



ARKANSAS

ENERGY & ENVIRONMENT

April 22, 2022

The Honorable Michael Regan
Administrator, U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
ATTN: Docket No. EPA-R06-OAR-2021-0801

Submitted via the Federal eRulemaking Portal at <https://www.regulations.gov>

Re: Arkansas Division of Environmental Quality Comments
Docket No. EPA-R06-OAR-2021-0801

Dear Administrator Regan:

The Arkansas Department of Energy and Environment's Division of Environmental Quality (DEQ) appreciates the opportunity to provide comment and input on the United States Environmental Protection Agency's (EPA) proposed rule titled, "Air Plan Disapproval; Arkansas, Louisiana, Oklahoma, and Texas; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards."

DEQ understands the complexity of air pollution transport, and fully recognizes the difficulty in determining the best solutions to ensure that emissions activities in one state do not significantly contribute to nonattainment in, or interfere with maintenance by, a downwind neighbor-state. This intricacy requires EPA and states to collaborate closely from the time a national ambient air quality standard is finalized until a state plan is submitted, in order to reach solutions that comply with Clean Air Act requirements, are equitable to all parties, and that provide benefits proportional to the expenditure of resources by states and the regulated community.

The Clean Air Act provides states with the primary role of selecting and implementing solutions to address good neighbor requirements. If a state's plan meets with the requirements under the Clean Air Act, then EPA must approve the plan—even if EPA would prefer different policies for implementing the good neighbor requirements. DEQ submits these comments in hopes of fostering a more cooperative relationship with EPA, and formally requests that EPA reevaluate

Arkansas's state plan based on the evidence presented therein and fully approve the plan, which satisfies good neighbor requirements as specified in the Clean Air Act.

Sincerely,

A handwritten signature in blue ink, appearing to read "Dw", followed by a long horizontal flourish.

David Witherow, P.E.
Office of Air Quality Associate Director
Arkansas Department of Energy and Environment
5301 Northshore Drive
North Little Rock, AR, 72118

Contents

I.	Introduction.....	1
II.	Background.....	1
III.	Timing of EPA’s Proposed Rule.....	2
IV.	Modeling.....	4
V.	Interstate Transport Framework Step 1: Identification of Downwind Air Quality Problems	12
VI.	Interstate Transport Framework Step 2: Identifying Linkages.....	13
VII.	Interstate Transport Framework Step 3: Identification and Evaluation of Air Quality, Upwind State Emissions, and Cost Factors.....	17
VIII.	Evaluation of EPA Newly-Identified Linkages.....	19
IX.	The Federal-State Partnership.....	22
X.	Conclusion.....	24
	Appendix A.....	

List of Figures

Figure 1: Historical NOx Emission Data for Honeywell International.....	7
Figure 2: Historical Emissions from John W. Turk Power Plant, AR.....	9
Figure 3: Historical Emissions from Plum Point Energy Station, AR.....	10
Figure 4: Historical Emissions from Oswald Generating Station.....	11
Figure 5: Modeled Contributions from All Linked States to Harris County, TX monitor (482010055).....	20
Figure 6: Modeled Contributions from All Linked States (Including Tribal, International, Offshore, Initial and Boundary Conditions, Fires, and Biogenics) to Harris County, TX Monitor (482010055).....	21

List of Tables

Table 1: Gross Load and Emission Rate from Oswald Generating Station.....	10
---	----

I. Introduction

On February 22, 2022, the United States Environmental Protection Agency (EPA) proposed to disapprove Arkansas’s plan, as well as plans submitted by other states, for prohibiting in-state emissions activities from significantly contributing to nonattainment or interfering with maintenance of the 2015 ozone national ambient air quality standard (NAAQS) in other states. The Arkansas Department of Energy and Environment’s Division of Environmental Quality (DEQ) offers the following comments on EPA’s proposed “Air Plan Disapproval; Arkansas, Louisiana, Oklahoma, and Texas; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards” (Proposed Rule).¹

II. Background

Under the Clean Air Act, Congress established a cooperative framework between the EPA and states for the protection of air quality. Under Clean Air Act §109, Congress granted EPA the authority to establish NAAQS for common air pollutants at a level requisite to protect public health and welfare with an adequate margin of safety. Under Clean Air Act §110, Congress charged states with the primary responsibility to develop and implement plans for attainment and maintenance of the NAAQS. EPA must review and approve each state implementation plan (SIP) submission that meets all applicable requirements under Clean Air Act §110. EPA also provides technical assistance to the states by issuing guidance and conducting analyses that states may use during SIP development. If a state fails to submit a SIP or submits a SIP that fails to meet all of the requirements under Clean Air Act §110, EPA serves a backstop role to ensure implementation of the NAAQS by issuing a federal implementation plan (FIP) within two years of issuance of a finding of failure to submit a SIP or within two years of finalizing a SIP partial or complete disapproval. The FIP addresses the applicable requirements not satisfied by the SIP until the state submits and EPA approves a SIP revision.

On October 1, 2015, the EPA finalized a revised NAAQS for ozone, setting in motion a three-year timeline of events for each state to develop and submit plans for implementing the revised NAAQS. State plans were due to EPA by October 1, 2018. In January of 2017, EPA released modeling results to help guide states in their policy decisions and data analysis.² EPA followed up with clarifying Memorandums in October 2017,³ March 2018,⁴ August 2018,⁵ and October

¹ February 22, 2022. Air Plan Disapproval; Arkansas, Louisiana, Oklahoma, and Texas; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards <https://www.govinfo.gov/content/pkg/FR-2022-02-22/pdf/2022-02961.pdf>

² January 2017. Air Quality Modeling Technical Support Document for the 2015 Ozone NAAQS Preliminary Interstate Transport Assessment https://www.epa.gov/sites/default/files/2017-01/documents/aq_modeling_tsd_2015_o3_naqs_preliminary_interstate_transport_assessmen.pdf

³ September 27, 2017. S. Page Memo: Supplemental Information on the Interstate Transport State Implementation Plan Submissions for the 2008 Ozone National Ambient Air Quality Standards under Clean Air Act Section

2018.⁶ The March 2018 guidance included a four-step framework for assessing interstate transport of air pollutants. Arkansas initiated rulemaking associated with the NAAQS revision in September 2018, which became final in September 2019. DEQ submitted a SIP revision for implementing the 2015 ozone NAAQS to EPA on October 4, 2019. EPA made a completeness determination for the SIP submission on November 7, 2019. The completeness determination established a November 7, 2020 deadline for EPA to review and make a proposed action (approval or disapproval) under Clean Air Act §110k. EPA approved the majority of Arkansas's 2019 SIP submittal for implementing the 2015 ozone NAAQS on February 12, 2021.⁷

