NORTH CAROLINA DIVISION OF AIR QUALITY COMMENTS ON EPA'S MARCH 27, 2018 MEMORANDUM ENTITLED "INFORMATION ON THE INTERSTATE TRANSPORT STATE IMPLEMENTATION PLAN SUBMISSIONS FOR THE 2015 OZONE NATIONAL AMBIENT AIR QUALITY STANDARDS UNDER THE CLEAN AIR ACT SECTION 110(a)(2)(D)(i)(I)"

May 11, 2018

Submitted by email to: Norm Possiel (possiel.norm@epa.gov) and Elizabeth Palma (palma.elizabeth@epa.gov)

Dear Norm Possiel and Beth Palma,

The North Carolina Division of Air Quality (DAQ), within the Department of Environmental Quality, appreciates the opportunity to comment as requested on the U.S. Environmental Protection Agency's (EPA) *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)(l),* dated March 27, 2018. The DAQ's comments are provided in response to Attachment A (Preliminary List of Potential Flexibilities Related to Analytical Approaches for Developing a Good Neighbor State Implementation Plan) of EPA's memorandum.

Analytics

- Choice of base year(s) for modeling: Ozone transport patterns may differ considerably from year to year. EPA should consider modeling multiple years to get a better understanding of average transport patterns and state contributions.
- EPA should consider modeling at higher resolution (≤4 kilometers (km)) in areas of complex terrain and at coastlines.
- Future analytic year: The DAQ generally supports using the moderate attainment year of 2023 for the basis in determining significant contributions. However, any future modeling should use a future year that provides sufficient lead time to enact or install any proposed remedies. It's possible some simpler remedies, such as changes in operating procedures, may require less lead time than costlier or technically challenging remedies.
- The DAQ supports a shift away from using proprietary power sector modeling, such as the Integrated Planning Model (IPM). The "engineering" approach used by EPA in the latest modeling was very encouraging. EPA should consider using the Eastern Regional Technical Advisory Committee (ERTAC) Electricity Generating Unit (EGU) Emission Projection Tool for estimating future year EGU emissions.

Step 1 - Identify downwind air quality problems

- EPA should follow its modeling guidance and remove days with poor model performance. Removing poor performing model days will make design value (DV) and contribution calculations more defensible.
- Recent ozone trends should be considered when determining which monitors will have nonattainment or maintenance issues. EPA should consider omitting any monitors with a current DV of 3 parts per billion (ppb) or more below the standard assuming that meteorology was conducive for ozone formation.
- International transport (Contributions from "dirty" international sources). EPA should estimate international contributions that originate from sources that are "dirtier" than typical US sources (i.e., uncontrolled power plants, industrial sources, vehicles, etc.). If the "dirty" portion of international contributions are greater than the amount a monitor is above the national ambient air quality standard (NAAQS), no additional controls should be required of upwind states.

Step 2 - Identify upwind states that contribute to those downwind air quality problems to warrant further review and analysis

- Based on EPA's currently policy, an upwind state is determined to have a significant contribution to a downwind state's nonattainment or maintenance monitor if air quality modeling shows that the upwind state's contribution is at least 1% of the NAAQS. For the 2015 ozone NAAQS, that means that a state with a contribution as low as 0.7 ppb to a downwind state's monitor would be required to expend significant resources to carry out Step 3 to lower its downwind contribution to a monitor below 0.7 ppb. We ask that EPA reconsider its policy for determining the significant contribution level in light of other EPA policies related to ozone monitoring and reporting protocols and its prevention of significant deterioration (PSD) policy. The DAQ believes that the 0.7 ppb threshold is too low and at a minimum, EPA should not set a threshold below 1 ppb for the following reasons:
    - There are significant uncertainties associated with the forecast year inventories used as inputs to the air quality modeling as well as the uncertainties associated with the meteorological and air quality modeling used to predict very small changes in ambient ozone concentrations over long distances. For example, the year of meteorological data used in the modeling could determine if an upwind state's contribution to a downwind state's monitor is above or below 0.7 ppb. Similarly, small changes to point source emissions from one year to the next could also potentially affect the contribution level. Given the uncertainties associated with the air quality modeling input data and the models themselves, it seems reasonable to establish a significant contribution level that is robust enough to account for the variability in modeling results associated with these uncertainties. At a minimum, the significance threshold should be set above the level of modeling uncertainty.

