Pennsylvania
Department of
Environmental Protection

August 12, 2024

The Honorable Michael S. Regan
U.S. Environmental Protection Agency
EPA Docket Center (EPA/DC)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Attention: Docket ID No. EPA-HQ-OAR-2023-0262

RE: PADEP Comments concerning the "Protection of Visibility: Amendments to Requirements for State Plans Rule."

Dear Administrator Regan:

The Pennsylvania Department of Environmental Protection (PADEP) appreciates the opportunity to submit these comments in response to the U.S. Environmental Protection Agency's (EPA) early engagement memorandum[1] for proposed revisions for the Third Regional Haze planning period. Specifically, the EPA is requesting information regarding the following four topics: Reasonable Progress, Four Factor Analysis, Long Term Strategy, and Future State Implementation Plan (SIP) Obligations. This comment letter provides recommendations for each topic area.

Background

While Pennsylvania does not have Regional Haze Federal class 1 areas within the state, the PADEP participates in the regional haze process as a member of the Mid-Atlantic/Northeast Visibility Union (MANE-VU). MANE-VU is a multi-state collaborative regional planning organization (RPO).[2] MANE-VU develops regional haze plans to help improve visibility at class 1 areas within its region. It is a regional group of states that collaborate in the development of regional strategies to reduce emissions of particulate matter and other pollutants that cause regional haze. It also assists states in meeting their consultation requirements for the Regional Haze Rule.

The PADEP also develops and submits Pennsylvania's Regional Haze SIPs to meet the applicable requirements under CAA sections 107(d)(7) (42 U.S.C. §7407(d)(7)); 110(a)(2)(D)(II) (42 U.S.C. §7410 (a)(2)(D)(II)); 110(a)(J) (42 U.S.C. §7410(a)(J); 165 (42 U.S.C. §7475), 169A (42 U.S.C. § 7491); and 169B (42 U.S.C. §7492). These SIPs are developed after collaboration

[1]EPA Memorandum, "Posting EPA-HQ-OAR-2023-0262 to Regulations.gov for Public Access;" E. Miller. (March 27, 2024). See " RH Nonregulatory Docket Posting Memo" at https://www.regulations.gov/docket/EPA-HQ-OAR-2023-0262/document

[2]"Visibility - Regional Planning Organizations." *Visibility and Haze*, U.S. Environmental Protection Agency, 12 Dec. 2023, www.epa.gov/visibility/visibility-regional-planning-organizations.

with the EPA and MANE-VU and consideration of possible facilities, potential control options and methodologies, and the evaluation of visibility initiatives that can achieve progress toward regional natural visibility goals. The ultimate goal of the MANE-VU collaboration with DEP is to ensure Federal class 1 areas progress towards meeting the CAA goal of achieving natural visibility by 2064.

EPA's Long-Term Strategy

The inventory in Table 1 below demonstrates that there is a limited availability of point source emission reductions in Pennsylvania for future planning periods. The Table 1 inventory also shows that emissions of nonpoint or area sources for most Regional Haze precursor pollutants persist in Pennsylvania. Accordingly, the PADEP recommends that EPA consider outreach to assist states in evaluating area source emissions. It should also consider determining cost effective strategies to find emission reductions in a future environment, where emission reductions available for regional haze progress will be dominated by area source emissions. A great opportunity exists to create an EPA and multistate area source taskforce to collaborate on future area source emission reduction initiatives.