In the Proposed Rule, EPA proposes to disapprove one component of Arkansas's 2019 plan for implementing the 2015 ozone NAAQS: DEQ's demonstration that the SIP contains adequate provisions to prohibit emissions sources and emissions activity from within the state from emitting any air pollutant in amounts that "will contribute significantly to nonattainment" or "interfere with maintenance" of the NAAQS in other states. See Clean Air Act §110(a)(2)(D)(i)(I). This component is often referred to as the "interstate transport" or "good neighbor" requirement for implementation of the NAAQS. Throughout the rest of this document, DEQ refers to this component of the 2019 SIP submittal for implementing the 2015 ozone NAAQS as the "Arkansas Transport SIP." EPA is also proposing to disapprove 2015 ozone NAAQS transport SIPs for 22 other states. Concurrently with these SIP disapprovals, EPA has also proposed a federal implementation plan (FIP) for 26 states, including Arkansas, to address Clean Air Act §110(a)(2)(D)(i)(I) based on their own policies in place of the state policies they propose to disapprove.

III. Timing of EPA's Proposed Rule

Under the Clean Air Act §110(k), EPA has six months to determine whether or not a state's SIP submittal is complete once it is received from the state. From the time of the completeness determination, EPA has twelve months to finalize an approval or disapproval of the state's

110(a)(2)(D)(i)(I) https://www.epa.gov/sites/default/files/2017-10/documents/final_2008_o3_naaqs_transport_memo_10-27-17b.pdf

⁴ March 27, 2018. P. Tsirigotis Memo: 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) https://www.epa.gov/sites/default/files/2018-03/documents/transport_memo_03_27_18_1.pdf

⁵ August 31, 2018. P. Tsirigotis Memo: 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 https://www.epa.gov/sites/default/files/2018-09/documents/contrib_thresholds_transport_sip_subm_2015_ozone_memo_08_31_18.pdf

⁶ October 19, 2018. P. Tsirigotis Memo: 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 https://www.epa.gov/sites/default/files/2018-10/documents/maintenance_receptors_flexibility_memo.pdf

⁷ February 12, 2021. Air Plan Approval; Arkansas; Infrastructure for the 2015 Ozone National Ambient Air Quality Standards <https://www.govinfo.gov/content/pkg/FR-2021-02-12/pdf/2021-02760.pdf>

submission. For the Arkansas Transport SIP, the deadline for EPA final action was November 7, 2020.

EPA failed to meet its statutory deadline for acting on the Arkansas Transport SIP. Not until EPA was sued by environmental organizations and EPA conducted new analyses to effectively supersede⁸ analyses provided by the previous EPA administration for use by states in SIP development did EPA issue a proposed action on the Arkansas Transport SIP.

EPA had all of the information necessary based on the best available science to approve the interstate component of the Arkansas Transport SIP submittal when its action was due on November 7, 2020. Yet, EPA Headquarters “red-lighted” work by the EPA regions on these submittals unless EPA’s 2017 modeling results indicated that a state’s overall contribution to identified nonattainment and maintenance areas was less than the threshold EPA had previously used to identify linkages for its Cross-State Air Pollution Rule FIP for the 1997 ozone NAAQS. It is DEQ’s understanding that EPA regions did not begin drafting actions on other submittals until after *Downwinders at Risk, et al.*, sued EPA for failure to act within Clean Air Act timeframes.⁹

EPA released two “updates” for modeling that were not made available to states in a timeframe reasonable for inclusion in national program goals or state plans. 2016v1 was made available two years after state plans were due to EPA, but EPA contends this data is useful for determining design values and linkages to downwind areas (Step 1 of EPA’s recommended four-step framework for evaluating interstate transport).¹⁰ EPA’s 2016v2 modeling—which EPA now purports is the measuring rod by which state plans should be evaluated—was released by EPA to the states at the same time EPA was writing its proposed disapproval and proposed FIP. EPA

⁸ EPA has not withdrawn its previous modeling results and guidance documents for implementation of the 2015 ozone NAAQS. However, the proposal states that it relies primarily on EPA’s new modeling and backtracks on previous guidance memos that discuss flexibility for state plan development.

⁹ On May 12, 2021, *Downwinders at Risk*, Sierra Club, Center for Biological Diversity, Air Alliance Houston, Texas Environmental Justice Advocacy Services, Clean Wisconsin, Appalachian Mountain Club, Earthworks, Natural Resources Defense Council, and Environmental Defense Fund (“*Downwinders at Risk, et al.*”) filed a complaint in the United States District Court for the Northern District of California (No. 21-cv-03551, N.D. Cal). In a proposed consent decree, published in the Federal Register on October 15, 2021, the EPA agreed to take final action on the 2015 ozone NAAQS good neighbor SIP submissions from Alabama, Arkansas, Connecticut, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, New Jersey, New York, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Texas, West Virginia, and Wisconsin by April 30, 2022; however, if the EPA proposes to disapprove any of these SIP submissions and proposes a replacement FIP by February 28, 2022, then EPA’s deadline to take final action on that SIP submission is December 15, 2022.

¹⁰ April 30, 2021. Revised Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS, <https://www.govinfo.gov/content/pkg/FR-2021-04-30/pdf/2021-05705.pdf>; see also Emissions Modeling TSD titled “Preparation of Emissions Inventories for the 2016v1 North American Emissions Modeling Platform,” <https://www.epa.gov/air-emissionsmodeling/2016v1-platform>.

thus moved the target on what should be evaluated for transport SIPs one and one-half years after the AR Transport SIP was deemed complete by EPA and four years after the SIPs were due.¹¹

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.

The Arkansas Transport SIP submittal clearly demonstrated, based on the information available at the time, that the Arkansas SIP contains adequate provisions to ensure that in-state emissions activities do not “significantly” contribute to nonattainment or interfere with maintenance of the 2015 ozone NAAQS in any other state. DEQ requests that EPA withdraw its proposed disapproval and instead fully approve the Arkansas Transport SIP. In the alternative, EPA should allow DEQ the customary two years post-disapproval to address identified deficiencies in the Arkansas Transport SIP and to resubmit to EPA, prior to issuing a federal implementation plan.