- Currently, the 0.7 ppb threshold is less than the manufacturer-reported precision of ambient monitors; consequently, it is unreasonable to assume that the air quality models can accurately predict levels at this threshold.[1] Also, each year EPA requires monitors to be calibrated within 2% of a reference monitor before deployment.[2] This means that a monitor may be calibrated up to 2% higher or lower each ozone season. A 1% threshold is half of this calibration threshold. In addition, most monitors are calibrated with what EPA refers to as a level three transfer standard. Each transfer standard is allowed up to a 3% error from the higher-level standard.[3] Finally, EPA allows up to a 7% difference in repeated measurements of a value and up to a 15% difference in bias between two monitors.[4]
- Another consideration are the reporting requirements in 40 Code of Federal Regulations Part 50, Appendix U. Appendix U requires hourly average ozone concentrations to be reported in parts per million (ppm) to the third decimal place, with additional digits to the right of the third decimal place truncated.[5] Thus, 0.7 ppb would officially be reported as 0 ppb. It doesn't make sense to have a threshold of 0 ppb.
- The 1% threshold EPA applied to interstate transport assessments is inconsistent with the Significant Impact Level (SIL) value recommended by EPA in April 17, 2018 final *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program*.[6] This Guidance recommends a SIL of 1.0 ppb based on an air quality variability analysis based on the 4th highest daily maximum 8-hour concentration (averaged over 3 years). EPA's technical analysis of this SIL "provides a basis for a permitting authority to conclude that concentration increases below this SIL do not cause or contribute to violations of the relevant NAAQS or PSD increments." In the accompanying legal document, EPA states it has "often equated an insignificant impact with one that is trivial or de minimis in nature."[7]

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[1] The precision of the 2Btech 205 FRM ozone monitors have a listed accuracy of 1.0 ppb or 2% of the reading, whichever is greater, http://twobtech.com/model-205-ozone-monitor.html. The precision of the Thermo Scientific 49i ozone monitor is 1 ppb. https://tools.thermofisher.com/content/sfs/brochures/EPM-49i-Datasheet.pdf.

[2] United States Environmental Protection Agency, QA Handbook Appendix D Validation Templates, March 2017, https://www3.epa.gov/ttn/amtic/files/ambient/pm25/qa/APP_D%20validation%20template%20version%2003_2017_for%20AMTIC%20Rev_1.pdf

[3] United States Environmental Protection Agency, QA Handbook Appendix D Validation Templates, March 2017, https://www3.epa.gov/ttn/amtic/files/ambient/pm25/qa/APP_D%20validation%20template%20version%2003_2017_for%20AMTIC%20Rev_1.pdf

[4] United States Environmental Protection Agency, QA Handbook Appendix D Validation Templates, March 2017, https://www3.epa.gov/ttn/amtic/files/ambient/pm25/qa/APP_D%20validation%20template%20version%2003_2017_for%20AMTIC%20Rev_1.pdf

[5] Appendix U to Part 50—Interpretation of the Primary and Secondary National Ambient Air Quality Standards for Ozone, https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=a76aa3d5469629f1117c5e975fda1b0e&mc=true&n=pt40.2.50&r=PART&ty=HTML#ap40.2.50_119.u

[6] https://www.epa.gov/sites/production/files/2018-4/documents/sils_policy_guidance_document_final_signed_4-17-18.pdf

[7] https://www.epa.gov/sites/production/files/2018-04/documents/legal_memorandum_final_4-17-18.pdf

- EPA should be receptive of various modeling techniques to determine contributions, for example using CMAQ versus CAMx, or OSAT versus APCA versus Brute Force. Any of these models/methods can produce different but equally valid modeling results.

