OZONE TRANSPORT COMMISSION

Connecticut

Delaware

District of Columbia

Maine

Maryland

Massachusetts

New Hampshire

New Jersey

New York

Pennsylvania

Rhode Island

Vermont

Virginia

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January 23, 2019

The Honorable William Wehrum,
Assistant Administrator
Office of Air and Radiation
U.S. Environmental Protection
Agency Mail Code 6101A
1200 Pennsylvania Avenue,
N.W. Washington, DC 20460

Dear Assistant Administrator Wehrum:

The Ozone Transport Commission (OTC) consists of 12 states and the District of Columbia that work together to address ozone transport under requirements of the 1990 Clean Air Act Amendments. Since its creation, the OTC has been tremendously successful in reducing ozone concentrations in all member states by collectively driving science and technology towards efficiency, thereby creating a healthier environment for nearly 66 million people. Despite this success, half of OTC's residents are still breathing air that exceeds the 2015 ozone National Ambient Air Quality Standard (NAAQS) and almost 4.5 million people are exposed to ozone levels exceeding the 2008 NAAQS. OTC's modeling indicates that without additional emission reductions, 12 million people in OTC states will still be breathing unhealthy air in 2023. Breathing unhealthy levels of ozone is linked to serious respiratory illness like asthma and can also lead to early mortality. Children and the elderly are at greatest risk from breathing unhealthy levels of ozone.

Over the past six months there has been a considerable amount of discussion and debate over the technical and scientific basis of environmental decision making. The OTC is concerned with a discernible trend by the Environmental Protection Agency (EPA) to present technical information in an incomplete way that favors EPA's preferred policy. In the case of recent Agency memoranda and proposals, EPA selectively presents information that undermines and mischaracterizes the continued need for emission reductions from upwind states in order to bring air in compliance with federal standards to the residents of the OTC.

An August 31, 2018 memorandum signed by Peter Tsirigotis, Director of EPA's Office of Air Quality Planning and Standards, to Regional Air Division Directors indicates that EPA intends to revise the threshold used to determine significant ozone contribution from upwind states to downwind nonattainment areas. The memo weakens the effectiveness of the Clean Air Act's "Good Neighbor" provisions (Section 110 (a)(2)(D)) and appears to be based upon faulty technical analyses. The Act's Good Neighbor provisions are intended to provide downwind nonattainment areas with relief from interstate pollution transport that prevents them from meeting federally mandated attainment dates. The significance thresholds in the EPA/Tsirigotis memorandum do not provide relief and will further delay public health protection to our citizens. This is unacceptable.

The attached comments are OTC's most recent submittal to EPA identifying technical analyses that are overly optimistic and in some cases misrepresent the science to support the EPA's policy position that upwind states do not need to include additional emission reduction measures in their Good Neighbor State Implementation Plans (SIPs) for the 2008 and 2015 NAAQS. The central and critical issues that OTC comments on include:

1. Inconsistency of EPA's analyses with the current understanding of ozone formation and transport;
2. Inadequacy of the weakened one part per billion threshold for significant contribution; and
3. Need for EPA to utilize a more appropriate threshold for control costs that equitably allocates responsibility between upwind and downwind states.

More specifically, this includes:

- Ignoring the results from another EPA approved model that shows less optimistic results;
- Averaging modeling results over multiple days which can mask maximum contribution on high ozone days;
- Using inaccurate assumptions to estimate daily and hourly emission profiles for significant ozone precursor sources;
- Failing to represent key meteorological regimes and conditions for ozone transport and local ozone formation;
- Not considering the collective contribution of upwind states in determining the appropriate threshold;
- Assuming emissions reductions that are not backed with enforceable requirements;
- Not utilizing low-cost controls that can be implemented sooner than 2023;
- Not considering the impact that various regulatory rollbacks will have on future year emissions; and
- Not considering the costs of programs in downwind nonattainment areas when determining cost-effectiveness of upwind reductions.