IV. Modeling

EPA proposes to primarily rely on a different modeling platform (EPA’s 2016 v2 modeling¹²) for its evaluation of Arkansas’s SIP submittal instead of the modeling data that EPA made available to the states for development of the Transport SIPs for the 2015 ozone NAAQS (EPA’s March 2018 Memorandum¹³). The EPA’s 2016v2 modeling platform was developed as an update to EPA’s 2016v1 modeling platform. A 2011 modeling platform was used to generate the data provided to states for SIP development in the March 2018 Memorandum. Among other updates to 2016v2, this platform incorporated updated emissions data, which represent emissions for the 2016 base year, as well as projected emissions for the 2023, 2026, and 2032 future years. As DEQ pointed out in its SIP submittal, different modeling platforms and inventory assumptions

¹¹ February 22, 2022. Air Plan Disapproval; Arkansas, Louisiana, Oklahoma, and Texas; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards <https://www.govinfo.gov/content/pkg/FR-2022-02-22/pdf/2022-02961.pdf>

¹² January 19, 2022. Air Quality Modeling for the 2016v2 Emissions Platform Technical Support Document https://gaftp.epa.gov/Air/aqmg/2016v2_Platform_Modeling_Data/AQ%20Modeling%20TSD_2016v2%20Platform_rev_2022_0119a.pdf

¹³ March 27, 2018. 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). EPA Office of Air Quality Planning https://www.epa.gov/sites/default/files/2018-03/documents/transport_memo_03_27_18_1.pdf

can yield different results. It is no surprise then that changing the modeling platform may yield different ozone source apportionment results. DEQ finds that it is not reasonable for EPA to provide states with modeling data for use in SIP development only to perform new modeling years later and then tell states that their decision-making, which was based on the data available to them at the time, is flawed.

On July 28, 2021, the Central States Air Resources Agencies Association, of which Arkansas is a member, sent EPA a letter noting states concerns with EPA's approach to developing rules to address interstate transport. The agencies requested that EPA consider publishing a Notice of Data Availability prior to initiating new rulemaking processes to allow states, local agencies, tribal partners and Multi-Jurisdictional Organizations (MJOs) the opportunity to review and offer input with respect to base year and future year emissions inventories used for photochemical modeling. The states also requested that EPA provide the background documentation to allow states to understand the growth factors chosen by EPA to project emissions from all sources and sectors. In the alternative, the letter suggests a more informal collaborative feedback opportunity could be used. A similar letter was sent by the Western Regional Air Partnership MJO on behalf of its membership. EPA provided states with an informal opportunity to provide feedback on the 2016v2 platform.

Arkansas and more than 20 other states and regional groups submitted comments, suggestions, and corrections to EPA for the emissions inventories datasets for the 2016v2 modeling platform.¹⁴ However, the modeling data that EPA proposes to primarily rely upon in its disapproval of the Arkansas Transport Plan does not reflect corrections to the modeling platform in response to state comments.

DEQ reviewed the point non-electric generating unit (ptnonipm) and point electric generating unit (ptegu) sectors of EPA's 2016v2 platform; following are comments derived from this review.

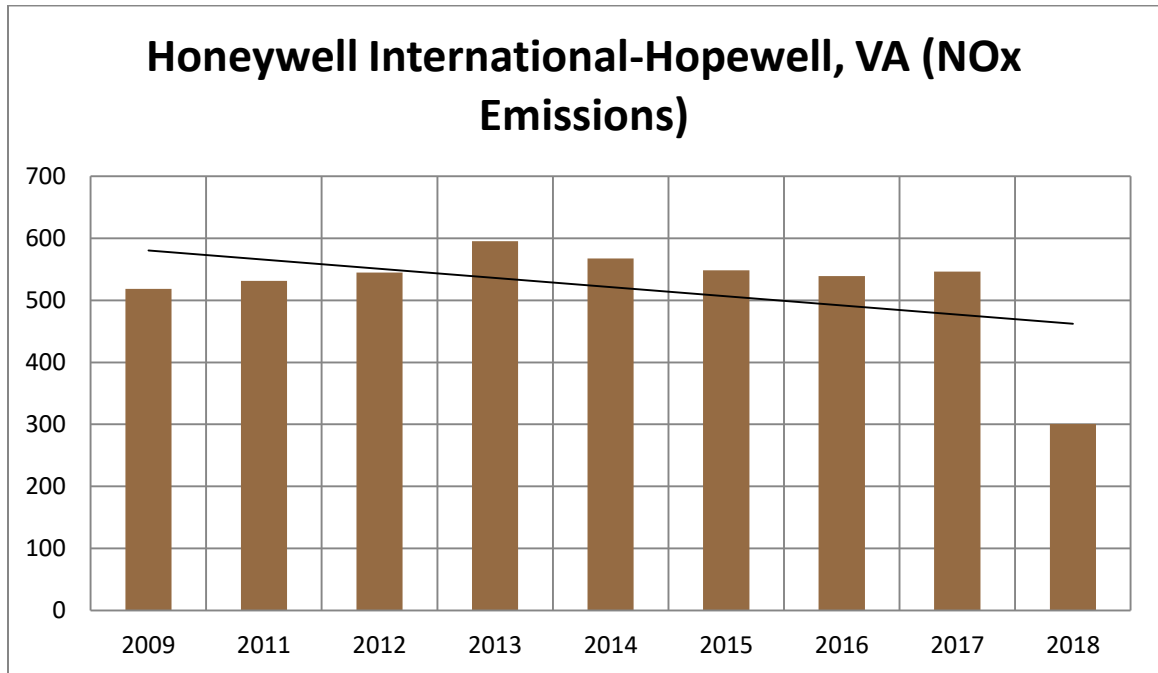
For the ptnonipm sector:

1. Although additional review could result in identification of more issues, DEQ has found that the future year projection factors used for Arkansas facilities in the 2016v2 for the 2026 and 2032 future years are more reasonable compared to those in the 2016v1 platform. For example, a future year projection factor of 2.55 was applied to an Arkansas facility in the 2016v1, while the 2016v2 platform applied a future year projection factor of 0.98 for this same facility that has exhibited decreasing emissions over the last 10 years.

