs that are a significant source of heavy-duty vehicle emissions, the vast majority of which originate outside of Wisconsin. Based on EPA's recent transport modeling, Wisconsin contributes only 8- 16 percent of the ozone in it's own nonattainment areas while other states directly contribute between 42-48 percent of the ozone to these areas.

- EPA should finalize the most stringent, technically demonstrated proposed option (Option 1).

- EPA must finalize more stringent heavy-duty NOx standards no later than December 2022

- EPA's final rule should address vehicle tampering without relaxing existing inducements for operators to maintain selective catalytic reduction (SCR) systems.

- EPA should not exempt any engines MY 2027 and beyond from complying with final emission standards without additional technical justification and therefore volume allowance provisions as written should not be included in the final rule.

- Updates to the Phase 2 Heavy-duty GHG program must not delay adoption of more stringent NOx emission standards.

- Incorporates by reference NACAA comments.

National Association of Clean Air Agencies ("NACAA") Comments[68]

- Emission limits for most other major NOx sources have been ratcheted down repeatedly. HD trucks will continue to be one of the largest contributors to the national mobile source NOx inventory in 2028 without additional regulations to reduce emissions.

[67] https://www.regulations.gov/comment/EPA-HQ-OAR-2019-0055-1162
[68] https://www.regulations.gov/comment/EPA-HQ-OAR-2019-0055-1232

- As large swaths of the country slip deeper into nonattainment, or teeter on the cusp of it, many state and local air agencies are left with few avenues to achieve the emission reductions they sorely need. Areas that miss their attainment deadlines face the threat of "bump-up" to a more demanding classification of nonattainment – if they are not already classified as Extreme – and statutorily required economic sanctions if they fail to meet their attainment deadlines. On April 13, 2022, EPA proposed to bump up 30 areas in nonattainment of the 2008 and 2015 ozone NAAQS, meaning the citizens of these areas continue to suffer the detrimental impacts of unhealthful air.

- Regarding attainment and maintenance of the ozone NAAQS, most areas of the country are "NOx-limited," meaning that reducing NOx emissions is the key to success. In addition, research shows that in some areas of the country, such as much of the East Coast, NOx reductions are now "supercharged," meaning that one-pound of reduction in NOx emissions equals more than one pound of ozone reduction. Failure to adequately address transportation-related NOx sources will have a direct and consequential impact on state and local air agencies' abilities to fulfill their statutory obligations to attain and maintain federal air quality standards by mandated deadlines and achieve their environmental justice goals.

- It is incumbent upon EPA to do its part. If EPA does not incorporate NACAA's recommendations into the final rule and does not finalize the rule this year, in time for it to take effect with MY 2027, many areas will be forced to adopt severe limits on stationary sources, for which they have authority to control, at ever-increasing costs, if reductions from such sources are even available.

- In Wisconsin, EPA action to significantly reduce NOx emissions from highway heavy-duty vehicles is critical for the state to meet its Clean Air Act (CAA) attainment obligations relative to ozone. The onroad mobile sector is the largest contributor of NOx emissions in Wisconsin.

- New Jersey needs NOx reductions to meet its regional haze goals; given the timing of this rule – to be finalized this year – the related NOx reductions will contribute toward achievement of those goals. New Jersey is also home to several ports that are surrounded by environmental justice communities impacted by the emissions from heavy truck traffic. Mobile sources (onroad and nonroad) make up greater than 75 percent of New Jersey's annual and summer day inventory for NOx.

- For Louisville MSA, onroad heavy-duty diesel vehicles represent the third largest overall NOx emissions sector in the area (after EGUs and onroad non-diesel light-duty vehicles).

- In Maryland, and the Northeast region, medium- and heavy-duty trucks are the second leading contributor of NOx emissions. To attain the federal ozone standards, emission reductions from HD trucks are needed.

- For the District of Columbia, modeling conducted by the Ozone Transport Commission13 found that onroad diesel vehicles are the second largest contributor to ozone in the District, behind only onroad gasoline vehicles. Onroad diesels were modeled to contribute 16 percent of anthropogenic ozone on exceedance days and throughout the ozone season in the District, which is a higher percentage than all of the District contributes to itself (12 percent on average and 10 percent on exceedance days). NOx reductions from diesel vehicles are necessary in order for residents of the District to breathe healthy air.

- Connecticut's citizens have suffered the public health and economic impacts of ozone nonattainment. This past year, Connecticut experienced 21 days with unhealthy ozone levels, and on April 13, 2022, EPA proposed to reclassify Fairfield, New Haven and Middlesex Counties as Severe nonattainment with respect to the 2008 ozone NAAQS. The Connecticut Department of Energy and Environmental Protection recently issued an assessment of onroad medium- and heavy-duty vehicle emissions, which included the finding that in 2020 onroad HD vehicles accounted for 36 percent of total onroad NOx emissions but are projected to increase to 57 percent of total onroad NOx emissions by 2045 without the adoption of new emission standards.

- Recommendations address: HD Engine NOx Standards, Useful Life Periods and Warranty Periods, Standards for Low-Load and Idle Duty Cycles, SCR Inducement, Durability Demonstration Program, interim In-Use Emission Standards, Production Volume Allowances, Emission Credits and Averaging, Banking and Trading, Onboard Diagnostics, Anti-Tampering, PM Anti-Backsliding

Minnesota Pollution Control Agency Comments[69]

- Minnesota needs NOx reductions from heavy-duty vehicles to reduce ozone formation, address disparities in air pollution exposure, and improve overall air quality and related health outcomes. Future NOx reductions from heavy-duty trucks will help Minnesota reach its Regional Haze targets and reduce ozone transport.

- Minnesota has sought and achieved significant NOx reductions at industrial and electric generation sources but needs federal leadership to achieve on-road transportation reductions. The MPCA looks to EPA to develop appropriately protective policies for heavy duty vehicle-related pollution.

Lake Michigan Air Directors Consortium ("LADCO")[70]:

[69] https://www.regulations.gov/comment/EPA-HQ-OAR-2019-0055-1041
[70] https://www.regulations.gov/comment/EPA-HQ-OAR-2019-0055-1034

- LADCO's modeling shows that relative to other source types, emissions from roadway mobile sources are the largest contributors to surface ozone in the Great Lakes region. Regulatory actions that result in emissions reductions from roadway mobile sources will impact a major source of ozone precursor emissions in this region.

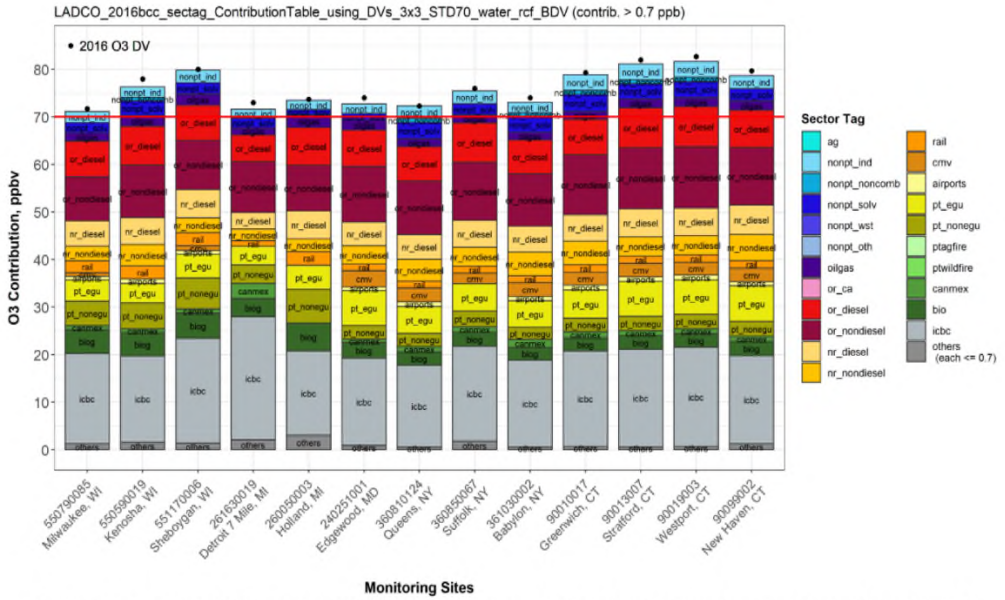

Figure 1. Modeled emissions sector contributions to 2016 ozone design values at key surface monitors in the eastern U.S.

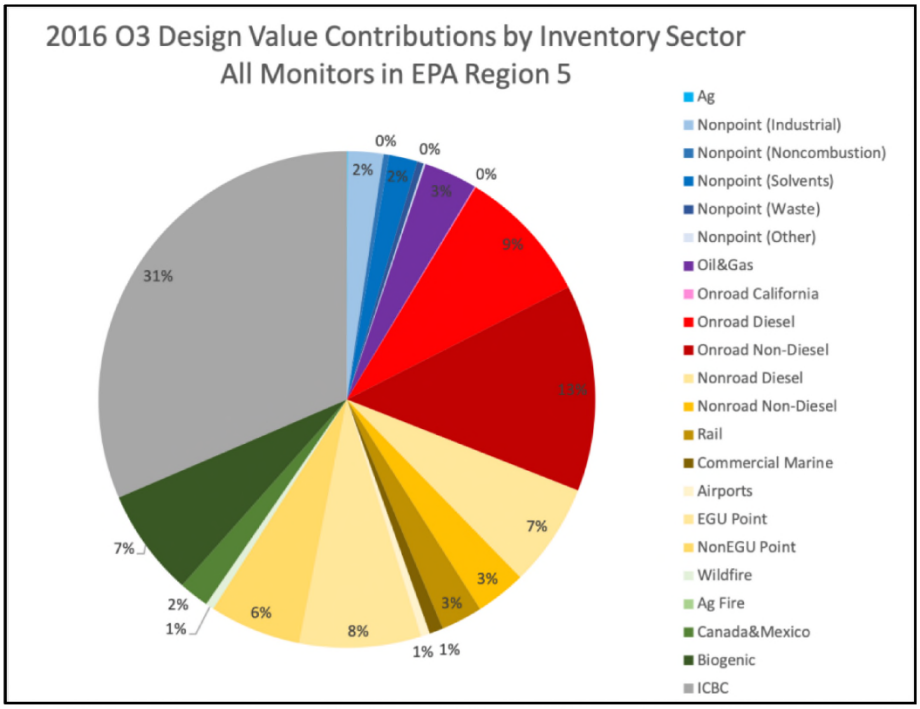

Figure 2. Modeled emissions sector contributions to 2016 ozone design values at all monitors in EPA Region 5.

Metropolitan Washington Air Quality Committee[71]

[71] https://www.regulations.gov/comment/EPA-HQ-OAR-2019-0055-0996

- The National Capital region has implemented several emissions control measures in all emissions sectors, including transportation, over the years to improve its air quality and comply with NAAQS for a variety of criteria pollutants. The region also relies heavily on federal emissions control programs for a significant amount of its emissions reductions. While significant progress has been made in the Washington region to reduce emissions of criteria pollutants and GHG emissions, addressing sources of low-level NOx, including from on-road vehicles, is critical to continuing to deliver cleaner air for the residents of the region.

EPA revised the GHG emission standards for passenger cars and light trucks under the authority provided by section 202(a) of the CAA. This section is found within the Chapter 85 of the U.S. Code titled, "Air Pollution Prevention and Control" and is incorporated into the chapter reference found within the state implementation plan obligations within Section 110(a)(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 – (A) include enforceable emission limitations and other control measures, means, or techniques (including economic incentives such as fees, marketable permits, and auctions of emissions rights), as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of **this chapter.** (Emphasis added).

In summary, nonattainment plans are required to meet the applicable requirements of the Clean Air Act also described as Chapter 85 of Title 42 of the U. S. Code. Approvable NAAQS implementation plans are required to incorporate relevant sections of the CAA, to include the programs promulgated under Subchapter II – Emission Standards for Moving Sources such as the GHG emissions standards for light-duty vehicles for 2023 and later model years. The air quality impacts from downwind state mobile source emissions reductions programs are measurable and warrant incorporation into the overall calculation of emissions reductions from CAA programs that will improve ozone air quality as part of the initial and aligned analysis of attainment strategies for both upwind and downwind states.

The proposed Heavy-Duty Engine and Vehicle Standards rule is anticipated to "reduce air pollution from highway heavy-duty vehicles and engines, including ozone, particulate matter, and greenhouse gases." 87 Fed. Reg. 17,414. EPA expects the standards in the proposed Options 1 and 2 to result in meaningful reductions in emissions of NOx, VOC, CO and PM2.5. "87 Fed. Reg. 17,581. Also, EPA predicts, "The proposal would reduce 8-hour ozone design values significantly in 2045." *Id.* at 17,582. These observations support the known impact of mobile sources on ozone ambient air quality.

As stated earlier in these comments, aligning the obligations to control significant sources of ozone precursors with the upwind and downwind ozone attainment obligations is the only path that leads to successful state implementation plan development as guided by the CAA. EPA's failure to recognize the impact of the timing of mobile source controls on implementation of the Good Neighbor provisions and the disapprovals being proposed is arbitrary and capricious and

exceeds EPA's authority under the CAA.

16. EPA's proposal focusing on point sources is flawed because it ignores mobile sources, which are the most significant source categories contributing to downwind nonattainment with the 2015 ozone NAAQS.

Review of historic emission changes and observed design values at linked downwind nonattainment and maintenance monitors in Connecticut, Pennsylvania, and Wisconsin indicates that controls associated with recently applied regulation and strategies to reduce NOx emissions from upwind EGU sources has nominal impact on ozone formation. As seen in the Figure 32 below, the relative design values at key receptors in 2020 is about the same (ratio near 1.0) compared to 2011. In contrast, EGU NOx emissions (yellow bar) from upwind CSAPR states have been reduced by over 65 percent in this same period and mobile source (onroad + nonroad) NOx emissions (green bar) from these states have been reduced by 53 percent. All other anthropogenic categories (red bar) show a NOx emission reduction of only 17 percent over this period.

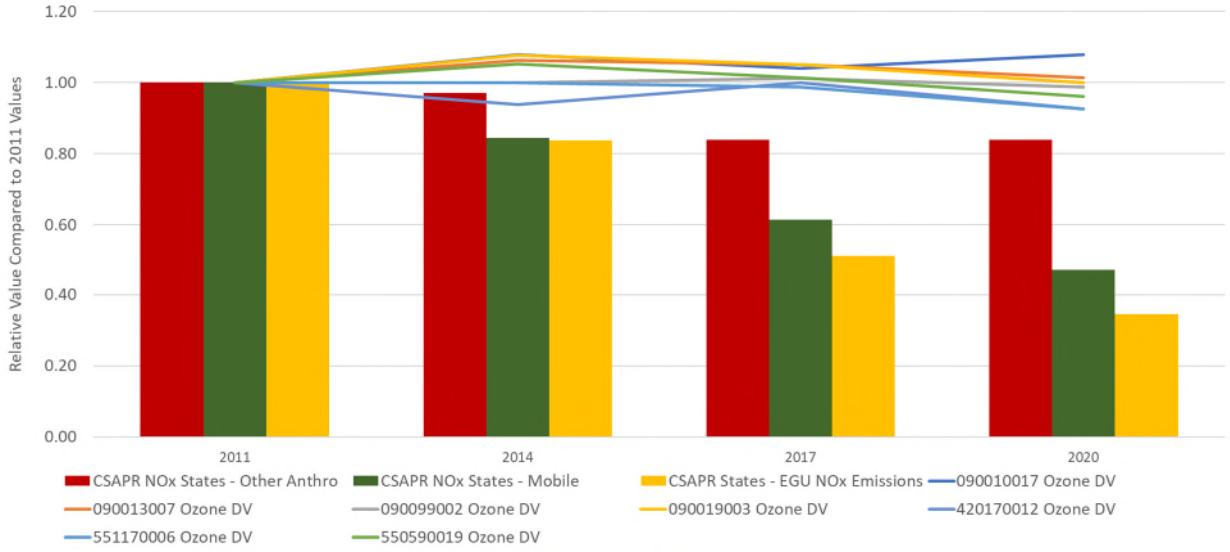

Figure 32. Relative ozone season NOx emission reduction from CSAPR identified upwind states and ozone design values at downwind receptors in Wisconsin and Connecticut between 2011 and 2020.