These comments build upon a progression of comments that OTC and member states have submitted in recent months and over the past few years. Other submittals where OTC and its member states have discussed EPA's less conservative and overly optimistic scientific and technical data and analyses include:

- April 6, 2017 OTC Comments to U.S. EPA; Docket ID No: EPA-HQ-OAR-2016-0751; RE: Notice of Availability of the Environmental Protection Agency's Preliminary Interstate Ozone Transport Modeling Data for the 2015 Ozone National Ambient Air Quality Standard (NAAQS);
- August 31, 2018 OTC Comments, including OTC Technical Assessment – Attachment 1, on the EPA's Proposed Determination Regarding Good Neighbor Obligations for the 2008 Ozone National Ambient Air Quality Standard (CSAPR Close-Out); and
- Comments from individual states on Section 126 Petition actions, Good Neighbor SIPs for upwind states, the CSAPR Update, the CSAPR Close-Out and other EPA actions or

proposals. Delaware, Connecticut, Maryland, New Jersey and New York have all submitted multiple comments to EPA on issues related to ozone transport.

As you know, many OTC states are working individually and in concert with others to challenge EPA decisions on many transport related actions. The science is very clear and EPA needs to require that upwind states adopt additional enforceable NOx reduction measures as part of their Good Neighbor SIPs for both the 2008 and the 2015 ozone standards. OTC member states are interested in discussing these issues further. I will be reaching out to you to schedule time for us to meet. If you have any questions in the meantime, please contact me or have your staff contact Mr. David Fees with my Division of Air Quality at (302) 739-9402.

Sincerely,

Shawn M. Garvin
OTC Chair

cc: OTC Commissioners and Air Directors
U.S. EPA Regional Administrators for Regions I, II, and III

OTC TECHNICAL ANALYSIS OF THE EPA DOCUMENT RELEASED ON AUGUST 31, 2018 ENTITLED "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."

AUGUST 31, 2018 MEMORANDUM FROM PETER TSIRIGOTIS, DIRECTOR EPA OAQPS TO REGIONAL AIR DIVISION DIRECTORS

DECEMBER 7, 2018

Introduction

The Ozone Transport Commission (OTC) is submitting technical comments below on the August 31, 2018 Memorandum from Peter Tsirigotis, Director U.S. Environmental Protection Agency's (EPA) Office of Air Quality Planning and Standards (OAQPS) to Regional Air Division Directors, *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*.

The Tsirigotis memo of August 31, 2018 concludes that relaxing the significant contribution threshold from 1-percent (%) of the National Ambient Air Quality Standards (NAAQS) to 1 part per billion (ppb) achieves results that are "generally comparable." OTC analysis finds that raising the significant contribution threshold from 1% of the NAAQS to 1 ppb is not comparable at many of OTC's most challenged locations and shifts the burden of reducing of up to 3 ppb away from states that would have been attached contributing states that drop out of significant contributor status under the potential change of threshold. The net result is that downwind areas will have to make-up this difference, with much more expensive control options than are currently available in upwind contributing areas.

The OTC has three main major concerns with the way EPA has characterized technical data in the August 31, 2018 Tsirigotis memorandum:

- EPA needs to ensure that the modeling used to support state SIPs is consistent with current conceptual understanding of how ozone is formed;
- EPA's preference to allow the threshold for significant contribution to increase from 1 percent of the NAAQS to a more lenient 1 ppb further shifts the burden of compliance from states outside of the OTR to states in the OTR; and
- The effect of combining a more lenient threshold for significant contribution with the extremely low and undervalued marginal cost threshold of $1,400 per ton of NOx removed, allows upwind states to determine that their "linked contribution" is not "significant" and increases the inequity for control costs in nonattainment areas and those areas contributing significantly to that nonattainment (i.e., it absolves the upwind states from any further transport obligations).

Consistency with Current Conceptual Understanding of Ozone

- **EPA needs to ensure that the modeling used to support state SIPs is consistent with current conceptual understanding of how ozone is formed[1].**
    - **Understanding Ozone Formation**

Although ozone design values in the East have dropped dramatically over the past ten years, there is still a large population that is exposed to ozone concentrations in excess of the 2008 and 2015 National Ambient Air Quality Standard (NAAQS). As ozone precursor emissions have been reduced, the way in which high ozone days occur has also changed. Historically, high levels of local emissions would combine with regionally produced emissions to form widespread ozone exceedances across the Ozone Transport Region (OTR). As states in the OTR worked individually and collaboratively to address local and regional ozone transport in order to meet the 1990 1-hour, 1997 8-hour, and 2008 8-hour ozone NAAQS, emissions and corresponding ozone concentrations came down significantly. During the process, virtually every cost-effective emission reduction was studied and pursued, and the continuing need for emission reductions resulted in incrementally higher costs, especially when compared to OTC's upwind neighbors.