The Excel Workbook draft "MANE VU_20240311_EI_NEI_AMPD_Summary"[3] in Attachment A4-2 shows draft emissions inventories from the various MANEVU states which are being developed through its collaborative process. The DEP's Emissions Inventory System (EIS) download of Pennsylvania's National Emissions Inventory (NEI) 2020 inventory data is included in Attachment A4-1 The Information from Attachments A4-1 and A4-2 provide the basis of the inventory data referenced in this letter. Table 1: "Pennsylvania NEI 2020 Emissions for Selected Regional Haze Pollutants" on page 3, shows the nonpoint source category as the predominant regional haze pollutant source category in Pennsylvania. It was developed from MANE-VU's draft inventory in Attachment A4-2 to this letter. The draft MANE-VU inventory in Attachment 1 also provides emissions inventories for various states since 2008. It shows the changing sector emissions associated with regional haze over time. On page 4, Table 2. "Pennsylvania Total 2020 Regional Haze Emissions by Pollutants (tons per year)" shows that nonpoint emissions in 2020 made up roughly 67% of Pennsylvania's inventory of total annual pollutants. Roughly 85% of Pennsylvania's Regional Haze Pollutants inventoried now and, in the future, will include emissions from sources other than point sources. The regional haze inventoried pollutants in Tables 1 and 2 include Sulfur Dioxide (SO2), Ammonia (NH3), Nitrogen Oxide (NOx), Particulate Matter less than 10 Microns (PM10), Particulate Matter less than 2.5 Microns (PM2.5), and Volatile Organic Compound (VOC) for point, nonpoint, onroad, and nonroad source sectors. MANVU's point source category is separated into Air Markets sources and Regular point sources for SO2 and NOx, but the total emissions remain the same as the 2020 NEI emissions downloaded by DEP from the EIS.

Pennsylvania point sources have made significant emissions reductions for pollutants likely to impact visibility. If the point source emissions in MANE VU's Table I below are compared between 2008 and 2020, Pennsylvania point sources reduced their Regional Haze related pollutants by 88%. Additional point source emissions reductions are likely by 2028 due to fuel

[3] "MANE-VU_20240311_EI_NEI_AMPD_Summary" MANEVU Multistate Collaborative Inventory Analysis. AMPD; See Attachment 4.

switching at power plants that will transition from coal to natural gas. As part of its third control period and long-term regional haze strategy, the PADEP recommends that EPA consider evaluating the regional haze benefits in obtaining additional reductions from under-controlled point sources and uncontrolled point sources in states where additional reductions are still available on an annual basis much like it did for the Ozone Season under the Good Neighbor FIP for the 2015 Ozone National Ambient Air Quality Standards (NAAQS). Further, EPA could also consider an update to its annual Cross-State Air Pollution Rule (CSAPR) emission trading program. Information on this program can be found at the EPA website: Overview of the Cross-State Air Pollution Rule (CSAPR) | US EPA.

Table 1: Pennsylvania Regional Haze Pollutants
Draft MANEVU Inventory by Sector[4] (Annual Emissions in Tons/Year)

Pollutant	State	Sector	2008	2011	2014	2017	2020	% of Total	Total (Tons)
NH3	PA	Point	2,040	1,991	1,945	2,010	1,770	2	
NH3	PA	Nonpoint	72,592	74,739	42,568	61,937	86,494	95	
NH3	PA	Nonroad	61	64	68	63	66	0	
NH3	PA	Onroad	4,895	4,077	3,419	3,172	2,958	3	**91,288**
NOx	PA	AMPD Point	187,771	149,620	125,612	37,148	26,019	9	
NOx	PA	Non-AMPD Point	68,641	60,583	52,422	44,962	34,732	12	
NOx	PA	Nonpoint	83,093	101,458	102,496	92,624	103,223	37	
NOx	PA	Nonroad	53,146	46,194	37,994	29,654	25,369	9	
NOx	PA	Onroad	223,671	204,073	174,231	117,513	91,492	33	**280,834**
PM10	PA	Point	79,449	36,447	30,188	21,661	21,049	9	
PM10	PA	Nonpoint	258,104	220,715	232,642	159,640	203,888	87	
PM10	PA	Nonroad	5,425	5,019	4,366	3,363	2,902	1	
PM10	PA	Onroad	9,413	10,887	11,529	8,450	6,409	3	**234,247**
PM2.5	PA	Point	67,882	26,833	21,807	16,618	16,333	15	
PM2.5	PA	Nonpoint	64,384	70,664	76,402	60,753	87,000	80	
PM2.5	PA	Nonroad	4,991	4,763	4,135	3,188	2,743	3	
PM2.5	PA	Onroad	7,759	6,488	6,321	4,032	2,737	3	**108,812**
SO2	PA	AMPD Point	831,915	330,539	270,332	69,790	33,602	60	
SO2	PA	Non-AMPD Point	78,457	37,409	34,023	19,710	15,212	27	
SO2	PA	Nonpoint	74,944	29,476	24,311	5,745	7,187	13	
SO2	PA	Nonroad	1,274	134	98	72	31	0	
SO2	PA	Onroad	1,082	939	1,041	947	297	1	**56,330**
VOC	PA	Point	29,238	24,227	23,538	21,358	18,295	5	
VOC	PA	Nonpoint	198,418	175,537	316,141	273,091	276,367	75	
VOC	PA	Nonroad	94,760	71,264	57,142	34,163	31,199	8	
VOC	PA	Onroad	110,174	101,106	80,517	59,815	41,516	11	**367,378**

[4] "MANE-VU_20240311_EI_NEI_AMPD_Summary" MANEVU Multistate Collaborative Inventory Analysis. AMPD; See Attachment 4.