These data demonstrate that recent control strategies, directed toward upwind point source emissions are not having the intended impact on downwind ozone concentrations. In support of this observation, recent ozone source apportionment modeling of state-source sector contribution by Alpine Geophysics shows small ozone contribution from NOx emissions from EGUs. Given the relatively small contribution of EGU NOx and even smaller contribution of non-EGU NOx to ozone concentrations at relevant monitors predicted by USEPA's modeling platform, additional emissions reductions from either sector will have little, if any, impact on ozone concentrations at these downwind receptors.

17. EPA's determination of air quality improvement related to the remedy being proposed is technically flawed and fails to demonstrate that the proposed control requirements are necessary to address the Good Neighbor Provisions of the CAA.

EPA has chosen to use a simplified Air Quality Assessment Tool (AQAT)[72] to estimate the air quality impacts of a significant federal rule which has the potential to impact dozens of states and hundreds of facilities. EPA ignores their guidance by choosing not to support the proposed rule with a full photochemical air quality modeling run of the control case. Rather, the Agency elects to propose use of a shortcut screening process to estimate the air quality improvements that could result from the proposed control strategy. EPA asserts its decision is "due to timing constraints".

EPA's position that "[a]ir quality modeling would be the optimal way to estimate the air quality impacts at each cost threshold level from EGUs and non-EGUs emissions reductions" and that "AQAT is not the equivalent of photochemical air quality modeling" supports the standpoint that results from the control analysis are inadequate for the geographic and cost magnitude of this rule.

The results of application of the simplified AQAT demonstrate that maximum estimated air quality improvements at downwind receptors improves by no more than tenths of a ppb at any receptor and that no upwind state linkage was broken to downwind states. EPA should have prepared a final air quality simulation, consistent with the base case runs and with EPA guidance, to determine whether actual modeled air quality improvements would be expected from the proposed control strategy. It is incomprehensible a proposal of such significant costs would be proposed without adequate modeling of the impact of the rule.

In a June 17, 2022, Technical Memorandum, prepared by Alpine Geophysics at the request of the Midwest Ozone group and entitled "Review of EPA's Use of AQAT in the Federal Implementation Plan for the 2015 Ozone NAAQS Transport Proposed Rule" ("Alpine Technical Memorandum" attached to these comments and identified as Exhibit E) an analysis is offered of the application of the AQAT to the proposed FIP/transport rule. The Alpine Technical Memorandum analyzes the myriad steps taken by EPA to estimate the emissions and air quality impact of the final remedy control case and discusses where this methodology compromises the findings and bases for the proposed FIP/transport rule. Alpine contests that at a minimum, EPA should have prepared a final air quality simulation, consistent with the base case runs and with EPA guidance, to determine whether actual modeled improvements would be seen and that results generated from the use of the simplified AQAT should not be used to justify the level of control, cost to implement, or the improvement in air quality identified in the proposed rule.

Specifically, the Alpine Technical Memorandum identifies multiple errors and inconsistencies with the approach used by EPA to address Step 3, including the following:

1. The IPM/CAMx-developed calibration factors for AQAT include units operating at certain levels of control or have already been retired as estimated by IPM. These

[72] EPA-HQ-OAR-2021-0668-0117.

photochemical model-derived calibration factors are based on the specific emissions inventory and unit level operating conditions estimated by IPM.

2. The emission reductions calculated with the EA, under the AQAT approach, include changes associated with units that have been retired in the IPM base case simulations. For these IPM-retired units and the states in which these units are located, these calibration factors are not applicable as EA generated emission reductions cannot technically be associated with a unit that has been retired. We have identified thousands of ozone season NOx tons that EPA includes as emissions reductions from EGUs that EPA had already modeled as retired in the future base case.

3. At multiple units, the resulting emission budgets (post-control) calculated with the EA, under the AQAT approach, are found to be higher than the emissions originally used in the photochemical air quality simulations from IPM/CAMx modeling and used to prepare the calibration factors for the simplified AQAT.

4. In multiple states, the resulting emission budgets (post-control) calculated with the EA are found to be higher than the emissions originally used in the AQ modeled base case simulations and used in the calibration factors for the simplified AQAT.

MOG is very much in agreement with Alpine Geophysics that EPA chose to ignore their own guidance and used the simplified AQAT methodology to assess the air quality impacts of various emission control strategies, including the final proposed control case proposed in the rule. At no time in this proposed rulemaking did EPA run a full photochemical model simulation accounting for the source and region-specific reductions that considers the unique temporal-spatial characteristics in emissions to evaluate the air quality change associated with the final proposed control case.

As documented in the Alpine Technical Memorandum, as part of the multi-step data population, calibration, and additional adjustment of the simplified AQAT, EPA has complicated and compromised individual steps and incremental adjustments which lead to their final findings and control decisions.

In place of a direct comparison of the final remedy to an air quality simulation, EPA can only provide a comparison of various calibration factors as justification for their conclusion that the simplified AQAT provides reasonable estimates of air quality concentration changes at individual receptors at magnitudes in the hundredths (0.01) of ppb – an infinitesimally small value.

Considering the importance of this regulation, significant cost to impacted industries and electric consumers, potential impact on electric supply reliability, and miniscule air quality benefit projected for the required control scenario, at a minimum, EPA should have run an air quality simulation to corroborate its findings with the simplified AQAT. Anything less constitutes arbitrary and capricious action.

As has been stated by the U.S. Supreme Court, EPA does not have authority to "require a State to reduce its output of pollution by more than is <u>necessary</u> to achieve attainment in every

downwind State". (Emphasis added). *EPA v. EME Homer City et. al*., 572 U.S. at 521, 2014. The Supreme Court went on to explain that "[O]nly reductions unnecessary to downwind attainment anywhere fall outside the Agency's statutory authority."

We have pointed out in these comments that EPA's assessment of the necessity of the controls it has proposed fails for a variety of reasons including (1) the errors in its assessment of air quality improvement as explained in the Alpine Technical Memorandum (Exhibit E) , (2) the failure to address downwind state mobile sources the largest contribution to downwind nonattainment, (3) the failure to align the emission reduction commitments of upwind and downwind states, (4) the decision to assess cost effectiveness based on NOx control cost effectiveness,[73] and (5) the failure to consider the potential benefit of VOC controls. The need to address these factors is made all the more important because this proposed rule addresses the more stringent 2015 ozone NAAQS with a significantly expanded number of nonattainment and maintenance areas[74] as compared with the 2008 ozone NAAQS.[75]

Notwithstanding the deficiencies in EPA's analytical approach to this rule, EPA's proposal asserts that the cost of its proposal would be $22 Billion[76] and would result in only the following air quality improvements[77]:

Existing EGU controls in 2023	0.07 ppb
New EGU controls / Gen. shifting in 2026	0.36 ppb
Non-EGU (Tier 1)	0.18 ppb
Non-EGU (Tier 2)	0.04 ppb
Total	0.64 ppb

In comparison, EPA Revised CSAPR Update involved a cost of $370 Million[78] with a resulting air quality improvement of 0.17 ppb.[79]

EPA's proposed rule, therefore, is premised on the assumption that it would achieve 3.7 times the air quality improvement upon which the Revised CSAPR Update was based but at a cost that would be 60 times the cost of the Revised CSAPR Update.

The Supreme Court in *Homer City* has made it clear that implementation of the Good Neighbor Provisions limits EPA's authority to the elimination of emissions from sources in upwind states "that can cost-effectively be reduced."[80] As these comments demonstrate, the controls proposed by EPA are not cost-effective. Moreover, if finalized, the proposed control requirement

[73] 87 Fed. Reg. at 20,075-77.
[74] 87 Fed. Reg. at 20,068-70.
[75] 81 Fed. Reg. at 74,533.
[76] 81 Fed. Reg. at 20,047, 20,160.
[77] 87 Fed. Reg. at 20,097.
[78] 86 Fed. Reg. at 23,060.
[79] 86 Fed. Reg. at 23,108.
[80] *Homer City*, p. 26.

will have a significant negative impact on the nation's economy.[81] EPA repeatedly describes the object of the proposed as achievement of "meaningful" improvement in air quality.[82] EPA, however, fails to meet its purported objective because the proposed air quality improvements result in very little change in the nonattainment or maintenance status of any downwind monitors (87 Fed. Reg. at 20,098-99), effectively leaving downwind states with the same burden to impose nonattainment controls on their local sources.

It is also significant that in advancing the proposed FIP/transport rule, EPA has abandoned the approach it applied in prior transport rules that involved selecting the appropriate controls only after deciding that the selected controls "maximized" air quality improvement with NOx emission reduction. As was described in the preamble to the final Revised CSAPR Update Rule, EPA compared NOx emission reductions and air quality improvements at different costs seeking to find a bend in the "knee-of-the-curve." Specifically, EPA offered the following description[83] of this process:

> Taken together, this level of control stringency in emission budgets represents the level at which incremental EGU NOX reduction potential and corresponding downwind ozone air quality improvements are maximized with respect to identified near-term emission control technologies.

The proposed rule, however, takes a different approach. In the proposed FIP, EPA selected required controls and NOx emission reductions completely independent of air quality improvement. Specifically, EPA notes in its non-EGU related Technical Memorandum that the process used to determine the requisite level of emissions reductions was implemented through the assignment of emissions limits to units based on uniform criteria which EPA compared to its new source performance standards (NSPS) and reasonably available control technology (RACT) requirements. Neither the NSPS nor the RACT programs are designed to achieve air quality improvements. EPA determined the applicable control requirement and related NOx reduction by using outdated and inaccurate air quality modeling performed in support of the Revised CSAPR Update rule and subsequently assessed air quality improvement related to the final remedy case. Instead of air quality improvement being considered as part of the selection of the control strategy, air quality was not examined until after the control strategy was selected. EPA's process flies in the face of the Supreme Court's mandate in *Homer City* which limits EPA's authority to the imposition of controls only to the extent necessary to attain NAAQS requirements.

Beyond the technical and legal flaws related to the failure to maximize NOx emission reductions based on air quality improvement, EPA's methodology for assessing air quality improvements is also flawed for all of the reasons cited in the Alpine Technical Memorandum (Exhibit E). Since EPA's analysis was based on the air quality modeling undertaken in connection

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[81] EPA's own analysis assumes that this proposal would force the shutdown of 15% of the coal-fired electric power generation capacity. U.S. EPA, Regulatory Impact Analysis for Proposed Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard, at Table 4-14. EPA-HQ-OAR-2021-0668-0151.
[82] 87 Fed. Reg. at 20,034, 40, 43, 53, 55, 76, 83, 94.
[83] 86 Fed. Reg. at 23107.

with the Revised CSAPR Update[84] the technical deficiencies render EPA's proposal arbitrary and capricious. The Revised CSAPR Update modeling contains an outdated emission inventory that did not account for any on-the-books control programs adopted after 2019 and does not reflect the updated emission inventory that was used by EPA to assess Step 1 and 2 issues in connection with the current proposal.[85]

For these and other reasons set forth in these comments, the rule as proposed fails to satisfy the requirements of the Good Neighbor Provisions of CAA and should not be finalized as proposed.

18. EPA assessment of the cost and feasibility EGU controls and related budgets are erroneous and unjustified and do not support the proposed rule.

MOG supports the comments that have been submitted to the docket by its EGU members and participants. As will be noted in this section of MOG's comments on the proposed rule, EPA has no legal or technical justification for the imposition of any new controls on EGU's.

To assist in the assessment of EPA's Step 3 analysis of emission control, MOG has engaged the services of nationally renowned experts J. Edward Cichanowicz, James Marchetti, Michael C. Hein and Shirley Rivera who have assessed EPA's analysis of EGU related control equipment, costs and state budgets and have offered their assessment of the merit of EPA's proposal in a report entitled "Technical Comments on EGU Control Technology Options and Emission Allocations Proposed by the Environmental Protection Agency in Support of the Proposed 2015 Ozone NAAQS Transport Rule" dated June 17, 2020 ("Cichanowicz, Marchetti, Hein and Rivera Report") which is attached to these comments and identified as Exhibit F. As will be discussed in this section of MOG's comments, the Cichanowicz, Marchetti, Hein and Rivera Report finds that EPA was in error in determining the merit of EGU controls and related budgets.

A. EPA has erroneously included EGU units in its assessment of EGU control costs that are not representative of the units that exist in the states that are the subject of the proposed rule.

As demonstrated in the research included in the Cichanowicz, Marchetti, Hein and Rivera Report [86], EPA began its control cost analysis using an EGU inventory that is grossly divergent from the inventory of EGUs that actually exist in the 25 states subject to the proposed transport rule. For example, in the evaluation of SCR retrofit, EPA includes the electric generating units in the 25 states applicable to the program, and an additional 38 units in 10 other states. These additional units are not representative of the units in the 25 states and distort the incurred cost per ton for the units in the 25 states included in the proposed rule. EPA did not justify inclusion of the additional states in the 25-state evaluation.

EPA's analysis of EGUs with SCRs installed considered a population of 226 units with 172

[84] 87 Fed. Reg. at 20,083.
[85] 86 Fed. Reg. at 23,075.
[86] Exhibit F, at pages 4–7.

meeting the selection criteria in all states, but EPA erroneously included in this total an additional 46 units in nine states not subject to the proposed rule, again rendering its conclusions inaccurate.

For oil or gas fired units, EPA identified 20 candidate units of which 16 meet the selection criteria in the states subject to the proposed rule but erroneously included five EGUs in its database from two states not subject to the proposed rule.

The net result of EPA's erroneous inclusion of this many EGUs from states not subject to the rule in its cost work means that all of EPA's conclusions are wrong, and not by a small amount.

B. EPA's assessment of EGU combustion controls is flawed.

The research performed in the Cichanowicz, Marchetti, Hein and Rivera Report also demonstrates that EPA over-estimates the capability of advanced combustion controls to limit boiler NOx emissions to extremely low rates (per lbs/MBtu). EPA appears to define advanced combustion controls as some combination of low NOx burners and overfire air, both of which delay or "stage" the combustion process to create NOx-reducing regimes with a flame. EPA does not offer any other definition of advanced technology but appears to treat a unit that emits NOx at greater than 0.25 lbs/MBtu as not equipped with advanced technology.[87]

Specifically, EPA notes in the EGU TSD[88]

> Modern combustion control technologies routinely achieve rates of 0.20 – 0.25 lb NOx/MMBtu and, for some units, depending on unit type and fuel combusted, can achieve rates below 0.16 lb NOx/MMBtu.

The NOx emission rates cited by EPA as attainable are based on fuel composition that cannot be extrapolated to the national inventory. EPA does not acknowledge – especially for tangential-fired boilers firing bituminous coal - that atypical reference fuels particularly the tangential-fired boilers prevent generalizing NOx emission rates from the small subset of boilers to the national inventory. Further, EPA did not conduct a detailed cost evaluation of combustion controls, using costs derived from a 2011 rulemaking. The reference data for this 2011 rulemaking is not shared in the reference documentation. Rather, EPA cites calculations using the Sargent & Lundy Retrofit Cost Analyzer that total costs (not incremental costs) for an "illustrative unit"[89] are at a threshold of $1,600/ton.

EPA identified 53 units equipped with advanced combustion controls on tangential-fired control technology and 39 units equipped with advanced combustion controls of wall-fired boilers, proposing these as typifying candidate units in the national fleet. This assumption is in error.

Figure 33 depicts for EPA's reference units deploying advanced combustion control technology, the 2021 ozone season average of NOx emissions for units as reported by EPA firing

[87] Exhibit F, pages 8-17.
[88] EGU NOx Mitigation TSD, page 14.
[89] EGU NOx Mitigation TSD, page 16 and footnote #23, 24.

tangential-fired boilers. Figure 34 depicts the same data for EPA's reference units employing wall-fired boilers with advanced combustion control technology.