In the 1990s, the Ozone Transport Assessment Group (OTAG) was formed to study ozone transport beyond the established Northeast OTR. Upon conclusion, they found that ozone and its precursor emissions could transport hundreds of miles through various meteorological regimes. Measurements taken around this time found that high-ozone events in the Northeast were linked to widespread regional transport episodes, where regional ozone routinely reaching concentrations of 70 to 90 ppb was found to be transporting aloft into the OTR just a few thousand feet above the ground. After transporting into the OTR, this regional aloft "reservoir" was found to mix down into lower elevations with local emissions that were released during the mid-morning to create high levels of ground-level ozone, often well above the standard. The OTAG process concluded with EPA implementing the NOx SIP Call, which successfully reduced inter-regional ozone transport and enabled many eastern locations to attain the ozone NAAQS.

Since the 1990s, additional regional and national emission measures have been implemented including the Clean Air Interstate Rule (CAIR), Cross-State Air Pollution Rule (CSAPR), and low emission vehicles and clean fuel requirements, but perhaps one of the biggest recent drivers of cleaner air in the eastern United States is not a regulation at all. It is an economic driver created by increasing low-cost natural gas supplies through improved fracking technology. Electric generating companies and large industry often found it more economical to switch to low cost and lower polluting natural gas that naturally meets most environmental regulations than it was to continue to operate with higher emitting fuels and operate post-combustion technology. While this economic driver has been very effective in reducing emissions and lowering ozone concentrations across the East, it comes with an uncertain future that is

[1] The following language is similar to that noted in Section 1 of the Ozone Transport Commission's (OTC's) Comment and Technical Assessment regarding Good Neighbor Obligations for the 2008 Ozone National Ambient Air Quality Standard, August 31, 2018.

dependent on an assumption that future year economics will continue to support low cost natural gas. It also comes with demonstrated changes in how high ozone events in the East are formed.

In recent years, the worst ozone days in the East are still almost always linked to regional events. Regional nitrogen oxide emissions (NOx) from electric generating units (EGUs) still create an aloft reservoir that mixes down, but ozone levels in the reservoir are more commonly in the 50 to 70 ppb range compared to the 70 to 90 ppb range observed ten years ago. Local emissions and short-range transport (West Virginia and Pennsylvania to Maryland, Maryland to New Jersey, New Jersey to Connecticut, etc.) have become more critical, adding up to 15 to 30 ppb of ozone to the 50 to 70 ppb of ozone mixing down from aloft. This can be the difference between exceeding and not exceeding the 2008 and 2015 standards. Driven by local meteorology, local geography and day-specific emissions, contribution from local emissions and short-range transport vary from one high ozone day to another. Modeling needs to account for fine scale topographical and emission features and have good model replication of the aloft transport reservoir.

- **Sea and Bay Breezes**

Sea and bay breezes are currently an important phenomenon at many of the high ozone monitoring locations in the OTR. These events can create large gradients between high and low ozone locations. Photochemical model performance in these locations is not strong enough to forecast with certainty to fractions of a ppb as was done in the transport modeling used to support the Tsirigotis memo. Modelers have explored removing data from the calculations, but this methodology is unproven and the source of additional uncertainties. Ideally, future modeling will include fine enough resolution where the near water model performance issue for high ozone monitors can be resolved to improve performance and certainty.

- **Emissions on High Ozone Days**

Another important detail that has not been accurately accounted for in current modeling is emissions on high temperature days. These high temperature periods are often also periods of high electricity demand where base load EGUs run at maximum capacity and peaking or load-following EGUs, that do not run every day, are also running at a high capacity. Infrequently operating peaking units, which often lack emission controls, have proven difficult to account for in the ozone modeling emission inventories. Such units have their modeled emissions "averaged" over long durations rather than capturing emission peaks concentrated on just a few days, or even hours, in the way these sources in the real world operate during high electricity demand periods.