Table 2: Pennsylvania NEI 2020 Emissions for Selected Regional Haze Pollutants*

Pollutant	State	Sector	2020 Tons	% of Total Tons of RH Pollutants	% of Sector	2020 Total Tons for Sector
NH3	PA	Point	1,770	0.16	1.9	
NH3	PA	NonPoint	86,494	7.59	94.7	
NH3	PA	NonRoad	66	0.01	0.1	
NH3	PA	OnRoad	2,958	0.26	3.2	91,288
NOx	PA	Point	60,750	5.33	21.6	
NOx	PA	NonPoint	103,223	9.06	36.8	
NOx	PA	NonRoad	25,369	2.23	9.0	
NOx	PA	OnRoad	91,492	8.03	32.6	280,834
PM10	PA	Point	21,049	1.85	9.0	
PM10	PA	NonPoint	203,888	17.90	87.0	
PM10	PA	NonRoad	2,902	0.25	1.2	
PM10	PA	OnRoad	6,409	0.56	2.7	234,247
PM2.5	PA	Point	16,333	1.43	15.0	
PM2.5	PA	NonPoint	87,000	7.64	80.0	
PM2.5	PA	NonRoad	2,743	0.24	2.5	
PM2.5	PA	OnRoad	2,737	0.24	2.5	108,812
SO2	PA	Point	48,814	4.29	86.7	
SO2	PA	NonPoint	7,187	0.63	12.8	
SO2	PA	NonRoad	31	0.00	0.1	
SO2	PA	OnRoad	297	0.03	0.5	56,330
VOC	PA	Point	18295	1.61	5.0	
VOC	PA	NonPoint	276,367	24.27	75.2	
VOC	PA	NonRoad	31,199	2.74	8.5	
VOC	PA	OnRoad	41,516	3.65	11.3	367,378
Totals =			**1138890**	**100.00**		**1,138,890**
NonPoint Total % of RH =				67.10		
Point Total % of RH =				14.66		
All Mobile Total %of RH =				18.24		
Total % RH =				**100.00**		

*(2020 NEI Emissions Download from EPA's EIS System) See data in the "esg_st_tr_sector_dc_28371" workbook tab below.

Reasonable Progress

Due to the diminished and limited availability of emission reductions from point sources in Pennsylvania and potentially other Northeastern states during the next Regional Haze control period, PADEP recommends that the EPA consider focusing its evaluation of potential emission reductions that can be achieved from large emitting point sources in states that have the ability to make additional annual emission reductions for NOx and SO2 from unoptimized controls. OTR states have developed and implemented statewide and cost effective annual Reasonably Available Control Technology (RACT) reductions for major sources of VOC and NOx to address ozone pollution. The EPA should consider this when addressing annual regional haze emission reductions across the United states for the purposes of establishing a type of Regional Haze RACT recommendation for other states outside of the OTR. The EPA should evaluate the visibility benefits of reducing emissions from all major sources based on controlling emissions of

SO2 and NOx by installing selective catalytic reduction (SCR) and flue-gas desulfurization (FGD) pollution controls. The EPA should also evaluate the benefits for visibility for units that have existing FGD and SCR but are not optimizing their use. If the EPA's evaluations identify states with available emission reductions, addressing those available emission reductions could lead to significant visibility improvement. The EPA should consider adding the optimization of current controls and where appropriate the addition of controls as part of each RPO's reasonable progress goals.