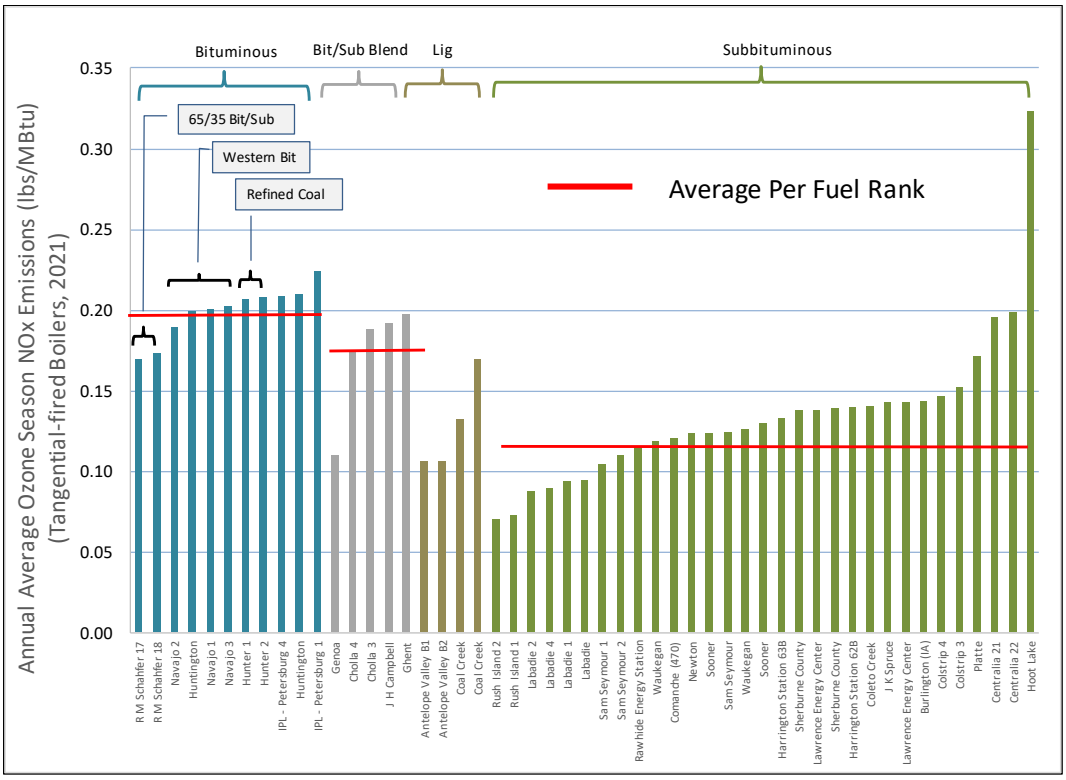

Figure 33. 2021 Average Ozone Season NOx Emissions: Tangential-Fired Boilers Firing Bituminous, Subbituminous, Blends and Lignite Coals

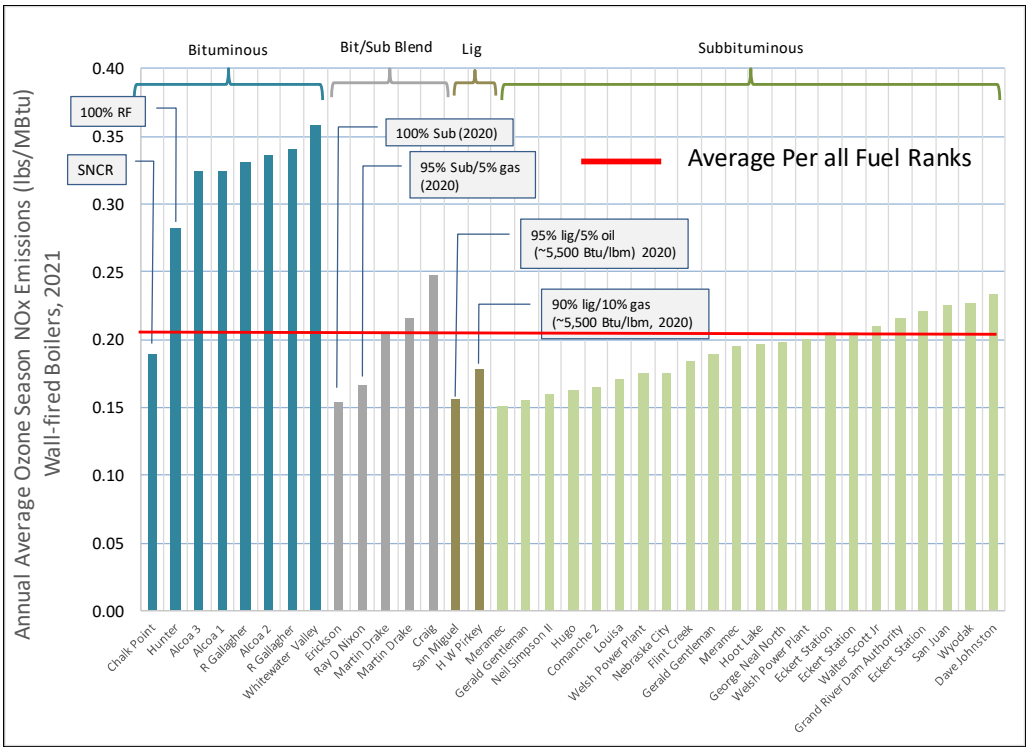

Figure 34. 2021 Average Ozone Season NOx Emissions: Wall-Fired Boilers Firing Bituminous, Subbituminous, Blends and Lignite Coals

Figure 33 reports NOx data for 11 tangential-fired units designated by EPA as firing bituminous coal, with the results suggesting approximately 0.20 lbs/MBtu as achievable. This depiction is inaccurate, as the fuels as reported by EPA as bituminous are misleading. Based on EIA Form 860 data for 2020, the RM Schaffer units fire a bituminous/subbituminous blend. The Navajo and Hunter units fired western bituminous – the composition of which lacks the sulfur content and acid/base ratio of eastern bituminous coals that are problematic in achieving the deep staged conditions required for low NOx. Also, differences in coal nitrogen content and the inherent volatility assert an impact. The Hunter units fire a refined variant of bituminous coal – an option not available in 2022. Only IPL-Petersburg Units 1 and 4 fire an authentic bituminous coal of composition that could be considered representative of U.S. fuels. Further, EPRI estimates the median value of NOx emissions from tangential-fired boilers firing bituminous coal to be 0.35 lbs/MBtu for LNCFS-II and 0.34 lbs/MBtu for LNCFS-III.[90]

Data is also shown for five units firing a bituminous/subbituminous blend, two lignite–fired units, and 32 subbituminous-fired units. Almost all subbituminous coals are from the Power River Basin (PRB), which due to high fuel volatility and excess alkalinity enable "deep" staging conditions that support low NOx. PRB moisture content can be four times the moisture content of bituminous, with half the nitrogen content – both important factors. The extremely low NOx emissions (< 0.10 lbs/MBtu) observed on units at the Rush Island and Labadie stations are

[90] EPRI 2002 Workshop on Combustion-Based NOx Controls for Coal-Fired Boilers, EPRI Report 1007579, January 2003. (Hereafter, "EPRI 2002 Workshop").

achieved with favorable volatility by even PRB standards. It is unreasonable to assume that PRB coal or PRB-like coal with these properties can be broadly acquired, thus their role establishing an average NOx rate should be discounted.

Figure 34 presents 2021 ozone season NOx emissions for wall-fired boilers that EPA cites as representative of the population. According to the Cichanowicz, Marchetti, Hein and Rivera Report, these units likely offer physical features that enable high performance of combustion controls, including generous surface area per unit volume for heat release, and spacing of structural features that enable elongated flame length and separation of overfire air introduction.

Results for eight bituminous fired units are shown. The Cichanowicz, Marchetti, Hein and Rivera Report did not consider the two lowest NOx emitting units due to aberrant control technology or fuel type. Specifically, Chalk Point employs SNCR as a supplementary control step and Hunter fires 100% refined coal. Refined coal is not an option available in 2022 and beyond and is not considered representative. The remaining units are too small in generating capacity to register significance for the national fleet. Three units are extremely small, limiting their ability to confidently scale results to larger capacities - two R. Gallagher units are each 140 MW and Whitewater Valley is 35 MW. The three Alcoa units – each at 166 MW – are also of generating capacity not representative of the national fleet of wall-fired boilers. EPRI estimates the median value of NOx emissions from wall-fired boilers firing bituminous coal and employing LNB with OFA to be 0.36 (opposed wall firing) to 0.40 lbs/MBtu (single wall-firing).[91] Five units are referenced firing a blend of bituminous/subbituminous. The lowest NOx-emitting unit (Erickson) does not fire a blend of coal but rather 100% subbituminous; the next lowest NOx emitting unit (RD Nixon) fires a blend of subbituminous and natural gas. The two Martin Drake units are 75 and 132 MW, respectively. As acknowledged previously, subbituminous coal enables low NOx firing conditions, particularly for coals with high volatility. The lowest emitting units are small – Neal Simpson II (90 MW) and are not representative.

The implications of these observations are clear. PRB coal with extremely low sulfur combined with high alkaline content minimizes the production of corrosive species and enables PRB-fired burners to exploit low NOx conditions, but such options are not available to the general population of units in the 12-state eastern region subject to the proposed rule. Therefore, EPA's failure to distinguish characteristics of coal used in its analyses results in a generalization that distorts its conclusions.

Equally important to EGU NOx control is the role of fuel composition is boiler design. Perhaps most important is the heat release intensity and furnace geometry. These two features are related; a generous furnace sizing allows typically elongated low NOx flames to not impede heat transfer or prompt flame impingement. Also, generous furnace sizing presents lower heat release intensity, a design feature quantified as the Burner Zone Liberation Rate (BZRL) which each boiler designer interprets and defines differently. BZRL is key in minimizing NOx emissions. The retrofit of advanced combustion controls may not provide the same NOx control on earlier "legacy" boilers with higher BZLR compared to more recent designs with lower BZLR values, and none of the recent boiler systems achieves the lowest NOx rates, claimed by EPA as being below 0.10 lbs/MBtu.

[91] Id.

EPA's projection of low NOx emission rates is flawed, particularly for bituminous coal, as only three units are valid references while others represent atypical cases of western bituminous, refined coal, or are co-fired when reported as exclusive bituminous. Only newer generating units that feature relatively low Burner Zone Liberation Rates could replicate the claimed low NOx conditions; many boilers designed for NOx New Source Performance Standards (NSPS) prior to 1997 or for a narrow range of coal properties will be challenged unlikely to achieve these rates. In summary, EPA's projection of the NOx control capability of advanced combustion controls is flawed as it does not fully consider coal rank, boiler design features, and operating characteristics. As a result, the incurred cost per ton of NOx removal is higher, due to lower mass of NOx removed.

The time required for installation – an average of 22 months based on a survey of 11 boilers - significantly exceeds the time available to enable retrofit for the 2023 ozone season. Notably, the 22-month is an average – one public power entity incurred between 48-60 months for the entire scope of activities, including arranging financing (required prior to any significant actions) and regulatory approval prior to installation to achieve cost recovery. Merchant generators will not require such approval but are required to justify the need with certainty to a lender.

C. EPA has erroneously assessed the cost and feasibility of installing new SNCR and SCR controls.

EPA proposes employing SCR to both extract additional NOx reduction from units presently so-equipped and retrofitting SCR to units that to date are equipped combustion controls or SNCR. EPA's premise is that owners of existing SCR equipped units are not "fully operating" this process equipment to the maximum capabilities, only extracting the NOx required to meet the present NOx allowance, but the Cichanowicz, Marchetti, Hein and Rivera Report concludes that EPA's estimate of additional capabilities for the costs is flawed.[92]

EPA estimates the maximum NOx removal potential is demonstrated by the "third-lowest" ozone season NOx emission rate observed for any unit since 2012, but this method reflects only a snapshot in time of a unit's performance. It is well known that NOx control performance degrades with the state of the catalyst, as does the ability to maintain a uniform mixture of ammonia reagent with NOx generated in the boiler. Both the physical state of the catalyst and the ability to achieve a high degree of ammonia-to-NOx uniformity can change year-to-year. Based on actual data set forth in the Cichanowicz, Marchetti, Hein and Rivera Report, MOG believes that EPA is wrong to assume NOx rates can be either readily maintained from existing equipment or attained without capital expenditure to refresh an entire inventory of catalyst or incur higher variable O&M costs than EPA projects.

With respect to new SCR retrofit, EPA's evaluation of the feasibility for "widespread" implementation of SCR employs a cost estimating procedure issued by Sargent & Lundy that reflects both capital and operating cost. The capital cost estimating procedure, although an improvement over past methodologies, does not adequately capture retrofitting SCR into the remaining units in the coal-fired fleet. Sargent & Lundy notes that cost components are derived

[92] Exhibit F, pages 18-26.

from surveys, and MOG submits that the Cichanowicz, Marchetti, Hein and Rivera Report reviewed data over the time from as early as 2004 through 2013, including data "significantly augmented' by Sargent & Lundy in-house data and conclude that such costs are outdated and most relevant to early SCR installations, whereas candidates in the remaining inventory differ in layout and baseline NOx emissions. For new retrofits, the target NOx emission rate of 0.05 lbs/MBtu represents a significant reduction from that assigned to existing SCR equipped units of 0.08 lb/MBtu.

EPA also proposes SNCR be applied to coal-fired units less than 100 MW in generating capacity, and to oil/gas units greater than 100 MW of capacity that emit more than 150 tons of NOx annually.

The retrofit of SCR to coal units, if feasible given the schedule constraints, will reduce NOx for a cost of $20,250 per ton at 56% capacity factor, escalating to approximately $28,000 per ton for units at the 90% population. These costs increase if estimated using each units' unique 2021 ozone season capacity factor, or a 5-year recovery period. Almost 100 units (94 evaluated in this study versus 88 evaluated by EPA) will be required to retrofit SCR. The costs exceed by 33% EPA's estimate incurred by the median unit of $15,500/ton and at 56% capacity factor.

Generating units with boiler exit NOx rates of 0.15 lbs/MBtu, if retrofitting SCR, will incur NOx removal cost on a per ton basis that are exorbitant. This study showed generating units in the 25-state region with boiler NOx rates approximating 0.15 lbs/MBtu incurred NOx removal costs of $25,000 to $35,000 per ton, based on a 56% capacity factor.

The retrofit of SCR to distillate oil/gas-fired units to 35 "qualifying" units incurs cost for a median unit from $11,000/ton at 56% capacity factor and 10 year remaining life, to over $66,000/ton for operation at the 2021 capacity factor and 5 year remaining lifetime.

Increasing NOx removal from existing SCR process equipment – and considering the marginal cost of this action – incurs a median cost of approximately $15,000/ton, escalating to more than $40,000/ton for a unit at the 90% population. EPA does not calculate the marginal cost for this action, but rather a cost for "restarting idled units", which in their evaluation does not exceed $2,220/ton.

SNCR retrofit as EPA proposes – to coal-fired units of 100 MW generating capacity or less - captures only six units. The incurred cost for the median unit ranges from $12,645/ton to more than $100,000/ton, the latter elevated reflecting operation at the 2021 capacity factor and 5 year remaining lifetime. These costs well exceed EPA's reference basis for SNCR for the population of boilers less than 100 MW of $10,800/ton for coal application.

For all of the aforementioned reasons, MOG asserts that EPA has erroneously and grossly underestimated the cost and feasibility of installing new SNCR and SCR controls.

D. EPA's reliance on generation shifting as a control mechanism under the Good Neighbor Provisions of the CAA, is arbitrary and capricious and otherwise exceeds its legal authority.

In this proposal, EPA provides that "if EPA did not account for generation shifting then it could result in substitution for emission reductions intended through control operations and installation, potentially lessening the implementation of those mitigation strategies." 87 Fed. Reg. at 20,081. EPA historically has asserted that it is reasonable for the agency to quantify and include the emission reduction potential from generation shifting at cost levels that are representative of the emission control technologies evaluated in the multi-factor analysis. In this proposed FIP, EPA offers assurances its generation shifting is constrained, but that the "sector's unusual flexibility with respect to how emissions reductions can be achieved makes" their task difficult particularly relative to trading and generation shifting. 87 Fed. Reg. at 20,105. EPA asserts that managing generation shifting is both technically and legally authorized under the CAA as it is a simply a tool for implementing emissions reductions. 87 Fed. Reg. at 20,081. In its combined EGU and Non-EGU Assessment of emission reductions, EPA references impacts of SCR/SNCR optimization and retrofit, LNB upgrade and generation shifting enumerated in Ozone AQAT modeled results of impact on air quality reductions. 87 Fed. Reg. at 20,097, Table IV.D.3-1. EPA reports ozone season NOx emissions reductions from the EGU sector emission reduction strategies, including generation shifting, at 26,250 tons (SCR/SNCR optimization + LNB upgrade + Generation Shifting) and 63,883 tons (EGU SCR/SNCR Retrofit = Generation Shifting). These reductions represent total change across all downwind receptors at 1.53 ppb and 7.89 ppb respectively.