¹⁴ Index of /Air/emismod/2016/v2/reports/comments at <https://gaftp.epa.gov/Air/emismod/2016/v2/reports/comments/>

2. According to EPA's 2016v2 Technical Support Document (TSD) "...the 2016 point source emission inventories for the platform include emissions 2016 primarily from S/L/T- submitted data, along with adjusted 2014 data pulled forward for sources under the annual reporting threshold with the goal of better representing emissions in 2016." DEQ suggests that EPA consider examining the use of 2017 NEI data and adjusting the dataset to create a 2016 base year. The 2017 data is more recent and if a backward base year projection is necessary, then it would be a one year projection (2017 to 2016) and not two years (2014 to 2016).
3. According to EPA's 2016v2 TSD, for sources outside of the Mid-Atlantic Regional Air Management Association (MARAMA) region, the maximum future year projection factor was capped at 1.25. Also the future year projection factor was capped at a maximum of 2.5 if SCC/NAICS combinations with criteria pollutant emissions >100 tons/year for the ptnonipm sector. However, the ptnonipm includes future year projection factors that are greater than 1.25 for various facilities outside of MARAMA region where the total annual emissions are less than 100 tons, including a future year projection factor as high as 1.468. DEQ does not know the origin of these greater than 1.25 exceptions to the TSD language and whether they are possibly a result of state-submitted refinement data, which would be reliable sources.
4. The future year projection factor for NOx emissions from "Honeywell International Inc. – Hopewell" (unit# 20375813) in Virginia is 6.79 for 2026 in the 2016v2 platform and was 0.63 for 2028 in 2016v1 platform. DEQ conducted trend analyses to evaluate some future year projection factors and DEQ's analysis for this source does not appear to support a future year projection factor of 6.79 and may support a future year projection factor of 0.62; however, Virginia may have suggested the 6.79 as the appropriate value and, if so, would likely be the best source of this data. DEQ suggests that EPA verify the above example, possibly with Virginia if data was not already provided by Virginia, and other similar examples.

Figure 1: Historical NOx Emission Data for Honeywell International

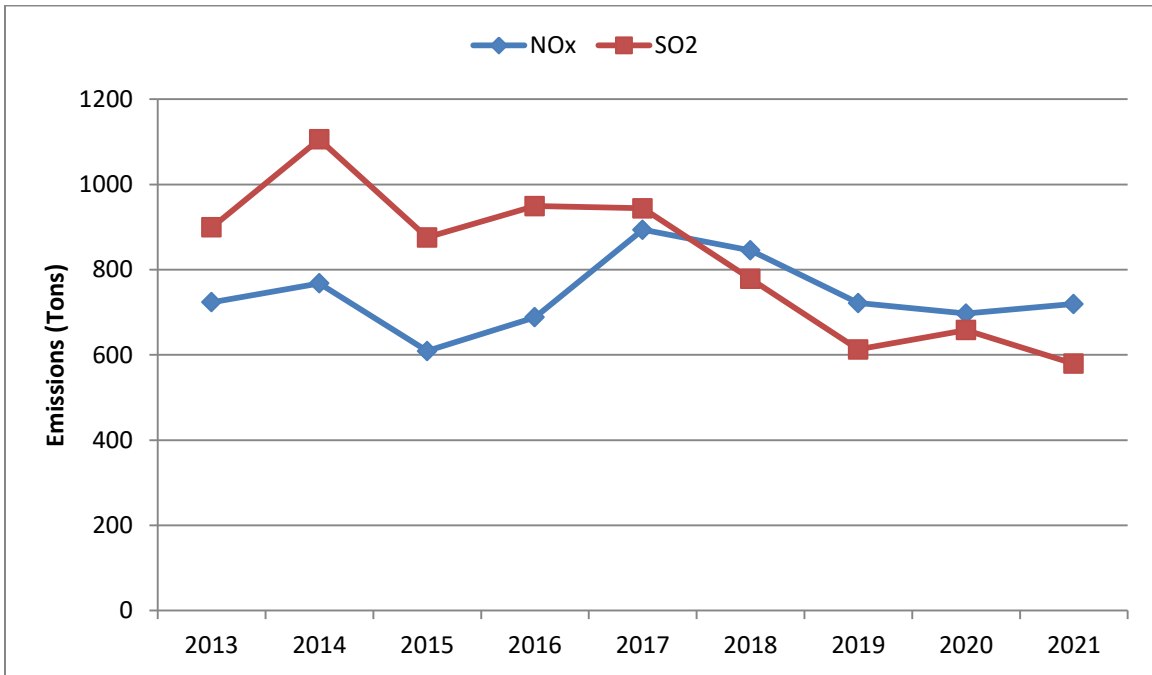


For the ptegu sector:

1. For regional haze purposes, DEQ previously compared future year projections in EPA’s 2016v1 platform and the v16.1 future year projections developed by the Eastern Regional Technical Advisory Committee (ERTAC), deciding ERTAC’s v16.1 future year projections were more appropriate than EPA’s Integrated Planning Model (IPM) future year projections that informed EPA’s 2016v1 platform. So, it may be informative to conduct a thorough comparison of ERTAC’s v16.1 (or a future update) and EPA’s 2016v2 (or a future update) to evaluate future year projections if EPA continues to chooses to use IPM instead of ERTAC.
2. If EPA chooses to continue to use IPM instead of ERTAC, then DEQ suggests that EPA communicate with states to seek any updates and/or corrections prior to conducting IPM modeling as is done by ERTAC.
3. For some sectors (e.g., solvents, nonpt, nonroad), EPA’s 2016v2 platform future year projections utilized Energy Information Agency’s (EIA) Annual Energy Outlook (AEO) 2021 data. However, according to the TSD, the ptegu IPM modeling used AEO 2020 data (e.g., demand, gas and coal market assumptions, cost and performance of fossil generation technologies, among others). The latest AEO 2021 was released on February 3, 2021 and DEQ suggests that EPA update the 2016v2 using the latest AEO data in all sectors.