- **Inventory and Modeling Uncertainties**

Support modeling for Good Neighbor (GN) State Implementation Plans (SIPs) introduces a new level of required modeling sophistication where fractions of a ppb become even more important. The results of this work determine which states owe emission reductions in their GN SIPs to address modeled violations of the ozone NAAQS. Getting this wrong can leave downwind areas facing failure to attain the NAAQS with insufficient help in reducing transport. For this test, EPA uses the model to predict future year (2023) design values and how much transport will

exist from upwind states to a monitor predicted to violate the NAAQS within its four-factor framework:

1. Identifying downwind air quality problems relative to the NAAQS;
2. Determining which upwind states are linked to these identified downwind air quality problems and which ones warrant further analysis to determine whether their emissions violate the good neighbor provision;
3. For upwind states linked to downwind air quality problems, identifying on a statewide basis, emissions (if any) that will significantly contribute to nonattainment or interfere with maintenance of a standard, based on cost and air quality factors evaluated in a multi-factor test; and,
4. For states that are found to have emissions that significantly contribute to nonattainment or interfere with maintenance of the NAAQS downwind, implementing the necessary emission reductions within the state.

There are many ways to evaluate transport and there are many large uncertainties including the use of future year expected emissions and meteorological variability. OTC performed an analysis of several different contribution metrics and found differing answers as to who significantly contributes to a modeled future year ozone violation. While the approach used by EPA to determine significant contribution is simple, there are other approaches that better reflect the realities of today's ozone transport problems.

EPA once used a calculation that averages state ozone contribution linkages to downwind nonattainment and maintenance areas on modeled days exceeding 70 ppb. The process was modified in the EPA March 2018 updated contribution modeling to average state ozone contribution linkages on the top ten modeled ozone days to the same areas of concern. Since the form of the ozone NAAQS considers the four highest ozone days per year for a given monitor, it makes sense to look at significant transport in a way that also considers the four largest individual day ozone contributions occurring during the highest modeled ozone days, rather than to average state ozone contributions on the top ten modeled ozone days. The OTC technique averages the maximum four state contribution linkages to areas of concern from the top ten modeled ozone days. Such a metric naturally improves consideration of key meteorological regimes (e.g., along corridor, westerly transport, local recirculation, etc.) and adds a needed small level of conservatism to better ensure attainment, which is generally absent from EPA transport analyses. Inherent uncertainties of year to year meteorology still limit full transport consideration of all common meteorological regimes to only those inherent to the base year meteorology.

Overall, photochemical modeling has historically done well with predicting larger ozone changes, but not to the degree where fractions of a ppb are predicted within modeling uncertainty. Today, there are widespread areas that are just a few ppb above the ozone NAAQS and the role of modeling and emission uncertainties is becoming increasingly important. EPA 2023 future year modeling is predicting a number of locations in the OTR to be within plus-or-minus 1 ppb of attainment, but uncertainties in future year emissions and meteorology make the prospect of these areas actually reaching attainment by 2023 tenuous without better accounting

for the current conceptual understanding of ozone formation and the uncertainties inherent to the analysis.

- **Need for enforceable limitations**

In step 1 of its four-step analysis, EPA's 2023 projection inventory and modeling presumes that certain emission reductions will occur, and thus air quality will improve in the future to such a degree that no area in the eastern United States will endure ozone nonattainment or maintenance issues. Many of these claims of emission reductions are dubious and are unlikely to occur without enforceable provisions. Without enforceable emission limits being implemented at facilities as assumed in the 2023 modeling, there is no guarantee that any emission reductions will actually occur. This serves to underrepresent the extent of downwind nonattainment and maintenance issues, and minimizes the extent of ozone transport from upwind states. EPA's approach is also contrary to the fundamental principle behind the statutory obligation that SIPs must "include enforceable emission limitations" and "contain adequate provisions prohibiting ... any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national ambient air quality standard."[2] By declaring future air quality as attaining the NAAQS without making enforceable the very measures by which that prediction was made, EPA subverts the text and meaning of CAA section 110(a)(2).