Given the significance of generation shifting in affecting state budgets in some states, it is critical that EPA clearly explain how this step is executed. MOG joined others in requesting a technical analysis of this aspect of the proposed FIP as set forth in the Cichanowicz, Marchetti, Hein and Rivera Report.[93] EPA describes generation shifting as biasing generation and NOx emissions from higher to lower NOx emitting sources[94]. The Technical Comments note in the state budget setting process, generation shifting is the third and final step in determining state budgets. Generation shifting is quantified by three IPM runs – Base Case, Run 1 and Run 2. In addition to these IPM runs, EPA adds a further calculation which determines the differential NOx emission rates between average IPM emission rates and Engineering Analytics emission rates. The minimum of these differential rates is applied to a state heat input to derive emission reductions, which are subtracted from the Optimized Baseline to yield a final state budget. It should be noted EPA's description of generation shifting is inadequate and lacks transparency on the steps and data used.

Of the three IPM runs that establish generation shifting results, the Base Case as the foundation is the most critical. The Base Case is flawed in that it does not represent the generating unit profile in many of the 25 states that comprise the proposed FIP region. Specifically, within the nine example states addressed in this analysis, in 2023 IPM erroneously retired 32 coal units representing 9.7 GW of capacity. None of the owners of these 32 units have announced retirement

[93] Exhibit F, pages 44-55.

[94] EPA's analysis of generation shifting is particularly flawed in the case of restructured states with merchant generation.

for 2023; notably 9 of these units totaling 6.6 GW are SCR-equipped and thus are expected to contribute to low NOx emissions. IPM also in 2023 idled 42 coal units representing 14.9 GW, also including significant capacity with low NOx emissions. In regard to this outcome, the National Rural Electric Cooperative of America ("NRECA") previously expressed concern to EPA that IPM modeling does not capture the true cost of idling. Of these 42 units, 17 are SCR-equipped and represent 8.5 GW, despite featuring an average ozone season NOx rate of 0.07 lbs/MBtu. In addition, IPM idles an additional 14 coal units representing 7.4 GW of coal capacity during the 2023 ozone season.

Table 14 presents the coal capacity by state EPA has either retired or idled in the nine example states evaluated. The table indicates that IPM has slightly over 28 percent of the operable coal capacity idled in the nine-state study region during the 2023 Ozone Season.

State	IPM Operable Coal Capacity	IPM Year-Round Idled Capacity	IPM Ozone Season Idled Capacity	IPM Retired Coal Capacity
AR	5,105	1,817	0	0
IN	11,147	1,118	4,252	0
KY	8,890	1,286	1,017	0
MO	9,417	275	0	240
OH	10,163	136	751	0
PA	1,964	112	767	6,958
TX	17,534	9,632	0	0
WV	11,220	520	80	0
WY	3,830	0	530	2,505
TOTAL	79,270	14,896	7,397	9,703

Table 14 . IPM 2023 Retired and Idled Coal Capacity in the Nine-State Study Region (MW)

The flaws in the Base Case generation profile impart flaws in results from Run 1 and Run 2 (derived from the Base Case) that cannot accurately represent shifting of generation within a state. Specifically, EPA projects generation shifted to non-regulated sources (e.g., sources not covered in the proposed FIP, such as non-fossil, storage and industrial facilities as a consequence of eliminating low NOx emitting coal units due to retirements and idling.

Perhaps the most notable concern is EPA's erroneous assumption of unrestricted transfer of generation across a state, particularly so for states with multiple Regional Transport Organizations ("RTOs"). EPA and IPM do not consider transmission constraints and the associated reliability issues that can occur during the height of the ozone season.[95] Further,

[95] See, Cichanowicz, Marchetti, Hein and Rivera Report Figures 8-2 (Arkansas); 8-3 (Indiana); 8-4 (Kentucky); 8-5 (Missouri); 8-6 (Ohio); 8-7 (Pennsylvania); 8-8 (Texas); 8-9 (Texas ERCOT); 8-10 (Texas Non-ERCOT); 8-11 (West Virginia) and 8-12 (Wyoming) each of which illustrate EPA's use of the IPM where EPA's v 6 models regional breakdowns of net energy for load in each of the 67 IPM U.S. regions.

because many of these RTOs manage generation across state lines, it is not realistic to assume that generation can simply be shifted between units within a state. EPA has not accounted for how its attempt to force generation shifting within one state will impact how markets behave, which units operate, and how this impacts both generation reliability and overall NOx emissions within the area controlled by the RTO. Because of the significant technical flaws in how it has assessed the potential for generation shifting, EPA's analysis and the resulting impacts on state NOx budgets do not provide any technical or legal basis for inclusion in this rulemaking.

EPA's efforts to justify its overreach to control generation shifting are not supported by the CAA and potentially raises the same issue identified as problematic in the ACE rule where it is asserted that authority to manage the generation and shifting of the power generation industry is far beyond the task Congress gave to EPA. This proposed FIP clearly worries EPA in terms of authorization as is apparent from its narrative about generation shifting. The reader is on notice of this agency concern and therefore comment is warranted about whether the agency is authorized to take this proposed action pursuant to the CAA.

Regarding technical justification, EPA characterizes limitation of generation shifting within the state only as "A proxy for limiting the amount of generation shifting that is feasible for near-term ozone seasons." 87 Fed. Reg. at 20,117. In the Response to Comments to the Revised CSAPR Update rule, EPA is on record of defending its feasibility of generation shifting assessment by asserting the state emission budgets accurately "reflect" a certain amount of shifting generation at a selected cost threshold. RTC, p. 528. EPA reiterates this point in the proposed FIP. 87 Fed. Reg. at 20,081. EPA clarifies that "Including reductions from shifting generation in the budget is important to ensure that other cost-effective reductions (e.g., fully operated controls) can be expected to occur." *Id*. The agency also notes the generation shifting is conservatively constrained, but that certain shifting may be required to meet demand. 87 Fed. Reg. at 20,105. This effort by EPA to manage generation shifting as a means for controlling emissions while also pondering the impact of such limitations on meeting electricity demand is illustrative of its over-reach from that of the administrator of the CAA to administration of electricity demand response. When there is a demand response, how will EPA determine an appropriate justification for the demand assertion and impact on emissions targets and budgets? The CAA offers no guidance nor directive to EPA to engage in emissions reductions that are derived from the management of demand for power generation.

As extensively illustrated in the Cichanowicz, Marchetti, Hein and Rivera Report, EPA also offers little if any assessment of the impact that IPM-assumed generation idling has on establishing state emissions budgets. EPA assigned certain idling and generation shifting assumptions to state budgets which are flawed. Underlying these flaws is an agency that is not authorized to manage the dispatch of power through an emissions reduction program. EPA's assumptions concerning idling was raised in the *Wisconsin v. EPA* litigation. In that case, petitioners asserted that the agency use of the IPM model assumed an unrealistic number of imminent unit retirements and circumstances of idling. The court found in the appellate review of the CSAPR rule, EPA had not improperly allowed idling to impact state budget development. As noted in the *Wisconsin* case,

> Idling is a natural component of modeling programs, like the Integrated Model, that are designed to reflect electricity markets "as accurately as possible." 81 Fed. Reg. at 74,528. To capture actual market mechanics, the model determines the least- cost method of anticipating electricity demand over a given period, and it assumes that less efficient units will be "idled" in the short run when they are not needed to meet demand. That temporary, on-again-off-again idling is quite distinct from permanent retirement and closure of a facility. That a model overestimates the rate of long-run retirements thus says nothing about whether it accurately projects the ebb and flow of short-run supply and demand. So EPA's decision to limit near-term retirement projections based on long- run unprofitability says nothing about the use of temporary, market-driven idling in its economic models.
>
> *Wisconsin*, 938 F.3d at 330. (Emphasis added).

In the proposed FIP a distinction can be noted. This rule has a very short 2023-2024 timeframe to incorporate idling. The IPM model may not be used to accurately project the flow of short-run supply. EPA's awkward efforts at managing generation dispatch, whether shifting or idling, are electric power dispatch issues that specifically have been directed to the jurisdictions of FERC and the states.

Legally, EPA concludes that its generation shifting strategy of the CSAPR programs pose no conflict to FERC or state jurisdictions under the Federal Power Act. CSAPR RTC, p. 529. The legal question is not whether EPA's actions run afoul of other statutory authorizations but whether the CAA provides it authority to make decisions that fall within the category of political decisions that "should be made by the national legislature, the branch best equipped by its structure and constituency" to respond to competing interests and priorities. *United States v. District of Columbia*, 669 F.2d 738, 744 (D.C. Cir. 1981). Major questions are those that implicate matters that extend beyond one agency's expertise. The major questions doctrine assesses "the danger posed by the growing power of the administrative state." *City of Arlington v. FCC*, 569 U.S. 290, 315 (2013). The legal issues that surround the concept of generation shifting are most thoroughly presented in the Affordable Clean Energy Rule ("ACE") litigation pending before the U.S. Supreme Court of Appeals, *WV v. EPA*, Case Nos. 20-1530, 20-1531, 20-1778 and 20-1780. The petitioners in that litigation have presented a major question doctrine challenge to generation shifting as a regulatory action that threatens to upend the power industry. In the context of the ACE rule, state petitioners argue that agency enforced generation shifting away from coal is a major question that implicates hundreds of billions of dollars, tens of thousands of potentially regulated parties, and years of congressional wrangling." Pet. Brief at 12-13.

In addition to the lack of statutory authority for generation shifting regulatory actions is the concern that EPA has improperly invoked CAA §110 to grant it authority to "up-end" the balance of upwind and downwind states' obligations to develop state implementation plans for the 2015 ozone NAAQS. EPA's proposed generation shifting assumptions of the FIP and prior proposed denials of good neighbor state implementation plans, present a complex array of legal and technical concerns. EPA has a misguided assumption of authority to wield power to decide which states are relieved from emissions implementation deadlines (that incorporate generation shifting assumptions) and which states are not afforded the opportunity to factor in downwind delayed

implementation (that incorporate generation shifting).

EPA offers no statutory authority to support its assertion of power that demonstrates no alignment of state generation shifting or emissions management obligations Although offering justifications in its discussion about the conservative nature of generation shifting, EPA's FIP has the actual impact of changing power generation to the point of changing the energy economy. Sources will be forced to close or curtail operations based on legal and technical assertions of statutory authorization by EPA that is not supported in law. The major questions doctrine also serves "the constitutional rule that Congress may not divest itself of its legislative power." *Gundy v. United States*, 139 S.Ct. 2116, 2142 (2019).

As noted in the ACE litigation, it is not enough to assert there is no prohibition against this type of regulation because there is no clear grant of authority for EPA's overreach. It is "unreasonable to assume" Congress delegated "unprecedented power over American industry" without "a clear [textual] mandate." *Indus. Union Dept., AFL-CIO v. Am. Petroleum Inst.*, 448 U.S. 607, 645-46 (1980). Finally, the U.S. Supreme Court recently determined that the Center for Disease Control and Prevention did not have broad statutory authority to impose a nationwide moratorium. *Ala. Ass'n. of Realtors v. Dep't. of Health and Hum. Servs.*, 141 S.Ct. 2485, 2486 (2021). The U.S. Supreme Court has invoked the major-questions doctrine relative to the CAA and EPA by determining that EPA could not extend permitting requirements to all greenhouse gas sources as such overreach would have resulted in "an enormous and transformative expansion [of its] regulatory authority without clear congressional authorizations. *Util. Air Regul. Grp. V. EPA*, 573 U.S. 302, 324 (2014).

In this proposed FIP, EPA similarly is assuming power without clear textual commitment provided in the CAA. Additionally, it is not enough for the agency to assert there is no denial of its overreach. *Atl. City Elec. Co. v. FERC*, 296 F.3d 1, 9 (D.C. Cir 2002). MOG requests the agency withdraw this proposed FIP as unauthorized by the CAA or any other statutory authority granted to EPA.[96]

[96] There is a significant concern that the IPM Model used by EPA to support its proposal indicates that generation shifting is occurring across state lines. This raises a serious question about whether EPA has exceeded its authority from Congress to regulate energy issues by forcing "generation shifting" across state lines in violation of the Commerce Clause. U.S Const. art. 1 Section 8, cl. 3. The IPM Model appears to include interstate transport, but it is unclear on how this is utilized with the data EPA presents. The IPM results viewer shows (https://www.epa.gov/system/files/other-files/2021-09/results-viewer-v6-summer-2021-ref-case.xlsmshows) that in 2019 the total generation in the U.S. was 4,082,964 GWh of energy consumed. For the planning model in 2023, EPA plans for 4,198,447 GWh of usage, a 3% increase. Using Kentucky was an example, Kentucky generation decreases between 2019 and 2023 from 77,312 to 55,970 GWh (-28%) in total generation. Based on known operations data regarding the generation fleet in Kentucky, the generation deficit in the model has to come from outside of KY, in other words, through interstate commerce. Incredibly, California appears to be projected to increase generation shifting by exporting over 103,000 GWh of generation at a time when the fleet in California is not able to meet internal California generation needs, yet this erroneous IPM model base case is the base scenario of all of the Generation Shifting runs.

E. The proposed backstop daily emission rate penalties are inappropriate because NOx budgets should be set based on achievable rates for controls without penalties for emissions occurring during high demand days when the choice is to maintain system reliability by running units with controls or shut down the units because of the backstop daily rate penalties.

EPA's analysis of the control capability for existing SCR-equipped units and the control cost analysis supporting the use of an emissions rate of 0.08 lb/MMBtu does not support the proposal to apply emissions penalties based on exceeding a "backstop" daily rate of 0.14 lb/MMBtu[97]. EPA has not demonstrated that short-term variations in performance are attributed to inadequate operation and maintenance of SCR, and therefore there is no justification for imposing a significant penalty. EPA's cost basis for operation of SCR on existing units (set at $1,800 per ton of NOx) does not factor in the operational cost related to these "penalties."

EPA acknowledged in connection with Maryland-Delaware Section 126 case that there is "very little difference" between "NOx rates for EGUs for hours with high energy demand" and "seasonal average NOx rates." 83 Fed. Reg. at 50,466. The *Maryland* Court offered the following: "The EPA also noted that there may be valid operational reasons not to operate catalytic controls on particular days, 'e.g., to avoid damaging or plugging of the [control] or taking a forced outage where a breakdown leaves the unit unavailable to produce power.' As a result, that a source ends up emitting above 0.20 lb/mmBtu on a particular day is not necessarily evidence of a failure to optimize. The EPA's explanation was reasonable."[98] As discussed in the technical evaluation below, there are indeed a number of reasons why short-term emissions may not be optimized or indeed where an SCR may not be operated at all due to technical limitations or unavoidable conditions (including startup, shutdown and unavoidable malfunctions).

In addition, EPA attempts to justify its proposed backstop limit by asserting that this is to "ensure that all individual units with SCR controls have strong incentives to continuously operate and optimize their controls." EPA however has previously rejected concerns that ozone season emissions trading programs may be encouraging EGUs not to optimize SCR performance on high energy demand days. In connection with its assessment of the *Maryland/Delaware* Section 126 filing, EPA states that an assessment of actual data proves that there is "very little difference" between "NO_x rates for EGUs for hours with high energy demand." EPA's analysis related to existing, working NOx budget programs with limited restrictions (other than the Assurance Level penalties under the existing CSAPR rules) and a robust and liquid market for allowances. EPA's finding is not surprising, because on high demand days that may also be conducive to ozone formation, EGUs across the region are more likely to be operating at higher load conditions that allow for optimized and most effective NOx control.

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[97] It is important to note that development of any such backstop requirement based on lbs. NOx/MMBtu is flawed. To be effective in addressing ozone air quality any such rate would need to be normalized via heat input to determine if the rate is meaningful from an ozone precursor standpoint. It would be more appropriate to identify a lbs. NOx/hr rate that reflects the potential to emit of the unit. In such a case startup or minimum sustainable load would be less likely to cause a unit to exceed the limit while having low mass emissions.