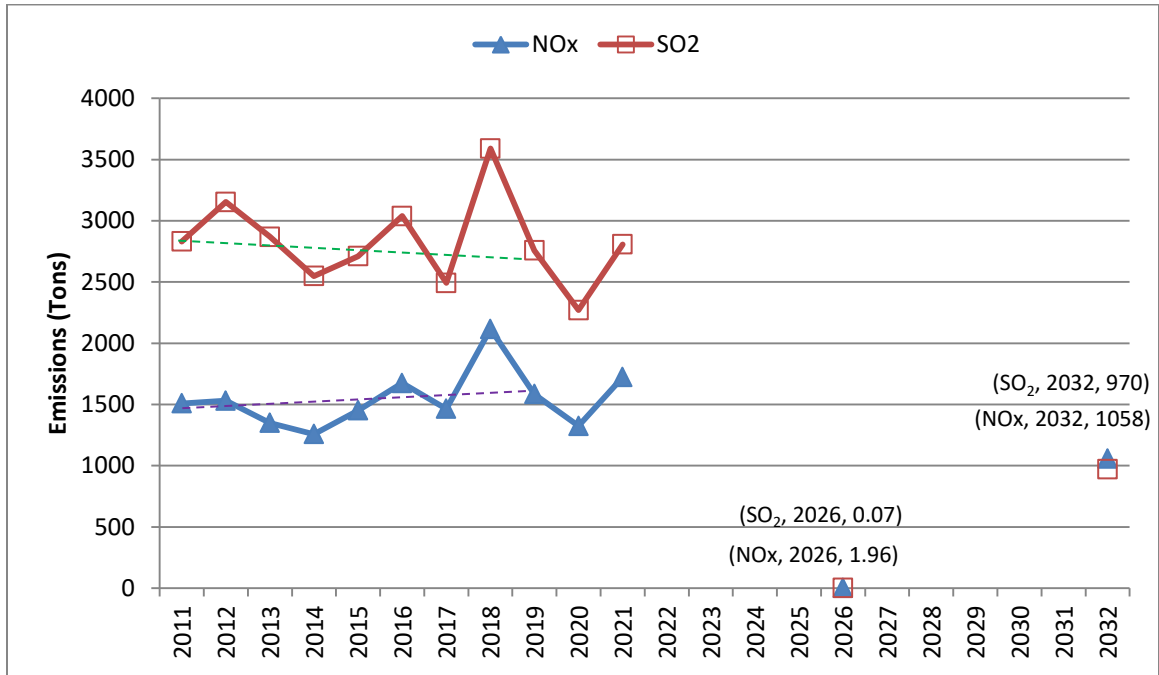
4. Table 4.2 of EPA's 2016v2 TSD reported total 2026 NOx emission for Arkansas as 9,258 tons; however, summing the three files (summer, winter, and wintershld) for both cems and noncems data for the ptegu sector indicates the total 2026 NOx emissions for Arkansas as being 9,273 tons. DEQ did not make this comparison for others states. DEQ suggests that EPA identify the source of the discrepancy in the above example and conduct the same comparison for other states.
5. IPM modeling for the 2032 future year includes emissions for the Entergy Arkansas-White Bluff plant. However, a state and federally enforceable administrative order requires the cessation of coal-fired operations by no later than December 31, 2028 and any possible operation beyond 2028 is unknown and would require future permitting actions if ambient air emissions are to be emitted. DEQ suggests that EPA zero out emissions beyond 2028 for this facility.
6. IPM 2032 projections show zero NOx emissions for the winter shoulder months (March, April, October, and November) for the Flint Creek, Plum Point, Arkansas Electric-Thomas B Fitzhugh Corp, and Harry D. Mattison Power plants in Arkansas. Also, IPM projected zero SO₂ emissions for Plum Point, Flint Creek, Union Power Station, and others in 2032 for the winter shoulder months. IPM projected zero NOx and SO₂ emissions for Independence plant in 2026 for the same shoulder months. Historical data consistently shows both NOx and SO₂ emissions for all of these facilities in these months. DEQ suggests that EPA re-examine this data and potentially other IPM projections in Arkansas and in other states as DEQ did not evaluate this beyond the above examples.
7. IPM did not project 2026 emissions for the Flint Creek Power Plant, but did project 2032 emissions. We suggest EPA re-examining including 2026 emissions for this facility.
8. IPM did not project 2026 and 2032 ptegu sector emissions for the John W. Turk Power Plant. However, IPM did project 2026 and 2032 ptnonipm sector emissions for this facility of NOx at less than 1 ton and SO₂ at less than 1 ton. Historical NOx and SO₂ emissions for the John W. Turk Power Plant are presented in Figure 2. EPA should include appropriate 2026 and 2032 ptegu sector emissions and verify the 2026 and 2032 ptnonipm sector emissions for the John W. Turk Power Plant.

Figure 2: Historical Emissions from John W. Turk Power Plant, AR



9. IPM did not project 2026 ptegu sector emissions for the Plum Point Energy Station. However, IPM did project 2026 ptnonipm sector for this facility of NO_x at 1.96 tons and SO₂ at 0.07 ton. Historical emissions for the Plum Point Energy Station are presented in Figure 3. In addition, IPM did project 2032 ptegu emissions, although the 2032 ptegu future year projection was a 62% reduction for SO₂ emissions from a 2021 baseline. For the Plum Point Energy Station, EPA should include appropriate 2026 ptegu sector emissions, verify the 2026 ptnonipm sector emissions, and verify the reasonableness of the 2032 ptegu SO₂ emissions.