Significant Contribution Thresholds

- **EPA's preference to allow the threshold for significant contribution to increase from 1 percent of the NAAQS to a more lenient 1 ppb shifts the burden of compliance from states outside of the OTR to states in the OTR.**

From a simple math perspective, changing the historically used significant contribution threshold from one percent of the NAAQS to 1 ppb raises the threshold between 25 and 30 percent for the 2008 and 2015 ozone NAAQS, respectively. Because fewer states would qualify as contributing states, fewer sources would be left with the responsibility of finding greater emission reductions to meet the goal of attainment. The applicability of 1 ppb would have to be reassessed each time the NAAQS is updated.

The origins of using 1 ppb as a significant contribution threshold comes through the Prevention of Significant Deterioration Program (PSD) where a technical analysis is conducted on individual emission sources to determine if the facility emissions will significantly contribute to air quality degradation. This analysis uses a significant impact level (SIL) as a screening threshold for the facility during single-source dispersion modeling as part of a permitting analysis. The ozone SIL resulted from a bootstrap statistical analysis of measured ozone monitor variability. As such, the 1 ppb threshold reflects an ozone change that a typical ozone monitor would be capable of recording created by the modeled emission source with a degree of statistical certainty. It's a bit of a leap to apply the ozone SIL to state-wide emission sources in a photochemical modeling analysis where fractions of a ppb are known to be important.

[2] Clean Air Act sections 110(a)(2)(A) and 110(a)(2)(i)(I), respectively.

EPA's August 31, 2018 memo suggests that the resulting modeled GN transport contributions of a 1% of the NAAQS and a 1 ppb threshold are "generally comparable, overall," however OTC analysis finds a significantly increased burden to downwind nonattainment and maintenance areas within the OTR. The table below summarizes states that would be linked via 1% of the NAAQS and 1 ppb thresholds to downwind problem areas in 2023. Using the Susan Wagner High School monitoring site in Richmond County, New York as an example, switching from 1% of the NAAQS to a 1 ppb threshold would eliminate three states (Illinois, Indiana, and Kentucky) as significant contributors representing up to 2.56 ppb of modeled ozone impact onto the downwind nonattainment area. When Congress established the transport provisions of the Clean Air Act, it envisioned that States would address their significant contributions to downwind nonattainment and interference with maintenance in an equitable and cost-effective manner. By increasing the threshold for significant contribution, EPA is further shifting the burden to downwind States without regard for the overall impact upwind states have on nonattainment.

Comparison of Potential Significance Threshold Changes for 2015 Ozone NAAQS[3]

AQS Code	County	Site	1% NAAQS	1 ppb	2023 EPA CAMx	Nonattainment Area Makeup (ppb)
090019003	Fairfield	Sherwood Island /estport	CT, MD, NJ, NY, OH, PA, VA, WV	CT, MD, NJ, NY, OH, PA, VA	72.7	0.89
360850067	Richmond	Susan Wagner S	IL, IN, KY, MD, MI, NJ, NY, OH, PA, VA, WV	MD, MI, NJ, NY, OH, PA, VA, WV	71.9	2.56
240251001	Harford	Edgewood	IN, KY, MD, MI, OH, PA, VA, WV	IN, KY, MD, OH, PA, VA, WV	71.4	0.81
090010017	Fairfield	Greenwich Point	CT, MD, NJ, NY, OH, PA, VA	CT, MD, NJ, NY, PA, VA	69.8	0.95
090013007	Fairfield	Lighthouse-tratford	CT, MD, NJ, NY, OH, PA, VA, WV	CT, MD, NJ, NY, OH, PA, VA	71.2	0.81
361030002	Suffolk	Babylon	MD, MI, NJ, NY, OH, PA, VA, WV	MD, NJ, NY, OH, PA, VA,	72.5	1.67
090099002	New Haven	Hammonasset tate Park-ladison	CT, MD, NJ, NY, OH, PA, VA	CT, MD, NJ, NY, OH, PA, VA	71.2	0.00
360810124	Queens	Queens College	MD, MI, NJ, NY, OH, PA, VA, WV	MD, MI, NJ, NY, OH, PA, VA	70.1	0.89
361192004	Westchester	White Plains	CT, MD, NJ, NY, OH, PA, VA, WV	CT, MD, NJ, NY, OH, PA, VA	68.1	0.89
340150002	Gloucester	Clarksboro	DE, IL, IN, KY, MD, MI, NJ, NY, OH, PA, VA, WV	DE, MD, KY, NJ, OH, PA, VA, WV	68.2	3.62
090011123	Fairfield	Danbury	CT, MD, NJ, NY, OH, PA, VA, WV	CT, MD, NJ, NY, OH, PA, VA	66.4	0.76