Four Factor Analysis

A four-factor analysis for affected facilities involves evaluating potential emission reduction measures necessary to make reasonable progress considering (1) the cost of control, (2) time necessary to install controls, (3) energy and non-air quality impacts; and (4) remaining useful life. 40 CFR 51.308(f)(2)(i). The PADEP recommends that EPA consider developing specific requirements for defining an affected regional haze facility or unit which can be used by states, consistently and efficiently, to define which facilities or units need to do four-factor analysis. Below, PADEP focuses on costs for this topic in support of this recommendation and then recommends a category of sources for the EPA to consider evaluating as needing a four-factor analysis for the third regional haze control period.

The current reasonable cost of emission reductions being looked at for visibility in Pennsylvania is considered to be around $10,000 per ton of regional haze pollutant reduced. This is not a bright line cost threshold but rather was recommended by the Federal Land Managers (FLMs) as a general cost guideline that the PADEP should consider for the re-evaluation and resubmittal of BART evaluations for Pennsylvania's first Regional Haze SIP. It was also the early engagement collaboration preliminary cost level PA DEP discussed with FLMs for units identified as having to do to do a four-factor analysis for the second regional haze control period SIP. The FLMs considered $10,000 per ton of reduction or a bit higher as a cost area around which Pennsylvania should consider reasonable based on their collaborative interactions with other states. States in different regions of the country use different ranges in evaluating costs for regional haze purposes.

Given these considerations, PADEP recommends that the EPA consider establishing a standard regional haze cost threshold that is reasonable for all states to consider. To address bright line cost threshold issues, the EPA could consider adding an indexing factor into the four-factor analysis that would index the standard cost threshold. Reasonable cost adjustments could be developed and provided to states as a cost-based equation that would adjust the reasonableness of costs upward or downward based on metrics like the unit's total emissions, the total emission reductions available, the potential impact of those emissions on any Federal class 1 area or potential impacts to class 1 areas based on distance for total RH emissions or other similar metric. PADEP generally would like the EPA to consider providing states with a standardized evaluation process for regional haze and a standardized way to analyze and evaluate reasonable costs associated with controls and control measures.

Further, PADEP recommends the EPA consider Regional Haze Visibility improvements that have co-benefits associated with PM2.5 and ozone. For example, even though the contribution

analysis[5] for the Good Neighbor Plan for 2015 Ozone NAAQS (EPA's Good Neighbor Plan) indicates that the Philadelphia nonattainment area attains the 2015 Ozone NAAQS, Pennsylvania's 5-county Philadelphia Nonattainment area is still a concern if the Good Neighbor Plan's transport benefits are lost or partially lost as a result of ongoing litigation. The PADEP evaluated the emission reductions that would be lost if the Good Neighbor Plan is vacated; DEP looked at the 2023 Ozone Season NOx emissions from coal units operated above the Good Neighbor Plan daily average backstop of 0.14 lbs. of NOx per MMBtu of heat input. The DEP also looked at the total Ozone Season NOx emissions emitted from coal units that operated above the EPA's optimization rate of 0.08 lb/MMBtu of heat input. The back stop and the optimization rate were the emission thresholds for NOx in the Good Neighbor Plan. See 88 FR 36654, June 5, 2023.

The DEP also looked at total hours operated for each coal unit on days when units operated at an average above the threshold values. The evaluation of operating hours helps to ensure that the daily NOx emissions were more than just emissions from startups and shutdowns. The daily ozone season emission rates and hours of operation on a daily basis were obtained from the EPA's Clean Air Markets Program Data (CAMPD) website. Spreadsheets for the OTR and Non-OTC states data are included with this letter in Attachments 1 and 2, respectively. The DEP also looked at the contribution analysis that the EPA provided for the Revised Cross-State Air Pollution (CSAPR) Update Rule for the 2008 NAAQS. See 86 FR 23054, April 30, 2021. CSAPR is the rule that will remain in place if the 2015 Good Neighbor Plan is vacated. Non-OTC states were included in the DEP's analysis if they showed any contribution to a downwind nonattainment area at 1% or more of the 2015 Ozone NAAQS projected into 2023. See Attachment 3. All OTC states with coal units were included in the OTC evaluation regardless of contribution. Circulating Fluidized Bed Boilers were not evaluated as EPA had determined in the Good Neighbor Plan that SCR on these units was not necessary as they can "achieve a comparably low emissions rate without this technology". See 88 FR 36726, June 5, 2023. Table 3 on page 7 shows the summarized data after DEP's evaluation.