Figure 3: Historical Emissions from Plum Point Energy Station, AR

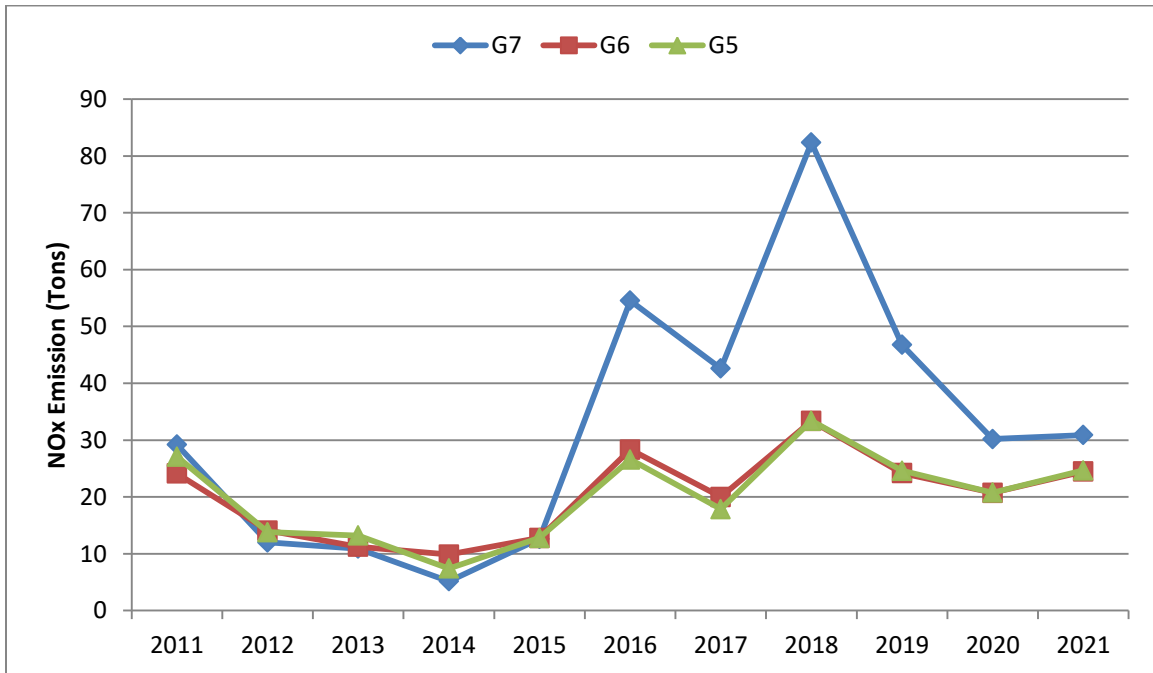


10. IPM 2026 projected NOx emissions from the ARK Elec Co-Op-Oswald Generating Station are Unit G7: 172 tons, Unit G6: 115 tons, and Unit G5: 115 tons. IPM 2032 projected NOx emissions are Unit G7: 160 tons, Unit G6: 107 tons, and Unit G5: 107 tons. Table 1 provides gross load from IPM future year projections and a 5-year average of historical data (2017-2021) for these units. The 2011-2021 historical NOx emissions for these units are provided in Figure 4. EPA should verify the reasonableness of projected 2026 and 2032 NOx emissions for all of this facility’s units and potentially for IPM-projected emissions at other facilities.

Table 1: Gross Load and Emission Rate from Oswald Generating Station

	Last 5 years Historical Average (MW-h)	IPM 2026 (MW-h)	IPM 2032 (MW-h)	Last 5 years Historical NOx rate (lb/mmbtu)	IPM 2032 NOx rate (lb/mmbtu) calculated from data in NEEDS
Unit G7	106991.622	374908	328548	0.1701	0.11459
Unit G6	53159.776	231851	203181	0.20512	0.12391
Unit G5	53122.886	231851	203181	0.20818	0.12391

Figure 4: Historical Emissions from Oswald Generating Station



In response to comments from the MJOs and states, EPA partially updated the 2016v2 platform emissions inventories datasets for future modeling runs.¹⁵ However, the modeling that EPA is primarily relying upon in its disapproval was performed before states could offer feedback and still contains all of the errors that states previously identified. Although DEQ disagrees with EPA’s choice to substitute new modeling data for the data that was available when the state was developing its plan, EPA should understand that failing to incorporate state-provided corrections to that data while moving forward with issuing proposed actions essentially bars states from performing their role under the Clean Air Act.

DEQ requests that EPA perform a more thorough review of the robust evidence provided in the Arkansas Transport SIP submittal, withdraw its proposed disapproval, and instead approve the SIP submittal. If EPA believes insists that it must consider newer data in its review of state Transport SIPs, then DEQ requests that EPA correct its emissions inventories, rerun the model using the updated 2016v2 platform, and issue a Notice of Data Availability based on its updated modeling prior to finalizing action on the Arkansas Transport SIP.

¹⁵ https://gaftp.epa.gov/Air/emismod/2016/v3/preliminary_updates/

V. Interstate Transport Framework Step 1: Identification of Downwind Air Quality Problems

As a result of EPA's choice to substitute new modeling for the modeling data provided to states for development of SIP submittals, the attainment and maintenance receptors identified for Step 1 of the Interstate Transport Framework differ. As specified by EPA, DEQ used 2023 future year results provided in EPA's March 2018 Memorandum to identify nonattainment and maintenance receptors. In the Proposed Rule, EPA proposes to rely primarily upon 2023 and 2026 future year results from the 2016v2 modeling platform. Based on this new modeling data, the only receptor that DEQ identified as having a potential linkage to Arkansas at Step 2 of the framework (Allegan County, MI) is no longer among the areas identified as nonattainment and maintenance receptors in Step 1. EPA's choice to primarily rely on new information instead of the demonstrations that the state made using data provided by EPA at the time of SIP development degrades DEQ's confidence that it can rely upon technical information provided by EPA for decision-making in any future iterations. The proposed reliance by EPA on new information effectively renders the extensive analyses performed by DEQ during the development of the Arkansas Transport SIP as irrelevant. DEQ believes this erodes the cooperative federalism framework and degrades the working relationship between DEQ and EPA Region 6 and EPA Headquarters.

EPA maintains that "differing results [do not] mean that the modeling or the EPA methodology for identifying receptors or linkages is inherently unreliable," and goes on to say that "Arkansas was linked to **some set** of these receptors, even if [...] Arkansas was linked to **different receptors** in one modeling run versus another) [emphasis added]. EPA's argument is contradictory; something cannot be "inherently reliable" (i.e. "dependable") if it does not produce the same results with consistency. The inconsistency in results in EPA modeling gives further weight of support to the state utilizing resources at its disposal (including HYSPLIT modeling) to augment and ground-truth information provided by EPA to determine **which set** of receptors to evaluate for linkages in Step 2 and "significant contribution" in Step 3 of the interstate transport framework recommended by EPA for this type of analysis.

DEQ expended hundreds of hours of staff time and other resources to perform a robust analysis and scientifically-based evaluation of the information that was available at the time of SIP development. EPA's disapproval moves the target on nonattainment and maintenance receptors that must be evaluated by primarily relying on data that was not available to the state at the time of SIP development and was not available when EPA was statutorily required to act on the Arkansas Transport SIP. This conduct is inconsistent with the cooperative federalism framework for air quality protection under the Clean Air Act.