Note: States shown in red are those that would be considered contributing states under the 1% of the NAAQS criterion, but not under the 1 ppb criterion.

[3] Based on EPA's March 2018 updated contribution modeling analysis with the 'en' emission inventory.

Inappropriate Threshold and Cost Criteria

- **The effect of combining a more lenient threshold[4] for significant contribution in Step 2 with the extremely low and undervalued marginal cost threshold of $1,400 per ton of NOx removed in Step 3, allows upwind states to determine that their "linked contribution" in Step 2 is not "significant" in Step 3 and increases the inequity for control costs in nonattainment areas and those areas contributing significantly to that nonattainment (i.e., it absolves the upwind states from any further transport obligations).**

The effect of combining a more lenient 1 ppb threshold[5] in Step 2 with the extremely low and undervalued marginal cost threshold of $1,400 per ton of NOx removed in Step 3, allows upwind states to determine that their "linked contribution" in Step 2 is not "significant" in Step 3. The Step 3 analysis is used to determine if the linked upwind state's contribution is "significant" or will "interfere with maintenance" of the NAAQS at downwind receptor(s). Step 3 does this by injecting an exceedingly low-cost threshold of $1,400 per ton of NOx removed. OTC has commented to EPA on multiple occasions that the cost threshold of $1,400 doesn't come close to actual costs being incurred in the OTR, and that by using such a low threshold, it allows contributing states to escape making even the most basic and most cost-effective emissions remediation to address their transport to downwind areas. This results in a much higher cost of attainment compliance, extends the time of noncompliance, and is economically punitive and unfair to downwind nonattainment areas.

The CSAPR Update finalized EGU NOx ozone season emissions budgets for affected states that were developed using uniform control stringency available at a marginal cost of $1,400 per ton of NOx reduced. However, EPA's selection of $1,400 per ton of NOx removed as the threshold for determining significant contribution is non-rigorous and arbitrary. EPA used a set of commonly used, low-cost, NOx emission controls, but fails to consider more expensive controls that many downwind states have already been forced to adopt.

EPA analyzed the following NOx control strategies to arrive at the $1,400 "cost-effective" threshold:

- optimizing NOx removal by existing, operational selective catalytic reduction (SCR) controls ($800 per ton of NOx removed),
- turning on existing idled SCR controls ($1,400 per ton of NOx removed),
- installing state-of-the-art NOx combustion controls ($1,400 per ton of NOx removed),
- turning on existing idled selective non-catalytic reduction (SNCR) controls ($3,400 per ton of NOx removed), and
- shifting generation to existing units with lower NOx emissions rates within the same state (cost varies).

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[4] Page 4 of Memo; "Although the 1 ppb threshold captures somewhat less upwind contribution across receptors than the 1 percent threshold".

[5] Page 4 of Memo; "Although the 1 ppb threshold captures somewhat less upwind contribution across receptors than the 1 percent threshold".

The EPA also considered installation of new SCRs ($5,000 per ton of NOx removed) and new SNCRs ($6,400 per ton of NOx removed), but noted that these reductions could not be achieved during the 2017 ozone season.