Table 3: Summary from Spreadsheets – Coal Units All OTC vs. Non-OTC States

	Lbs of NOx /MMBtu	Total "Unit Hours" Operated above GN Thresholds	Total OS Tons of NOx from these units in 2023 on days operated above thresholds (CAMPD)
OTC	> 0.14	640	163
NON - OTC	> 0.14	253,557	63,203
OTC	> 0.08	2,834	498
NON - OTC	> 0.08	440,488	98,779

[5] "Good Neighbor Plan for 2015 Ozone NAAQS." *Cross State Air Pollution*, U. S. Environmental Protection Agency, Mar. 2023, www.epa.gov/Cross-State-Air-Pollution/good-neighbor-plan-2015-ozone-naaqs. See, under heading March 15, 2023 – Final Good Neighbor Plan for the 2015 Ozone National Ambient Air Quality Standards (NAAQS), Technical Support Documents, Air Quality Modeling Final Rule TSD excel document.

The results in the Table 3 show that coal units in Non-OTC states emit significant NO_X emissions and operated above the Good Neighbor thresholds on a daily basis during the 2023 ozone season. The average daily number of hours operated above the Good Neighbor FIP thresholds by units in Non-OTC states is very significant. The analysis suggests there are NOx emission reductions still available in Non-OTC states. It also shows there are very few NOx ozone season reductions available in the OTC states from coal fired Electric Generating Units (EGU)s to address any additional reductions that may be needed to meet the 2015 Ozone NAAQS.

NOx is also a regional haze pollutant. The PADEP's 2023 OS analysis above is added to these comments because it supports that EPA consider evaluating coal fired EGU's for available regional haze emission reductions. The analysis is done for the ozone season. If EPA were to analyze the daily emissions on an annual basis, the potential for regional haze emission reductions from coal fired units outside the OTC states would likely be larger. Therefore, it is PADEP's recommendation that as part of EPA's rule for the third control period to address regional haze that EPA consider co-benefits during the Ozone Season as well as setting annual daily backstops to achieve annual benefits for regional haze. The PADEP suggests that the EPA evaluate the actual availability of emissions reductions from underutilized controls and from uncontrolled coal fired EGUs and whether they can be operated or installed at a reasonable cost on an annual basis to support future visibility goals.

Lastly, NOx is a precursor to PM 2.5 during winter months. A second co-benefit would be to help states meet the 2024 annual PM2.5 NAAQS and reduce any transport related PM2.5 emission issues.

Future SIP Obligations

Emission reductions are becoming more difficult to achieve, SIP obligations will also become more difficult to meet. Based on these considerations, the PADEP recommends that the EPA consider how new regional haze requirements impact the ability of states to realistically meet those requirements in terms of SIP submissions. Further, the EPA may wish to consider research and development of Control Techniques (CTs) for regional haze pollutants. The development of CTs may provide a way that EPA can help states identify available emission reductions and evaluate the cost effectiveness of those emission reductions so states can meet their future regional haze SIP obligations. See 42 U.S.C. §§ 7408, 7417.

Conclusion

In closing, the PADEP appreciates the opportunity to comment on regional haze four-factor analysis issues related to continued visibility progress for all Federal class 1 areas. Area source sector emissions will impact additional visibility progress in Pennsylvania and many other states for the third regional haze control period and beyond; therefore, should be a long-term focus of EPA and state collaboration moving forward. Annual emission reductions to support continued visibility progress in class 1 areas remain available from coal EGUs in states outside of the OTR. Therefore, the EPA should consider analyzing the under controlled and uncontrolled coal fired EGU operations as it may be able to identify emissions that can be reduced to help meet reasonable further progress in the third control period. The EPA control techniques guidelines for

regional haze source categories in the future to provide states with a basis to generate control measures to be used in their future Regional Haze SIP submittals.

Thank you again for the opportunity to make comments on future regional haze issues as part of the third control period to be included in EPA's Non-Regulatory Docket. Should you have any questions or need additional information, please contact Nicholas Lazor, Director of the Bureau of Air Quality, by email at nlazor@pa.gov us or by telephone at (717) 772-3952. We look forward to continued collaboration in our efforts to improve visibility at our National Parks.

Sincerely,

Jessica L Shirley

Jessica Shirley
Acting Secretary