[98] *Maryland v. EPA*, 958 F.3d 1185, 1207 (D.C. Cir. 2020).

EPA's operational restriction by imposing a daily limit with a substantial allowance penalty will force decisions that are contrary to the effective management of generation and emissions. Situations that may result in exceeding EPA's proposed daily limit include necessary startup or shutdown of units based on system demand, operation of units at minimum load conditions to meet grid requirements, and even short-term operation of a unit after malfunction of NOx controls. On high demand days, EGU operators and RTOs will face the choice to maintain system reliability by running units with limited NOx control or shut down the units because of the backstop daily rate penalties.

EPA's backstop narrative provides,

> [w]hile the identified EGU emissions reductions in Section VI of this proposed rule are incentivized and secured primarily through the corresponding seasonal state emissions budgets (expressed as a seasonal tonnage limit for all covered EGUs within a state's borders) described earlier, the EPA is also incorporating backstop daily emissions rates of 0.14 lb/mmBtu for coal-fired steam units serving generators with nameplate capacity greater than or equal to 100 MW in covered states. The backstop emissions rates will first apply in 2024 for coal-fired steam units with existing SCR controls, and in 2027 for coal-fired steam units currently without SCR controls. For a unit that exceeds its applicable backstop daily emissions rate on any day, all emissions on that day exceeding the emissions that would have occurred at the backstop daily emissions rate will be subject to a 3-for-1 allowance surrender ratio instead of the normal 1-for-1 allowance surrender ratio.

87 Fed. Reg. at 20,121.

As is pointed out in the Cichanowicz, Marchetti, Hein and Rivera Report[99], EPA's proposed daily backstop NOx rate of 0.14 lbs/MBtu as described in the TSD does not account for the inherent variability that even well-maintained SCRs encounter. Operating data from the national fleet of units equipped with SCR is insightful as to variability on operation, particularly during the startup /shutdown events that almost without exception a unit encounters during an ozone season. EPA's analysis conservatively considers the NOx emission trends of 110 units that during the 2021 ozone season operated SCRs at high performance levels, meeting the 0.08 lbs/MBtu seasonal average but fails to consider that many units operating at an average value exceeding 0.08 lb/MMBtu (by even a small amount) may indeed be well controlled but average emissions have been impacted by periods of startup, shutdown and other operational conditions that impact the operation of SCR. These data are insightful in terms of the prospect of occasionally exceeding on a daily basis the proposed backstop rate of 0.14 lbs/MBtu.

Relative to startup impacts on the ability to meet the backstop emissions rate, Figure 35 presents an example timeline for typical SCR startup, defining the key events over three categories of time. The following analyses of actual observations during these events informs of the dilemma the proposed backstop emission rate presents. The timeline shows in the first time period (0-3 hours) the induced and forced draft fans initiate operation, coal is introduced, and the flame is stabilized. During the second time period – ranging from 3 to 24 hours –gas temperature leaving the boiler and thus entering the SCR reactor reaches 300-400 F and thereafter increases to achieve

[99] Exhibit F, pages 35-43.

the minimum temperature at which ammonia reagent can be injected. This minimum temperature varies with many factors, most importantly fuel composition and associated sulfur content, and can be approximately 580 F for subbituminous coals up to 620 F for some bituminous coals. At this juncture ammonia reagent is injected, and post combustion removal of NOx initiated, although the level of performance may be limited as the unit continues through startup at low load conditions by the gas temperature impacts on the catalyst "activity" for NOx reduction and poor flow distribution and reagent mixing with flue gas during non-steady state transition to operating load. During the third time period – which may be 24 hours or more depending on dispatch requirements – the unit achieves full load and SCR is able to operate at design values.

Figure 36 presents a timeline of key data observed in May of 2020 from an actual process startup for LG&E/KU Mill Creek Unit 4. The outage from which Unit 4 is starting up reflects a typical 'pre-ozone season' outage, essential to inspect catalyst and key equipment for the reagent injection and control system. The NOx emission rate is recorded through the startup and reflected on the left vertical axis, while the ammonia reagent (gas/hr) load (MW), and SCR temperature (F) are reflected on the right vertical axis. Also shown is the daily NOx average, constructed per EPA boiler operating day data (any day where fuel is combusted for at least one hour). Figure 7-2 shows that at least for two boiler operating days hours following ammonia injection, the daily NOx rate exceeded the proposed backstop value of 0.14 lbs/MBtu.

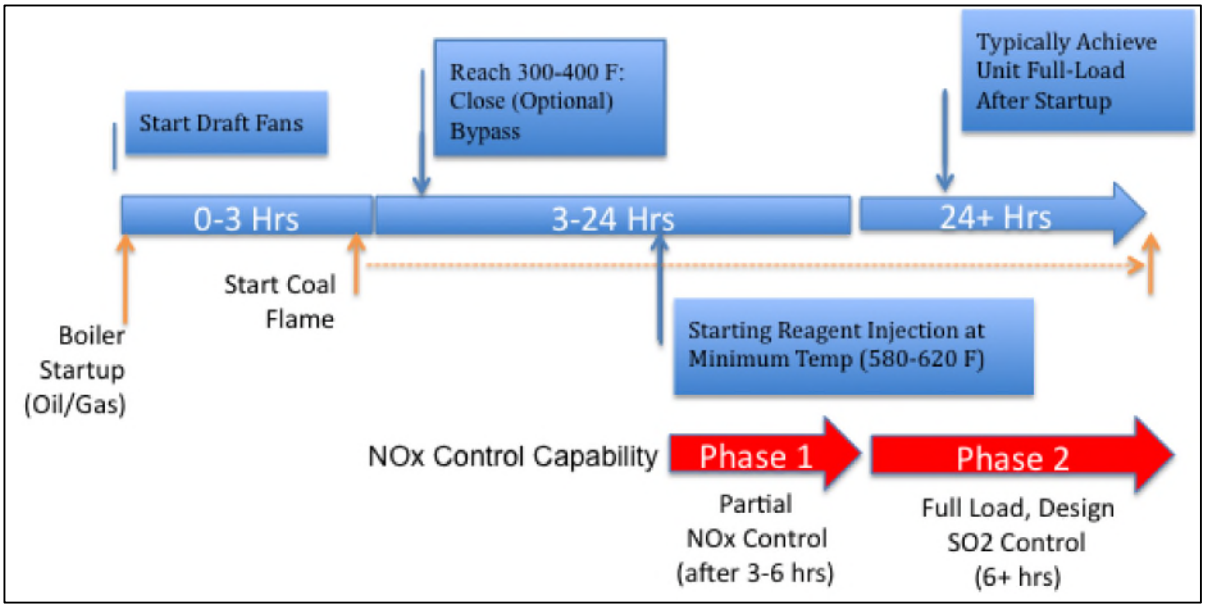

Figure 35. Timeline of Key Events in SCR Process Startup

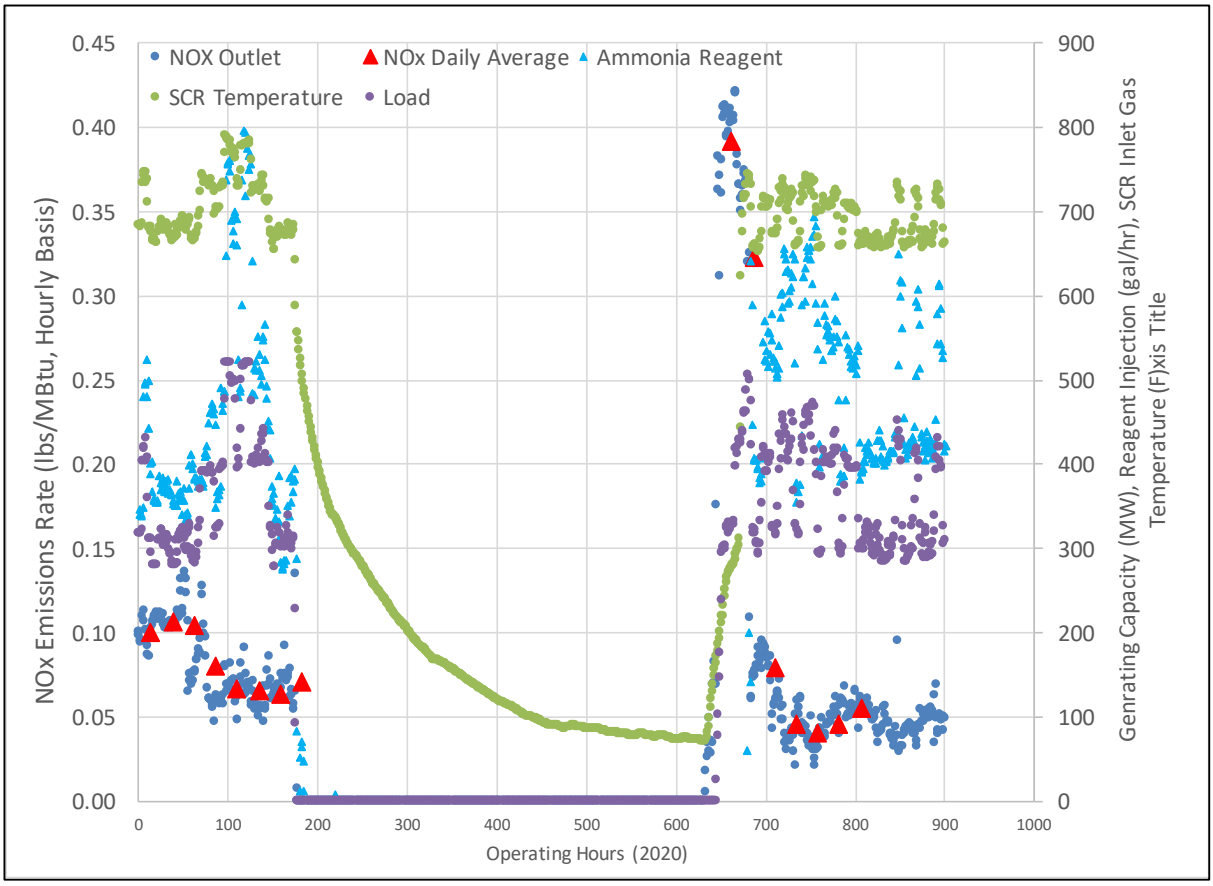

Figure 36. LG&E/KU Mill Creek Unit 4 Startup Data

Additional insight as to the role of startup on delaying operation of SCR and control of NOx emission is reflected by review of select data from 6 startup events experienced by LG&E/KU Trimble County Unit 2 from January 31, 2020, to April 28, 2021. Figure 37 presents a bar chart summarizing the duration of time required for three significant events. These are the time required from establishing combustion to (a) "sync" with the power grid, (b) initiating of reagent flow, and (c) to achieving 80% NOx reduction.

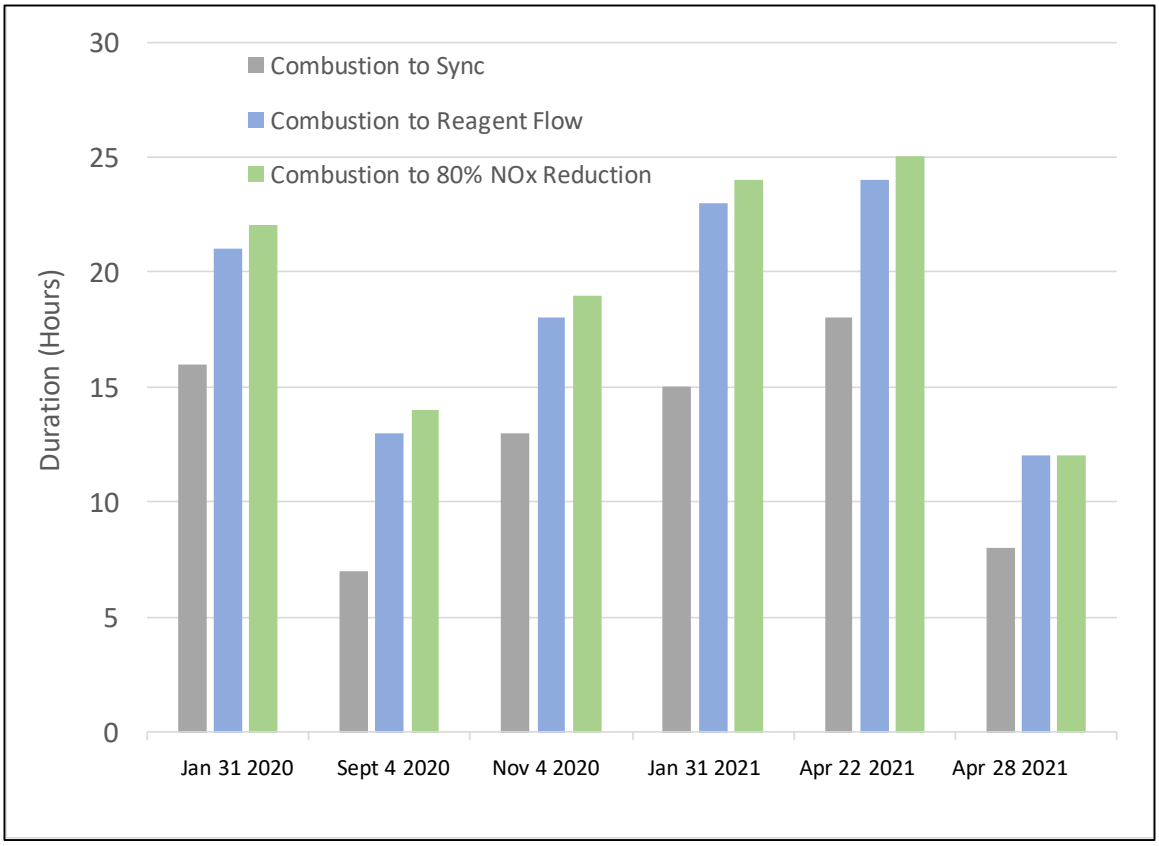

Figure 37. LG&E/KU Trimble County 2: Time Duration of SCR Startup Events

The key takeaway is the time required for 80% NOx reduction, which over the 6 startup events ranges from 12 to 25 hours.

Startup Emissions Impacts. NOx emissions from the operating fleet in 2021 achieving high levels of SCR performance over the ozone season are evaluated below to illustrate how startup/shutdown events affect emissions. For each of the 110 units in the SCR-equipped inventory which emit less than 0.08 lbs/MBtu for the ozone season, the daily NOx emission rate (per EPA's definition of a boiler operating day) is calculated. As subsequent data shows, even well-performing units experience daily NOx emissions exceeding 0.14 lbs/MBtu. Both the number of units for which a daily rate exceeds 0.14 lbs/MBtu and the number of events were recorded. Results are reported in Figures 38 to 41.

Count of Units with Daily Emissions Above the Proposed Backstop Rate. Figure 38 reports for the 110 units that achieved 80% NOx reduction for the 2021 ozone season, the number of units for which NOx is observed to exceed the proposed daily rate of 0.14 lbs/MBtu. Figure 38 shows about 1/3 of the total units in this population – 36 – do not experience excursions in NOx daily rate exceeding the proposed 0.14 lbs/MBtu. The horizontal axis describes the increase in units that emit more than 0.14 lbs/MBtu, for multiple days. For example, eleven units operated above 0.14 lbs/MBtu for three days, while five units exceed that rate for 7 days.