VI. Interstate Transport Framework Step 2: Identifying Linkages

In the Proposed Rule, EPA proposes to substitute its arbitrary 1% threshold for the threshold used by DEQ in the Arkansas Transport SIP to identify potential linkages between Arkansas and identified nonattainment and maintenance areas. Consistent with EPA's August 2018 Memorandum¹⁶, DEQ selected a 1 part per billion (ppb) threshold for identifying linkages between Arkansas and nonattainment and maintenance receptors. EPA now attempts to dismiss its own guidance by attempting to add, post hoc, a requirement that DEQ should base its use of the 1 ppb threshold on "an evaluation of state-specific circumstances."¹⁷ The August 2018 memo contains no such directive. Instead, the memo contains boilerplate language that "each state should consider whether the recommendations in this guidance are appropriate for each situation."¹⁸ Because of the interstate nature of the SIP, there are no "state-specific circumstances" with regard to the linkage threshold. DEQ instead chose to follow the plain meaning of the "consider" language and the spirit of guidance in the August 2018 memo. That is, it was the clear intent that the EPA, at the time of the August 2018 memo, wanted each state to exercise its rational and independent judgment as to whether the 1 ppb threshold was an appropriate measure of to identify linkages. The appropriateness of this threshold was supported in DEQ's SIP by multiple facts. First, EPA's August 2018 memorandum provided evidence that a 1 ppb threshold is generally comparable to a 1% threshold for the 2015 ozone NAAQS. Second, 1 ppb is a threshold used for another program to determine whether a PSD source has a significant impact that causes or contributes to a violation of a NAAQS or PSD increment. Third, 1 ppb is the significant digit for reporting ozone monitoring data. These three pieces of evidence support DEQ's selection of a 1 ppb threshold for determining what the state considers to be a potential linkage to nonattainment and maintenance receptors. In its proposed disapproval, EPA dismisses the weight of evidence provided by DEQ in its choice of the 1 ppb threshold and substitutes its own policy for the state's without any evidence to support their 1% threshold other than to state that the 1% threshold captures marginally more contributions. Unlike EPA's arbitrary threshold, DEQ's threshold for evaluating linkages is based on a robust weight-of-evidence.

Although EPA has not revoked the August 2018 Memorandum, EPA attempts to justify why they no longer consider this memorandum "guidance"¹⁹ and why they now specify that all states should conform to their policy choice with respect to the arbitrary 1% threshold. DEQ finds that it is unreasonable for EPA to transform into a requirement that which was initially packaged and

¹⁶ August 31, 2018. P. Tsirigotis Memo: 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 https://www.epa.gov/sites/default/files/2018-09/documents/contrib_thresholds_transport_sip_subm_2015_ozone_memo_08_31_18.pdf

¹⁷ 87 Fed. Reg. 9806 (Feb. 22, 2022).

¹⁸ See note 16, *supra* at page 1.

¹⁹ *Ibid.* Sentences 6 and 10 of the "Analysis of Contribution Thresholds for Use in Interstate Transport State Implementation Plan Submissions for the 2015 Ozone NAAQS" identify the document as "guidance."

delivered to states as one of several options. This puts states at a critical disadvantage, as state rulemaking and the associated SIPs take years to develop, and early EPA guidance and conversations with EPA Regional Offices are the first pillars of state SIP development. States must undertake SIP development with limited technical resources, so the states rely heavily on EPA data and EPA guidance in their decision-making. The threshold decision is fundamental to further steps in the Interstate Transport Framework analysis. Therefore, this late-stage decision by EPA is unreasonable. DEQ finds that this decision effectively forces states to fail in meeting EPA's vacillating interpretation of what is necessary for SIPs to meet interstate transport obligations.

Substituting the data that Arkansas relied upon in its SIP development and the threshold that Arkansas chose to identify linkages results in a different set of linkages than DEQ identified in its SIP. In its 2019 submittal, DEQ identified one maintenance receptor, Allegan County (Arkansas projected contribution = 1.64 ppb), based on modeling results from EPA's March 2018 Memorandum. In EPA's 2022 disapproval of DEQ's 2019 submittal, based on EPA's 2016v2 modeling platform, EPA identified four maintenance receptors—481210034, Denton, TX (Arkansas projected contribution = 0.76 ppb); 480391004, Brazoria, TX (Arkansas projected contribution = 1.39 ppb); 482011034, Harris, TX (Arkansas projected contribution = 1.38 ppb); and 482011035, Harris, TX (Arkansas projected contribution = 1.34 ppb)—and one nonattainment receptor—482010055, Harris, TX (Arkansas projected contribution = 1.00 ppb)—as linked to Arkansas. Had this updated modeling information been available at the time of SIP development, DEQ would have focused its analysis of potential linkages in Texas instead of the receptor in Michigan.

To give perspective from a state's standpoint, EPA's 2016v2 modeling indicates that one Texas monitor linked to Arkansas emissions (Brazoria County, 480391004), and projected by EPA 2016v1 modeling to be in nonattainment in 2023, is now projected to achieve attainment without further controls. DEQ did not perform an analysis for the Brazoria County monitor because Arkansas's contribution was below DEQ's analytical threshold of 1 ppb. Three Texas monitors (Denton County, 481210034; Harris County, 482011034; and Harris County, 482011035) are projected by both the 2016v1 and 2016v2 modeling to be maintenance-only in 2023. One Arkansas-linked Texas monitor (Harris County, 482010055), previously projected by the 2016v1 modeling to be in attainment in 2023 is now projected by the updated modeling to be in nonattainment in 2023. Essentially, EPA provided states with one set of data and "linkages" upon which states based their SIP submittals, then proposed to disapprove the same SIPs based on a completely different set of data. DEQ finds that this decision is arbitrary and capricious, and amounts to a bait and switch, allowing the EPA to usurp the states.

In summary, EPA's 2016v2 modeling in support EPA's SIP disapproval identified three receptors with "linkages" to Arkansas that were not originally identified at the time of SIP development. Of the top five linked receptors listed in the 2016v2 modeling and disapproval, only two were also listed in EPA's March 2018 Memorandum (i.e., the state was only made

aware of three supposed “linkages” to downwind receptors in EPA’s 2022 proposed disapproval of the state’s SIP submission). The contributions for these two receptors ranked third and fifth in EPA’s March 2018 Memorandum (both receptors were below DEQ’s threshold), and ranked first and fifth in EPA’s 2016v2 modeling, with an increase of 0.49 ppb and 0.18 ppb, respectively. This caused a receptor that was originally modeled to show a contribution that was below DEQ’s threshold (0.90 ppb contribution) to sharply increase past the threshold in the updated modeling (1.39 ppb contribution). The receptor with the second-highest contribution identified in EPA’s 2016v2 modeling and disapproval ranked sixth in modeling results from EPA’s March 2018 Memorandum; again, a downwind receptor that was well below the threshold at the time DEQ was developing the SIP (0.54 ppb contribution) modeled with more than one and one-half times the contribution in EPA’s 2016v2 modeling results (1.38 ppb contribution). At the time of SIP development, DEQ could not predict that these receptors would produce such varied results through modeling performed four years after the SIP submittal was due to EPA, nor could DEQ appropriately focus limited state resources on the receptors with which EPA is now concerned in their disapproval. The state submitted a robust and well-justified SIP, based on information available to DEQ at the time. EPA disregards this fact.