The EPA methodology then identified potential NOx reductions associated with each of the dollar amounts ($800, $1,400, and $3,400 per ton of NOx removed), and found that there is more potential NOx removed in the $800 to $1,400 range than in the $1,400 to $3,400 range, and thus concludes that $1,400 is reasonable for use in determining significant contribution. This analysis leads to the suggestion that SNCR is not a cost-effective control technology because SCR control technology is more efficient at NOx removal than SNCR. However, had EPA considered what NOx control technologies are already being commonly utilized rather than comparing the marginal cost of SCR to SNCR, EPA may have concluded that $3,400 per ton of NOx removed is cost-effective. Moreover, CSAPR NOx allowance prices stayed within a range of $150 to $300 per ton for much of the 2018 ozone season – considerably lower than the cost estimates contained in the CSAPR Update. These represent the true costs of the CSAPR Update; allowance prices never exceeded the $800 per ton threshold during the 2017 ozone season or the 2018 ozone season to date. Absent permanent and enforceable emission limits, it is unreasonable to assume that units will operate already-installed controls, rather than just purchasing cheaper allowances.

Businesses/corporations do a great deal of economic analysis when deciding on capital expenditures. Prior to the installation of any NOx control technology, all companies determine if the added cost of the controls is cost effective; that is- can they make the money back? Certainly, if a company has installed post-combustion NOx controls (SCR or SNCR), operated the control devices, and asked for rate increases on customers to pay for the control devices, then the installation and operation of the control device was already determined to be cost effective. EPA did not need to separate SCR control device costs from SNCR control device costs in developing a cost-effective threshold. Electric generating companies have conducted this analysis already; the proof is the installation and operation of the control devices. Therefore, using EPA's own cost data in the CSAPR Update, $3,400 per ton of NOx removed is a more reasonable dollar per ton of NOx figure for determining significant contribution than $1,400.

By combining a more lenient screening threshold to determine upwind states contribution and accountability to downwind states with a lower cost threshold requirement for those upwind states that are deemed significant contributors, EPA has shifted the burden of NOx reduction costs significantly towards downwind states. A $3,400 per ton of NOx removed cost threshold for upwind states is significantly less burdensome when compared to the high costs of controls in downwind OTC states struggling to reach attainment. While Reasonable Available Control Technology (RACT) cost thresholds vary from state to state, many OTC states have implemented regulations enforcing control costs orders of magnitude higher than $3,400 per ton of NOx removed. This economic disparity can be illustrated by comparing the state of Connecticut to upwind states. As required in Connecticut's Reasonably Available Control Technology rules (RCSA 22a-174-22e(h)), Connecticut sources are required to pay more than $13,000 per ton of emissions reduced. This is a nearly 4-fold increase over the $3,400 cost threshold and a 9-fold increase over the current EPA CSAPR-Update $1,400 cost threshold. EPA inequitably utilizes an average cost per ton threshold across a large domain instead of

leveling the economic playing field and using cost per ton thresholds from upwind nonattainment areas. Ultimately, EPA's combination of a more lenient screening threshold (1 ppb) with an unreasonably low cost threshold puts downwind states at a huge economic disadvantage and absolves upwind states of their responsibilities under the Clean Air Act (Good Neighbor) transport provisions.

Conclusion

In conclusion, the OTC has three main major concerns with the way EPA has characterized technical data in the August 31, 2018 Tsirigotis memorandum. To address these concerns EPA needs to:

1. Ensure that the modeling used to support Good Neighbor SIPs is consistent with current conceptual understanding of how ozone is formed and measured by accounting for local meteorology, fine scale topographical features, day and hour specific emissions, accurately representing the aloft transport reservoir and addressing the days when ozone transport is contributing to nonattainment. (For example, EPA should use the average of the maximum four state contribution linkages to areas of concern from the top ten modeled ozone days and control measures included in the modeling should be consistent with the enforceable requirements included in state or federal implementation plans.)
2. Retain the one percent of the NAAQS threshold for significant contribution and interference with maintenance as the one percent threshold provides for a more equitable solution for addressing the overall impact ozone transport.
3. Develop a cost threshold that is equitable for significant contribution and interference with maintenance that considers the cost of additional controls in downwind areas. (The effect of combining a more lenient significant contribution threshold with the extremely low and undervalued marginal cost threshold allows upwind states to determine that their "linked contribution" is not "significant" and absolves the upwind states from any further transport obligations.)

The OTC is asking EPA to re-examine and respond to these three main issues that continue an apparent trend of misrepresenting technical analysis in a way that undermines the need for emission reductions from states upwind of the OTR.