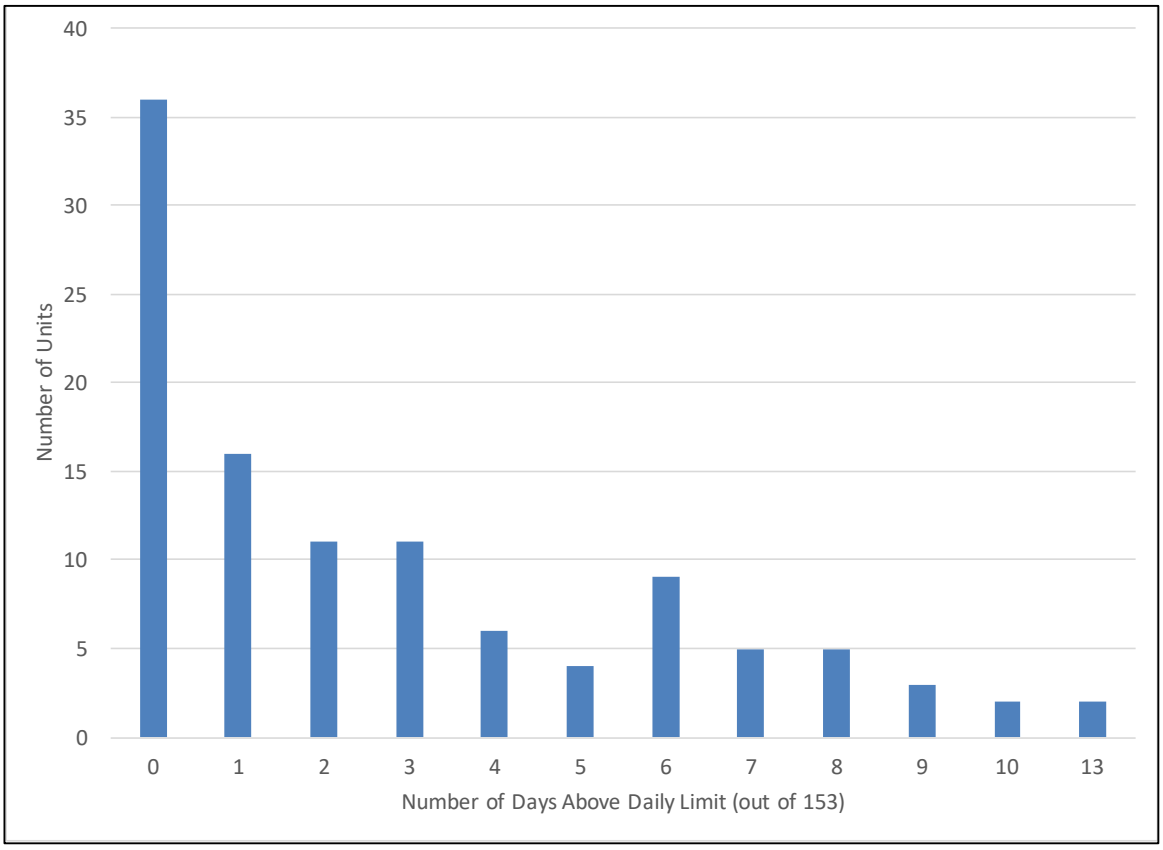

Figure 38. Count of Units Emitting Above Proposed Backstop Rate

"Count" of Units with Startup Days. Figure 39 reports the number of units that experienced a startup in the 2021 ozone season, ranging from none ("0") to 13 days. Figure 39 shows only 6 units did not encounter any startup days. The largest number of units – 21 – encountered three startup days, while three units encountered 10 startup days.

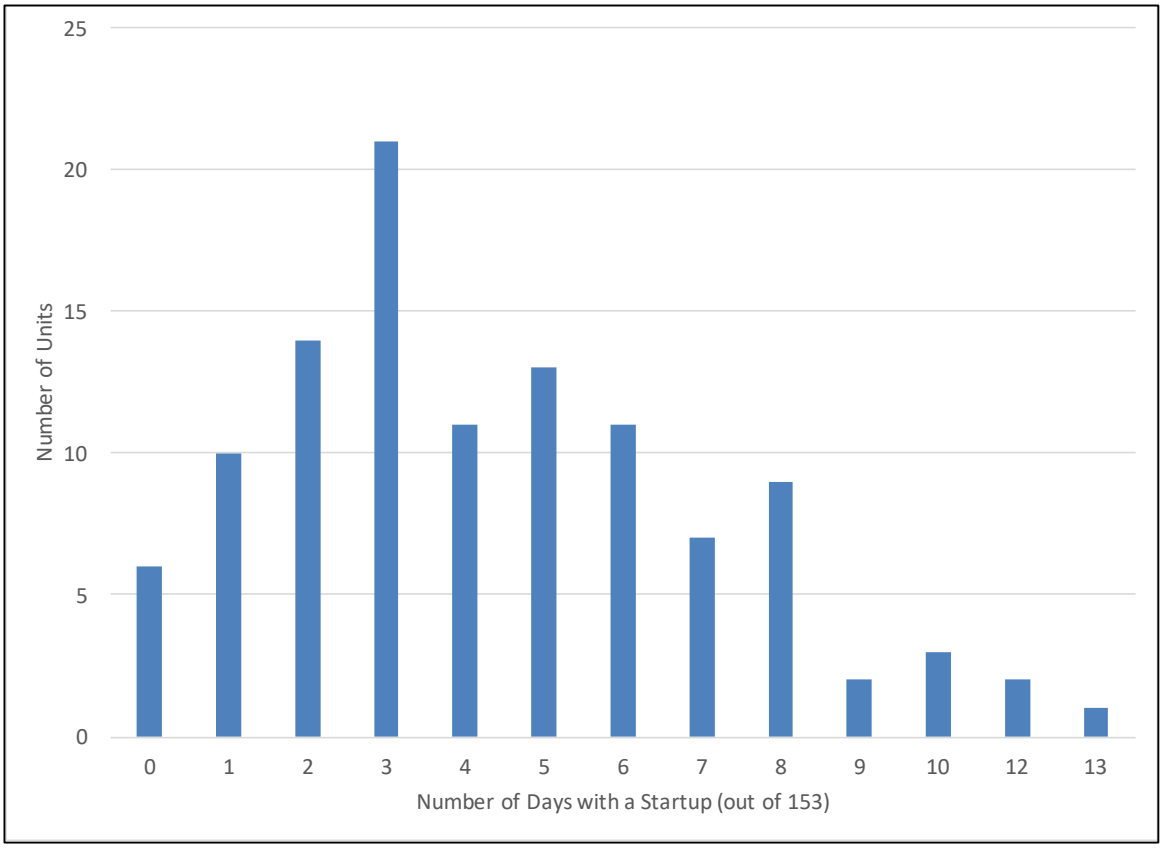

Figure 39. Role of Startup days on Count of Units Emitting Above Proposed Backstop Rate

"Count" of Units per Hours of Outage. Figure 40 reports the number of units that experience outages of at least one hour a day – necessitating as a minimum a "hot" startup. Figure 40 describes the wide range of outage days incurred by the 110 units that achieved the 2021 ozone season limit of 0.08 lbs/MBtu. Figure 39 shows the median unit encountered 27 days of the 153-day season – almost 20% - affected by an outage (requiring at least one startup and affecting NOx emissions). The units that were least influenced by outages – units at the 10% of the study population – experienced four days affected by an outage. Conversely, units most influenced by outages –units at the 90% percentile - encountered 76 days.

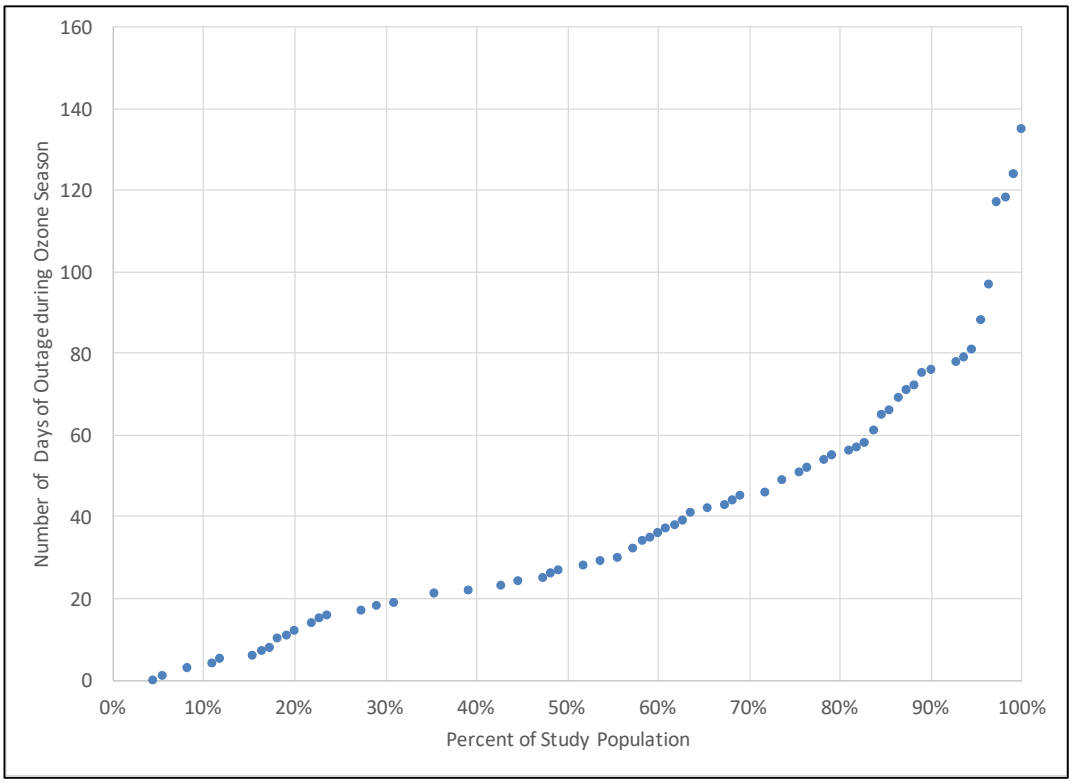

Figure 40. Count of Units Experiencing at Least One Hour of Outage

Role of Days Following Startup. The operating time subsequent to a startup is one indicator potential for daily rate exceedances. Figure 41 presents data derived from the inventory of units operating over the 153 day 2021 ozone season, describing the number of day that exceed the proposed daily backstop rate. Figure 41 shows operating within 1 full day of startup, a total of 65 observed days were recorded with NOx exceeding the 0.14 lbs/MBtu rate. But within a second day the observed days exceeding 0.14 dropped by 1/3, to 21 total days. At more than 4 days such observations are negligible.

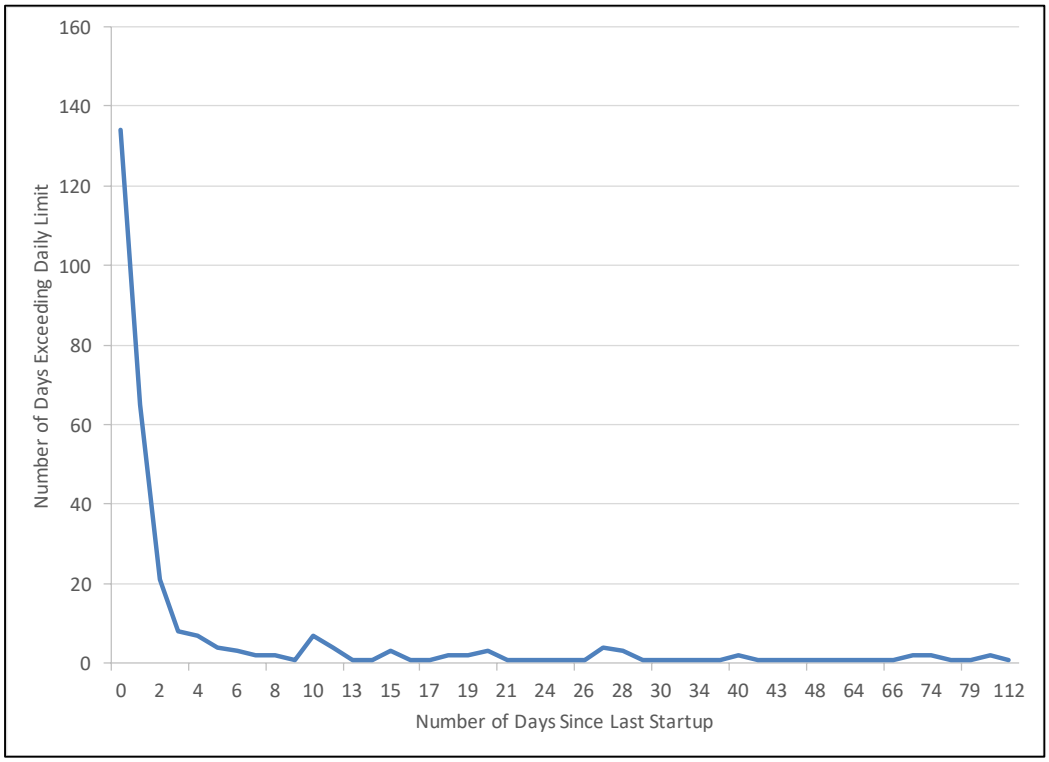

Figure 41. Role of Days Following Startup on Days Exceeding Daily Rate

Role of Load. Operating load affects performance of the SCR process, with load less than 50% frequently inducing boiler outlet gas temperature below the minimum operating temperature for SCR. At these conditions reagent is typically terminated or reduced, to prevent possible damage or fouling of the catalyst and downstream boiler components (air heaters, precipitators, etc.) due to deposition of solids formed by reaction of excess ammonia. It is also significant ammonia can cause ash to emit ammonia making it difficult to transport and place ash in a disposal site.

Figure 42 reports the cumulative number of days that all units in the 110-unit study population exceeded the proposed backstop rate of 0.14 lbs/MBtu for the 2021 ozone season. The left axis reflects the fraction of total operating days in each load "bin" that exceeded the proposed backstop rate. For example, over the 2021 ozone season, units operating at or below the 20% load "bin" recorded a total of 390 days exceeding the proposed backstop rate – equal to 47% of operating days in that load bin. A similar number of operating days – 370 – were recorded for all units operating in the 21-40% bin with NOx exceeding the proposal backstop rate, comprising 12% of all operating days in that bin. The combined operating time for these two low load categories – 756 days – represents conditions where SCR is not operating in an optimal state or must be terminated as inlet gas temperature is below the minimum required for injection. At these conditions, the generating units operate with no material postcombustion control of NOx emissions. Conversely, above 80% load, 6,971 operating days were recorded with NOx emissions less than 0.14 lbs/MBtu.

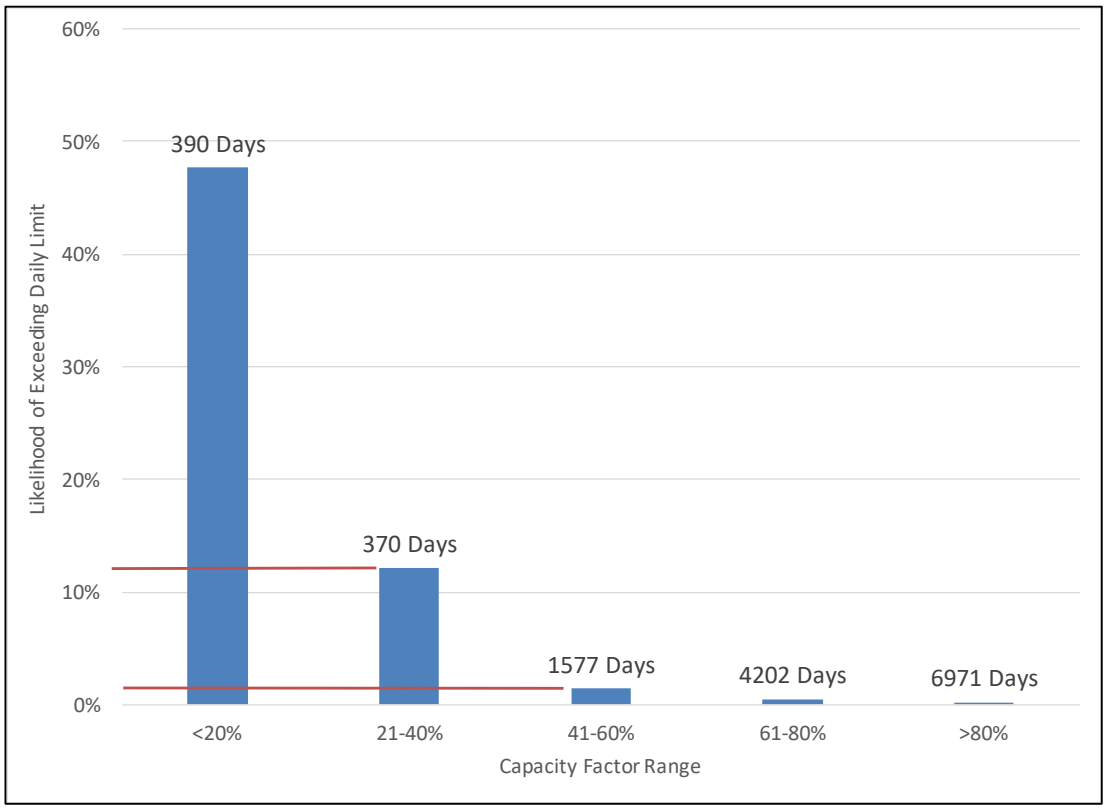

Figure 42. Role of Load Factor

These preceding data show for the select boiler population in which unit meet the 0.08 lbs/MBtu limit, it is almost unavoidable to incur either an outage or startup that trips a unit into emitting more than the backstop rate of 0.14 lbs/MBtu. Altering the definition of how the rate is calculated - from a daily rate to a short-term, multi-day rate such as an average of 2 or 3 days – still leaves significant number of operating events exceeding the 0.014 lbs/MBtu rate but at least would significantly reduce the allowance penalty that would be incurred related to these unavoidable operating conditions.