Step 3 - Identifying air quality, cost, and emission reduction factors to be evaluated in a multifactor test to identify emissions that significantly contribute to nonattainment or interfere with maintenance of the NAAQS downwind, if any

- Provide an example of a state with significant contributions applying a remedy. To our knowledge, individual states that are significant contributors have not had transport SIPs approved. The only methodology available is outlined in FIPs, which involves a multi-state analysis of contributions and emission controls.
- Emission reductions for contributing states should be allocated proportionally among the home state and all states with significant contributions. Below we present an example for the Fairfield, CT monitor (AIRS ID 90019003). The Fairfield monitor has a 2023 maximum DV of 75.9 ppb, which is 5 ppb above the ozone NAAQS. The 5 ppb of excess ozone is allocated proportionally among the home state and significantly contributing states. For example, West Virginia has a relative contribution of 1.14 ppb, but would be responsible for 0.14 ppb.

Relative Contributions and Proportional Ozone Reductions for the Fairfield, CT Monitor (AIRS ID 90019003)
(Maximum 2023 DV = 75.9 ppb, Significance Threshold is 1 ppb)

State	Relative Contribution (ppb)	Percent of Significant Contributions	Proportional Required Reduction (ppb)
NY	15.80	39%	1.94
NJ	7.75	19%	0.95
PA	6.56	16%	0.81
CT	3.71	9%	0.46
MD	2.17	5%	0.27
VA	1.91	5%	0.23
OH	1.60	4%	0.20
WV	1.14	3%	0.14
Total	40.64	100%	5

- States with marginally significant contributions to monitors marginally over the NAAQS should not be overcontrolled. For a state linked to only 1 or 2 monitors that are barely over the standard, controls required by other states linked to several monitors, and at higher contribution levels, may bring those lower monitors below the standard without the requiring the single state to control any emissions. The table below shows a hypothetical example

where Mississippi is only contributing to a single monitor in Houston (Houston 1). The DV is only 0.2 ppb over the standard, and the contribution is 1.05 ppb, only 0.05 ppb above the proposed 1 ppb significance threshold. Louisiana and Oklahoma contribute far higher levels to the Houston 1 monitor. The Houston 2 monitor is projected to be at 75.0 ppb, or 4 ppb above the NAAQS. Mississippi is not a significant contributor to Houston 2, while Louisiana and Oklahoma have contributions well above the threshold. Louisiana and Oklahoma will be required to reduce emission to address contributions for Houston 2. These controls will also address contributions at Houston 1. The controls will likely bring Houston 1 into attainment, and therefore Mississippi should not be required to address their contributions to Houston 1.

Hypothetical Example

		State Contributions (ppb)		
Monitor	**Future DV**	**MS**	**LA**	**OK**
Houston 1	71.2	1.05	1.7	1.8
Houston 2	75.0	0.7	1.8	1.9

- Addressing contributions for Maintenance monitors should be less stringent than for nonattainment monitors. Perhaps some measures could be contingent on observed monitor values.

- Control measures should be evaluated on a cost per ppb basis. This metric will provide more efficient and cost-effective controls to reduce ozone. An evaluation strictly using cost per ton NOx may impose controls that provide little to no reduction in downwind ozone.

Step 4 - Adopt permanent and enforceable measures needed to achieve emissions reductions (translating the control levels identified in Step 3 into enforceable emissions limits)

- No comments.

Thank you again for the opportunity to comment. We look forward to working with the EPA on the process to determine significant interstate ozone transport. If you should have any questions regarding this submittal, please contact DAQ staff members Randy Strait (919-707-8721, randy.strait@ncdenr.gov) or Nick Witcraft (919-707-8484, nick.witcraft@ncdenr.gov).