Table 15 compares the "count" of units that exceed the 0.14 lbs/MBtu proposed daily rate and the total number of days in which exceedances are observed – for three averaging methods. Table 7-1 shows the scope of lost operating time, with and without startup. There are no periods where a unit experiences startup/shutdown and does not exceed the proposed backstop rate.

Rule	Count of Units with Exceedances	Total Exceedances
1-Day Average – with SU/SD Days	74	317
1-Day Average – without SU/SD Days	52	183
2-Day Average – with SU/SD Days	53	149
2-Day Average – without SU/SD Days	22	46
3-Day Average - with SU/SD Days	24	62
3-Day Average – without SU/SD Days	9	21

Table 15. Count of Units and Exceedances of Daily Emission Exceeding Proposed Backstop Rate of 0.14 lbs/MBtu

Two observations are clear from Table 15. First, altering the calculation to consider a 2 or 3 day average lowers the count of exceedance and the total observations – but does not eliminate them. Even with a 3 day average period a relatively large number of exceedances (62) that are experienced by 24 units. Second, it is unavoidable units will have outages – even eliminating the role of startup, for each calculating method there are unavailable outage days.

In conclusion, the introduction of a daily backstop rate – at the proposed value of 0.14 lbs/MBtu - will prompt even units with well-run SCR processes into exceedances, mostly due to unavoidable startup operation. The proposed backstop daily rate penalties are unreasonable, arbitrary and capricious and should not be included in the final rule.

F. EPA's budget calculations and emission allocations are in error and should be corrected.

EPA's State Budget Setting Process under the proposed Transport Rule contains numerous errors and omissions and adopts incorrect assumptions pertaining to technology deployment and NOx emission rates.

Set forth below are examples of budget concerns illustrated by nine states within the 25-state Transport Rule region as proposed in the Cichanowicz, Marchetti, Hein and Rivera Report[100]. These states - Arkansas, Indiana, Kentucky, Missouri, Ohio, Pennsylvania, Texas, West Virginia and Wyoming – represent different geographic sectors of the Transport Region. These states also represent various RTOs and different utility structures (IOUs, Public Power and Cooperatives).

Errors and Omissions. EPA's Budget Setting Process did not accurately assign NOx emission rates to SCR and non-SCR units sharing a common stack. Table 16 lists those SCR-equipped units in both Indiana and Kentucky that share a common stack with non-SCR-equipped units, as determined from discussions with unit operators.

Unit	2021 SCR Rates (lbs/MBtu)
Clifty Creek 4 and 5	0.07
Ghent 3	0.021
Cooper 2	0.06
Shawnee 1	0.048
Shawnee 4	0.062

Table 16. 2021 Unit Emission SCR Emission Rates (lbs/MBtu)

Correcting NOx emissions from the SCR–equipped unit to a lower value increases the NOx tons assigned to the non-SCR-equipped unit, as total common stack emissions must remain the same. If the non-SCR-equipped unit is equipped with state-of-the-art combustion controls, any such revision of assigned NOx tons increases the budget for 2024 and forward years. If the non-SCR-equipped unit does not have state-of-the-art combustion controls, the 2024 and forward emissions are adjusted based upon retrofitting the unit with a state-of-the-art emission factor.

[100] Exhibit F, pages 56-64.

EPA's Budget Setting Process did not accurately reflect natural gas conversions in the nine-state study region. EPA either did not correctly identify the timing of a natural gas conversion or utilize the appropriate post-conversion emission rate in the State Budget Setting process. Table 17 lists units for which conversion to natural gas is planned for which EPA needs to adjust the timing or emission rates in the State Budget Setting process.

State	Unit	Change
KY	RD Green 1 & 2	Change unit emission rates of 0.17 for 2023
PA	Brunner Island 1-3	Begin burning only gas between May and September in 2023 of 0.15
PA	Montour 1 & 2	Possible conversion to natural gas in 2025 at an emission rate of 0.04
WY	Jim Bridger 1 & 2	Conversion to natural gas in 2024 at emission rates of 0.09 (Unit 1) and 0.084 (Unit 2)
WY	Neil Simpson II (001)	Conversion to natural gas in 2025 at an emission rate of 0.075

Table 17. Natural Conversions in the Nine State Study Area

EPA also incorrectly assumes several unit retirement dates which significantly affect a state budget. Table 18 lists corrections required to remedy errors in retirement dates.

State	Unit	Change
IN	Merom 1 & 2	Hoosier sold plant to Hallador Power, which expects to keep plant open beyond 2027
IN	Schahfer 17 & 18	NIPSCO delaying retirement until 2025, unable to get replacement capacity
MO	Rush Island 1 & 2	To be retired in 2024
WY	Naughton 1 & 2	To be retired in 2025
WV	Pleasants 1 & 2	To be retired in 2023

Table 18. Retirement Date Changes in the Nine State Study Area

Technology Assignment Issues. In reviewing the unit information with owners, the Project Team identified incorrect technology inventory data that need to be addressed in determining final state budgets. Table 19 presents examples of EPA's errors in technology inventory.

State	Unit	Change
IN	Whitewater Valley 1 & 2	Does not have an operating SNCR
KY	Bluegrass Generating Units 1,2 &3	Not equipped with SCR
KY	Cane Run CC	Not equipped with SCR
MO	Sikeston Unit 1	Not equipped with SNCR
MO	John Twitty CT1A	Not equipped with SCR
OH	AMP Gas Turbines	Uses default emission factors in 75.19 as a Low Mass Emitting (LME) unit
PA	Helix Ironwood	Not equipped with SCR
PA	Seward	The plant operated SNCR in the 2021 Ozone Season
TX	Newman GT6A	Not equipped with SCR
TX	San Miguel	The unit operated SNCR in the 2021 Ozone Season
TX	Silas Ray 9	Not equipped with SCR

Table 19. Technology Assignment Issues in the Nine State Study Area

Technology Deployment Issues. As discussed within these comments, the timing for installation of Combustion Controls and SCR processes should be revised to determine state budgets in 2023 and 2026. Specifically, Combustion Controls require on average 22 months from project inception to commercial operation, and thus will not be available for the 2023 Ozone Season (see Section 4.5). The earliest time for which Combustion Controls could be operational is the 2024 Ozone Season, which is consistent with the language in the proposal that says state-of-the-art combustion controls are to be readily available at the start of the 2024 ozone season[101]. This is contrary to how EPA established the 2023 state budgets, which assumed the availability of combustion controls in 2023. New SCR retrofits will require 40 months on average, and thus will not be broadly available until the 2027 Ozone Season (per information from 18 SCR installations reported in Section 5.3). In calculating the state budgets for 2023, EPA should revise its methodology and not presume Combustion Controls will be operating until the 2024 Ozone Season, and SCR will not be broadly available until the 2027 Ozone Season.

[101] 87 Fed Reg 20079.

EPA uses a single emission rate for Combustion Controls (0.199 lbs/MBtu) and thus fails to consider fuel and boiler type, which assert an impact on achievable NOx emission rate. Table 20 presents advised achievable NOx emissions that should be used is establishing emissions attributed to the 2024 budget year.

Coal Rank	Tangential-Fired	Wall-Fired
Bituminous	0.28	0.32
Lignite	0.20	0.22
Subbituminous	0.15	0.19

Table 20. Average Achievable NOx Emission Rates (lbs/MBtu)

In addition to issues related to the calculation of state budgets, EPA has incorporated in Appendix A of the *Ozone Transport Policy Analysis Proposed Rule TSD* each units' gross generation and generating capacity, and computed capacity factors. Although the description of Appendix A material is incomplete, it appears capacity values are reported on the basis of *summer net*, implying an appropriate capacity factor requires knowledge of net and not gross generation. MOG's contractors Cichanowicz, Marchetti, Hein and Rivera Report were not able to reproduce capacity factors listed in Appendix A. The inability to corroborate EPA's calculations creates concerns Appendix A data does not correctly establish the threshold NOx emission rate of 150 tons per year that determines if oil/gas-fired units are required to deploy SCR.

Recalculation of State Budgets. Based upon issues and omissions identified, EPA should adjust the state budgets beginning with budget year 2023. The focus of these adjustments should reflect: (i) the timing for installation of Combustion Controls in 2024 and retrofit SCRs in 2027; and, (ii) the correct technology inventory, and (iii) accurate NOx emission rates and retirements.

A recalculation of the budgets for the nine example states based upon the information described previously for the years 2023 and 2026 was executed for these comments. Table 21 compares the Optimized Baseline developed by EPA in the proposal to a Recalculated Optimized Baseline. The Optimized Baseline consists of retirements, natural gas conversions, and new SCR processes installed prior to the budget year, plus adjustments to the baseline from SCR and SNCR Optimization and Combustion Controls.

State	Year	Optimized Baseline (Ozone Season Tons)	State Budget (Ozone Season Tons)	Recalculated Optimized Baseline (Ozone Season Tons)
AR	2023	8,927	8,889	8,927
	2026	4,031	3,923	8,702
IN	2023	11,486	11,151	12,556
	2026	7,997	7,791	9,033
KY	2023	12,853	11,640	14,182
	2026	7,761	7,573	12,681
MO	2023	12,525	11,857	12,531
	2026	7,373	7,246	11,047
OH	2023	9,134	8,369	9,140
	2026	8,941	8,586	9,089
PA	2023	9,264	8,855	8,675
	2026	7,228	6,819	8,448
TX	2023	39,706	38,284	39,752
	2026	23,369	21,946	35,842
WV	2023	13,306	12,478	13,849
	2026	11,026	10,597	12,452
WY	2023	9,501	9,125	11,607
	2026	4,580	4,490	8,635

Table 21. Recalculated State Optimized Baselines: 2023 and 2026

Non-SCR Unit Retirements Between 2026 – 2030. Utility owners could either be retiring or cease burning coal at 27 non-SCR-equipped coal units between 2026 and 2030, representing 16.7 GW of capacity[102]. These units should be exempted from the Backstop Emission Rate of 0.14 lbs/MBtu. Since there will be no NOx emissions when they retire, for budget setting purposes their emission rate for the 2026 thru 2030 budget years should be set at 0.14 lbs/MBtu

2021 Baseline. The State Budget Setting process employs data at one point in time - 2021 – to project state budgets for 2023 and 2024. This approach is flawed as future electric utility operations based upon one historical year will not represent volatility in fuel prices and demand. This static approach does not account for changing dispatch conditions and unit performance, specifically changes in load. Also, this static approach commits units to a specific capacity factor for state budget purposes. EPA should consider an alternative approach that consider changes in demand in computing individual state budgets.

[102] Exhibit F, Appendix A.

In conclusion, MOG asserts that the budget calculations and emission allocation are in error and must be corrected as arbitrary and capricious actions by the agency.

G. The proposed FIP threatens the reliability of the electric power grid.

This proposed FIP coincides in time with significant concerns about electric reliability. As shown in Table 22 taken from the Cichanowicz, Marchetti, Hein and Rivera Report (Exhibit F), many electric generating units will not be able to comply with the proposed FIP allowance allocations in 2023.[103] More specifically, looking at the nine example states addressed in this evaluation, it is estimated an overall allowance shortfall of 6,310 allowances during 2023 Ozone Season. This is a matter of significant concern since a limited allowance market implies allowance purchases will be costly.

State	2021 Ozone Season Emissions	2023 Ozone Season Emissions	2023 Allocations	Deficit/Overage
AR	8,955	8,047	8,889	842
IN	14,162	12,595	11,111	-1,484
KY	14,571	14,146	11,640	-2,506
MO	20,388	11,705	11,857	152
OH	11,728	9,961	8,077	-1,884
PA	12,792	8,488	8,782	294
TX	42,760	37,595	38,206	611
WV	14,686	13,607	12,478	-1,129
WY	11,643	10,331	9,125	-1,206
Total	151,684	127,615	120,165	-6,310

Table 22. EGU 2023 Ozone Season Emission and Allocations by State

An additional evaluation contained in the Cichanowicz, Marchetti, Hein and Rivera Report (Exhibit F, page 62)as part of the effort to consider the 2026 Ozone Season emissions and allocations for Kentucky and Texas, as shown in Table 23.

State	2021 Ozone Season Emissions	2026 Ozone Season Emissions	2026 Allocations	Deficit/Overage
KY	14,571	11,794	7,675	-4,119
TX	42,760	30,975	22,195	-8,780

Table 23. Electric Generating Unit 2026 Ozone Season Emissions and Allocations

[103] Generation forecast was based upon EIA's AEO22 regional electric generation forecasts by fuel type and takes into account retirements, technology deployment schedules and EPA mandated technology emission rates for SCR-equipped units. The 2023 allowances assume a redistribution of unused New Set-Aside allowances.

As is apparent from these tables, a revision of EPA's budget-setting methodology is required to address this potential negative impact in reliability.

RTOs and similar organizations have also issued warnings of high prices and possible blackouts. These include:

MISO - In April 2022, Midcontinent Independent System Operator (MISO) told utilities that it expects summer demand to increase to 1.7% over last summer, while generation capacity has declined 2.3%. MISO attributed the decline in generation due to fossil-fuel power plant retirements due to shift in energy to renewable sources.[104] MISO is reporting it will need to import power from outside its region. It is not apparent how EPA's generation shifting assumptions will play out in light of such measures. "The reality for the zones that do not have sufficient generation to cover their load plus their required reserves is that they will have increased risk of temporary, controlled outages to maintain system reliability," Clair Moeller, MISO's president and chief operating officer, said in a May 2022 statement. Moeller said further customers in those zones "may also face higher costs to procure power when it is scarce." The problems MISO and others are seeing reflect the knock-on effects of a large-scale transformation of the power grid of the United States, as power generators seek out greener alternatives to legacy fuel sources. In its Seasonal Readiness Workshop Summer 2022, MISO is anticipating a warmer-than-normal-summer and probably capacity shortfalls in June, July and August. More specifically, MISO is forecasting in its Probable Generation Scenario a July peak at 124 GW, with only 118.5 GW of probable generation available. According to MISO emergency resources and non-firm energy imports will be needed to maintain system reliability. (MISO, *Seasonal Readiness Workshop Summer 2022*, April 28, 2022). MISO's 2022/2023 Planning Resource Auction (PRA) further supports a capacity shortfall for the MISO North/Central Regions, despite importing over 3,000 MW, the region cannot meet its requirement. The auction indicates that MISO North/Central Regions have a slightly increased risk of needing to implement temporary controlled load sheds. (MISO, *2022/2023 Planning Resource Auction (PRA) Results*, April 14, 2022). This is further reinforced by NERC, that considers MISO a high risk for running short of operating reserves under normal conditions. (NERC, *2022 SRA*, May 17, 2022). In its comments to EPA on January 11, 2022 regarding issues related to the Dallman, Erickson, Meramec, Ottumwa, and Sioux power plants MISO expressed concern about the result of withdrawal of service by the five generators stating that:

> Such interruptions of service would result in localized impacts, but must also be viewed by MISO for their collective effects. This is especially true since the proposed decisions could result in withdrawn generation for plants in close time proximity to one another rather than the more normal situation where generator outages result from individual decisions by their owners.
>
> …

[104] MISO Summer Readiness Workshop, April 28, 2022. https://cdn.misoenergy.org/20220428%20Summer%20Readiness%20Workshop%20Recording624371.mp4

> MISO respectfully requests that the EPA consider these Comments regarding the effects of generator closures on the electric transmission system in the MISO footprint. The loss of any significant portion of the 3.1 GW from the five generators considered in the above-captioned cases would push resource adequacy coverage of regional demands into dangerous territory.[105]

MISO also filed comment to USEPA Docket No. EPA-HQ-OLEM-2021- 0588, 0589, 0592, 0593 and 0594 on February 23, 2022 concerning EPA's coal combustion residuals rule regulatory impacts resulting in the withdrawal of service by five generators. MISO commented, "Based on the most currently available information, however, MISO expects there is very little excess generating capacity (or none at all) to cover demand for electricity, plus the required reserve margin, in the immediate future." P. 6. " . . .additional closures of generators will worsen what is projected to be an already difficult situation." For example, MISO has experienced an increasing number of hours during the year when supply is barely adequate to cover demand even during non-peak seasons and times of the day. These events, which place MISO in near-emergency or emergency conditions, are the result of the changing resource profile, including a significant number of thermal plant retirements and related increases in planned and unplanned outages. *Id.*

ERCOT - ERCOT is forecasting record summer demand in Texas but is confident of capacity. However, ERCOT told Calpine to delay its scheduled repairs and keep plant operating to meet the demand during the hotter than expected May weather. On May 13, 2022 the plant went offline, when some its equipment stopped working. By 5 PM on May 13, six plants (2,900 MW) had gone offline and ERCOT asked people to turn down thermostats and avoid using large appliances. (Mitchell Ferman, *Texas Grid Operator Told a Power Plant to Delay Repairs Ahead of a May Heat Wave. It Was Among Six Crashed*, Texas Tribune, May 17, 2022). This is a concern, when ERCOT tells companies they cannot do scheduled maintenance, which may have been scheduled months or even years in advance, in order to keep them running to meet demand. Therefore, deferring to maintenance raised the concern about ERCOT vulnerability to more extensive summer outages. Even though Texas has boosted reserve margins through the addition of wind and solar generation, NERC still considers ERCOT at an elevated risk due to the potential of extreme weather and the ongoing drought. (North American Electric Reliability Corporation (NERC), *2022 Summer Reliability Assessment*, May 2022).

PJM: PJM indicated on May 12, 2022 that it has sufficient capacity to meet the summer power demand. (SPP Global Commodity Insights, *PJM Expects to Have Sufficient Capacity to Meet 149 GW of Summer Power Demand*, May 12, 2022). However, on May 17, 2022 PJM recommended that the Indian River 4 Power Plant remain open into 2026, in order to strengthen the grid before the coal unit is retired. The coal unit was scheduled to close this year; thereby

[105] *In re Receipt of Waste from Dallman Power*) EPA-HQ-OLEM-2021-0588 *Station Based on an Interim EPA Determination*); *In re Receipt of Waste from Erickson Power*) EPA-HQ-OLEM-2021-0589; *Station Based on an Interim EPA Determination*); *In re Receipt of Waste from Meramec Power*) EPA-HQ-OLEM-2021-0592; *Station Based on an Interim EPA Determination*); *In re Receipt of Waste from Ottumwa Power*) EPA-HQ-OLEM-2021-0593 *Station Based on a Proposed EPA Determination*); *In re Receipt of Waste from Sioux Power*) EPA-HQ-OLEM-2021-0594; *Station Based on an Interim EPA Determination*)

indicating possible reliability concerns. (Delaware Business Now, *Last Coal-fired Power Plant in Delaware Gets Reprieve*, May 17, 2002).

PJM also filed comment to USEPA Docket No. EPA-HQ-OLEM-2021-0587, 0590, and 0595 on March 25,2022 concerning EPA's coal combustion residuals rule regulatory impacts. Citing significant reliability concerns, PJM urges EPA to coordinate with the states and RTOs to sequence outages of units to ensure reliability. P. 14.

NERC: The May 2022 North American Electric Reliability Corporation (NERC) Summer Reliability Report was released (NREC, *2022 SRA*, Mat 17, 2022). The following map is from NREC's 2022 Summer Reliability Assessment and illustrates the current stress on the electric power grid:

Seasonal Risk Assessment Summary	
High	Potential for insufficient operating reserves in normal peak conditions
Elevated	Potential for insufficient operating reserves in above-normal conditions
Low	Sufficient operating reserves expected

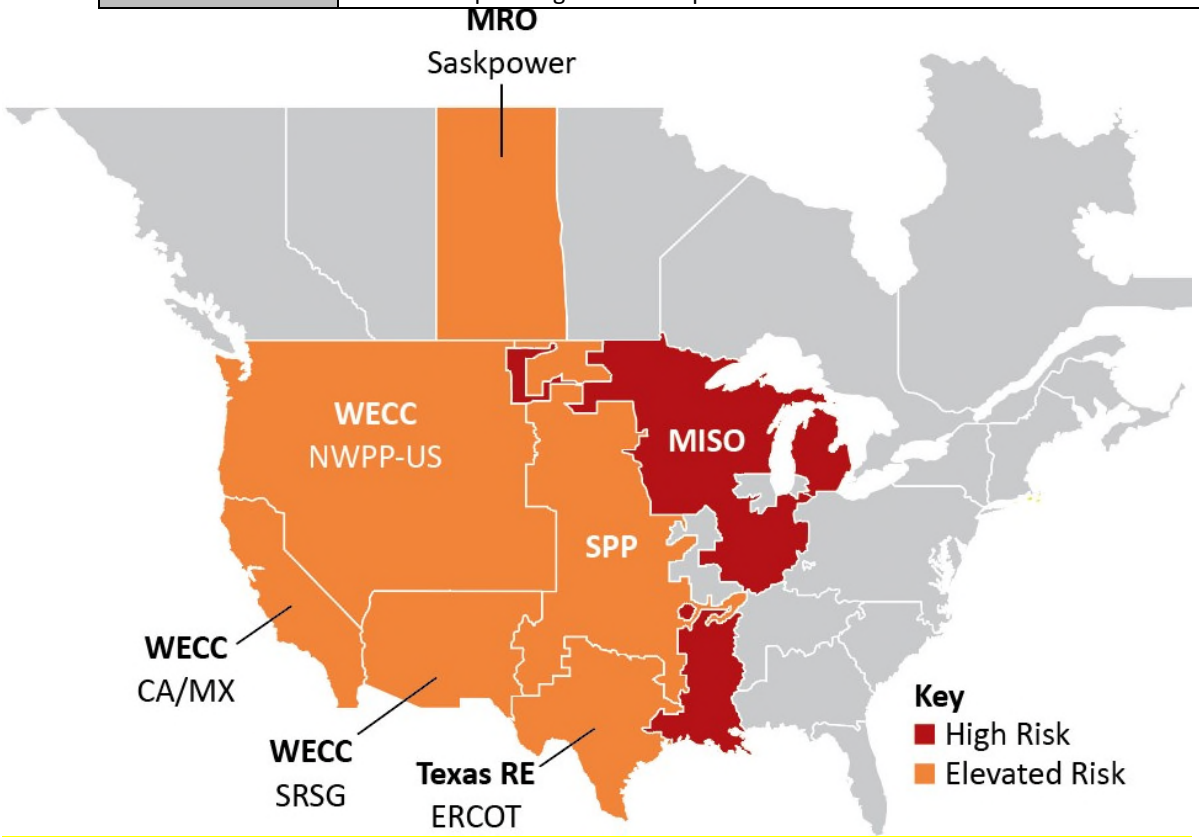

Figure 42: Summer Reliability Risk Area Summary

SPP: SPP anticipates sufficient resources to meet 2022 Summer Demand; however, NERC considers SPP an elevated risk in extreme weather events. NREC indicated the persistent drought in the Missouri River Basin could disrupt hydropower production and affect fossil units that use the river for heat rejection, which limit generator output - leading to energy shortfalls at peak

demand periods. Above normal wind generation may provide some relief; however, this energy is not assured according to NERC.[106]

MOG shares the concerns expressed by RTO's and others about electric reliability. MOG is particularly concerned that the EPA has failed to properly assess how its proposed rule will impact on electricity reliability. This is a particular concern given the marginal air quality improvement represented by EPA's proposal and the fundamental flaws in the manner in which the proposal has been developed. It is essential that in assessing the final version of this proposal that EPA assure that its rule does not interfere with the reliability of the electric power grid.

19. EPA should extend the deadline for EGU and non-EGU units to install new controls.

EPA requests comment on the time needed to install the various control technologies across all of the emissions units in the Tier 1 and Tier 2 non-EGU industries. 87 Fed. Reg. 20,104. Within its discussion of timeframes for installation of controls, the agency looks back at its 1998 NOx SIP Call and 2005 CAIR projections for installation of SCR control technology on the EGU sector and recounts its conclusion that a three-year installation timeframe should be feasible for most if not all of the identified industries. *Id.* Following its assessment of 24 and 16 years ago respectively, EPA proposes that

> . . .if the EPA finalizes this proposed rule in 2023, implementation of the necessary emissions controls across all of the affected non-EGU sources by the August 3, 2024, Moderate area attainment date would not be possible.
>
> For purposes of this proposed rule, the EPA estimates that the required controls for non-EGU source categories would take up to 3 years to install across the affected industries in the 23 states that remain linked in 2026. Therefore, based on the available information, the EPA proposes to require compliance with these non-EGU control requirements by the beginning of the 2026 ozone season.

Id.

MOG reminds the agency of the unique supply of materials, transportation limitations and workers during these times of geopolitical disruption triggered by the Russian invasion of Ukraine and ongoing COVID-19 pandemic-driven disruption. Reference to historical three-year installation timeframe is not reasonably projected whether related to EGUs or non-EGUs emissions controls installation. The three-year default may prove to be unachievable, which EPA concedes with its question about extensions.

EPA provides for comment criteria that they might consider in granting an extension request for compliance as follows:

> The EPA solicits comment on the specific criteria that the EPA should apply in evaluating requests for extension of the 2026 compliance deadline for non-EGU

[106] NERC, *SAS*, May 2022.

> sources. Such criteria could include documentation of inability, despite best efforts, to procure necessary materials or equipment (*e.g.*, equipment manufacturers are not able to deliver equipment before a specific date) or hire labor as needed to install the emissions control technology by 2026; documentation of installation costs well in excess of the highest representative cost-per ton threshold identified for any source (including EGUs) discussed in Section VI of this proposed rule (*e.g.*, vendor estimate showing equipment cost); documentation of a source owner or operator's inability to secure necessary financing, due to circumstances beyond the owner/operator's control, in time to complete the installation of controls by 2026; or documentation of extreme financial or technological constraints that would require the subject non-EGU emissions unit or facility to significantly curtail its operations or shut down before it could comply with the requirements of this proposed rule by 2026. Finally, the EPA requests comment on the process through which the EPA should review and act on an extension request—*e.g.*, the appropriate deadline for submitting a request, and whether the EPA should provide an opportunity for public comment before granting or denying a request.

Id.

We call EPA's attention to the comments filed by the American Forest and Paper Association (AF&PA) in this docket that confirms that three years is not sufficient time to comply with the industrial boiler NOx emission limits proposed for application to Tier 2 sources. Given air permitting requirements and supply chain limitations, AF&PA has advised EPA that a minimum of four years would be needed to comply with the proposed boiler limits, if finalized. An even longer time period would be needed if a firm natural gas supply is not currently available to repower combustion equipment. Accordingly, AF&PA urges EPA to allow for an extension of the compliance deadlines for up to an additional three years if needed to permit and install controls

MOG urges that these criteria (and perhaps other criteria noted by all impacted EGU and Non-EGU regulated sources) warrant consideration for extension requests for as much as an additional three years if needed to permit and install controls. In addition to justified cause for delay implementation of the controls by upwind EGU and Non-EGU sources, MOG reminds the agency of the requirement that performance dates of NAAQS implementation plans be aligned with one another. Delay by one state in implementation of NAAQS related controls may impact the obligations of other states, regardless of whether the state is an upwind or downwind state. As discussed in detail throughout these comments, the *Wisconsin* court clarifies the need to align deadlines among upwind and downwind states. If a downwind state delays its emissions reduction program, then a similar delay in assessing significant contribution by the upwind state is the only method that delivers an "on par" attainment strategy among all states. *Wisconsin* at 315- 316. The *Wisconsin* remand explained, "In sum, under our decision in *North Carolina*, the Good Neighbor Provision calls for elimination of upwind States' significant contributions on *par* with the relevant downwind attainment deadlines." *Id.* (emphasis added). The *Wisconsin* remand summarizes that "it is the statutorily designed relationship between the Good Neighbor Provision's obligations for upwind states and the statutory attainment deadlines for downwind areas that generally calls for parallel timeframes." *Id.* at 316.

MOG urges EPA to provide for a regulatory option to request delay in implementation by all impacted sources to this proposed FIP while also providing upwind and downwind states relief for the impact of delay of control implementation of achieving compliance with state emission budgets or other provision of this rule or the NAAQS.

20. EPA has failed to justify the non-EGU control requirements that it has proposed.

MOG is pleased to support the comments of the following organizations which have also filed comments with EPA expressing concerns about EPA's proposed rule and challenging EPA's authority to promulgate such a rule:

American Forest & Paper Association (AF&PA): AF&PA in its comments offers significant data and information addressing concerns that EPA has incorrectly assessed the feasibility of add-on NOx controls for pulp and paper mill process units. Significant, the AF&PA comments demonstrate that EPA has erroneously assessed the cost and feasibility of NOx controls on pulp and paper mill boilers and has failed to explain the basis for the NOx emission limits it has proposed for these units. The comments also explain the extent to which EPA has overestimated NOx reduction from the pulp and paper mill boilers it analyzed. MOG urges EPA to accept AF&PA's comments and to revise the proposed rule accordingly.

American Iron and Steel Institute (AISI): The AISI offers comments detailing its significant concerns regarding the unnecessary expansion of the ozone transport program to cover the iron and steel industry. The proposal would, in the vast majority of cases, require controls that are technically infeasible for the industry to implement. Further, the proposal would establish emission limitations that are set without any technical basis, and control technologies that are contrary to previously issued decisions in BACT and LAER determinations made for iron and steel plants. Further, the NO_X emission reductions resulting from imposition of such costs on the iron and steel industry would be negligible and result in no (or virtually no) appreciable improvement to downwind maintenance or attainment of the ozone NAAQS – which is the sole legal and technical purpose of this proposed rule.

Steel Manufacturers Association ("SMA") and the Specialty Steel Industry of North America ("SSINA") (collectively, the "Electric Arc Furnace Steel Associations"): The Electric Arc Furnace Steel Associations detailed comments offer the general observation that the "Proposed FIP, based on shockingly deficient current knowledge[107] of the steel industry, and especially the EAF steelmaking process, seeks to impose technically unachievable and cost-ineffective new NO_X limits across the EAF steelmaking industry in 23 states. The unprecedented breadth of regulatory requirements that EPA seeks to impose on EAF steel producers based on such deficient data is all the more egregious given EPA's erroneous and internally inconsistent linkage presumptions for just three sources at two EAF steel plants." The EAF Steel Associations offer detailed data-driven analysis demonstrating how the proposal misconstrues the nature of EAF related NOx emissions, contribution to ozone nonattainment through transport and emissions reductions potential. MOG urges EPA to accept the EAF Steel Associations comments and to revise to proposed rule accordingly.

V. Conclusion.

For the reasons set forth in these comments, the Midwest Ozone Group urges that EPA withdraw the subject proposal in favor of allowing states the opportunity to correct any concerns that EPA may have with their SIP submittals and in the alternative for EPA to correct the errors that have been identified with respect to its proposed FIP.

[107] Almost all of EPA's analysis of the emissions and air pollution controls is drawn from or can be traced to a single 1994 Alternative Control Techniques (ACT) document that is so outdated as to be completely irrelevant. Even so, to the extent this document does discuss fundamental technical limitations regarding emission controls, EPA disregards or simply omits those considerations in its proposed rule-making. To the extent that EPA relies on sources besides this document, for inexplicable reasons, EPA references combustion equipment from other industries such as coal-fired power plants as support for its suggested air pollution controls, such as Selective Catalytic Reduction (SCR), with no awareness or discussion of the fundamental technical differences between such sources.