EPA’s proposed disapproval also dismisses DEQ’s HYSPLIT modeling used to identify whether a potential linkage was significant as irrelevant. While DEQ agrees that CAMx is a state-of-the-science tool, this does not mean that other tools cannot be informative. In addition, EPA provided input on DEQ’s HYSPLIT modeling analysis during the comment period for the SIP and DEQ made adjustments to its modeling in response to EPA’s comments. If EPA contends that HYSPLIT modeling is not informative for the purposes of SIP decision-making, this should have been stated in early conversations between the agency and DEQ, before DEQ performed HYSPLIT modeling, or during the public comment period (rather than suggesting modifications to DEQ’s methodology, resulting in additional state resources invested in HYSPLIT modeling to bolster the SIP submittal in response to EPA comments). See EPA comments and DEQ responses to comments on 2015 Ozone Transport SIP, included here as Appendix A.

EPA’s argument regarding the HYSPLIT central path in the proposed disapproval was not raised during preproposal consultation or the comment period for the SIP. Indeed, EPA doesn’t quantify the degree to which they believe a back-trajectory should pull in areas on each side horizontally and vertically in their proposed FIP. This argument by EPA in their proposed disapproval leaves DEQ with no information about what EPA believes would be an appropriate buffer around the back-trajectories if DEQ were to reevaluate how it interpreted HYSPLIT data to address EPA’s alleged concern.

DEQ continues to assert that its HYSPLIT analysis provides meaningful insight as to whether the potential linkages identified by CAMx are consistent and persistent. EPA’s CAMx modeling only looks at five to ten elevated ozone days. For comparison, DEQ’s HYSPLIT analysis evaluated ninety-five elevated ozone days over the course of a ten-year period.

EPA's proposed disapproval points out that DEQ concluded that the CAMx modeled potential linkage to Allegan County was not "persistent or consistent" without defining what is meant by "persistent" or "consistent." Of the 608 back-trajectories evaluated for those ninety-five elevated ozone days, only 6.74% of those back-trajectories passed through Arkansas with the number varying greatly from year to year (i.e., 93% did NOT pass through Arkansas). Although DEQ did not define a bright line for "persistent and consistent," swings in linked elevated ozone day back-trajectories from year to year shows a lack of consistency. The very low percentage of back-trajectories' paths that passed through Arkansas prior to reaching Allegan County on high ozone days indicates that impacts from Arkansas sources to Allegan County are not persistent. DEQ did not perform this analysis for the Texas receptors because those receptors did not meet DEQ's threshold for a potential linkage based on the data available at the time of SIP development.

DEQ's HYSPLIT analysis indicated that the identified linkage to Allegan County was neither persistent nor consistent. The HYSPLIT evidence indicates that emission reductions from sources and emissions activities within Arkansas are not likely to result in a reduction in the design value for Allegan County. Nevertheless, DEQ did move forward with further analysis under Step 3 of the interstate transport framework based on the CAMx linkage as described in the Arkansas Transport SIP. DEQ used the HYSPLIT analysis to evaluate whether particular emissions activities might be contributing to nonattainment or interfering with maintenance under Step 3 and examined other evidence to determine whether revisions to existing SIP control measures were necessary to prohibit any source or emissions activity in Arkansas from contributing to nonattainment or interfering with maintenance by Allegan County, MI.

EPA's proposed disapproval also conflates a "linkage" based on its arbitrary 1% threshold with "significant contribution" that automatically imposes some emission reduction obligation on sources or emissions activities in a state. The threshold, whether 1% or 1 ppb, is a screening device triggering further analysis to determine whether particular emissions sources and activities within a state are "significantly" contributing to nonattainment or interfering with maintenance in another state. Arkansas's obligation is to prohibit "any source or other type of emissions activity within the State from emitting any air pollutant in amounts [that will] 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." A "linkage" in and of itself is not a "source" or "emission activity" and is not a construct established under the Clean Air Act. It is a tool EPA established in guidance to assist states (and themselves) in evaluating whether there may be a source or emission activity in one state that is emitting an air pollutant(s) in an amount that may "significantly" contribute to nonattainment in or interfere with maintenance by any other State. In the Arkansas Transport SIP, DEQ made use of a 1 ppb threshold as a tool for determining whether further inquiry into potential "significant" contribution or interference by a source or emission activity is required (Step 3 of EPA's interstate transport framework).

VII. Interstate Transport Framework Step 3: Identification and Evaluation of Air Quality, Upwind State Emissions, and Cost Factors

In EPA’s proposed disapproval, EPA purports that DEQ did not conduct an adequate analysis of emissions from the sources and other emission activity from within the state to determine whether its contributions were significant. DEQ finds that EPA is objectively wrong in this assertion. DEQ performed a robust analysis of emissions activities within the state that had the potential to significantly contribute to nonattainment or interfere with maintenance of the NAAQS in other states. This analysis covered all sources in Arkansas with elevated stacks²⁰ (including both EGUs and other industrial sources) that are under DEQ’s regulatory authority. EPA inaccurately states in the proposed disapproval that DEQ’s analysis under Step 3 only focuses on EGUs. DEQ focused analysis on emissions of NO_x, as most VOC emissions within Arkansas are not anthropogenic, and are therefore uncontrollable.²¹

Because the modeling that EPA provided to the states at the time of SIP development did not include sector-specific tagging, DEQ examined sources with elevated stacks to determine whether any sources in Arkansas were anticipated to significantly contribute to nonattainment or interfere with maintenance. Because DEQ had additional information about EGU emissions, DEQ performed additional analysis for this source type. As previously discussed, the analysis focused solely on Allegan County, MI because that was the only receptor DEQ identified as being potentially linked to Arkansas—although DEQ’s HYSPLIT analysis suggests that this linkage is not persistent or consistent. The data presented in the Arkansas Transport SIP indicates that EGUs in Arkansas are not significantly contributing to nonattainment or interfering with maintenance in Allegan County, MI. The data also show that controlling emissions activities in Arkansas would not be an effective way of reducing the ozone concentrations in Allegan County—particularly when looking at Arkansas’s relative contribution to the Allegan County monitor compared to the proximity and quantity of emissions in other states near to Allegan County. DEQ did not perform similar analyses for the receptors identified by EPA in their disapproval because the data upon which those “linkages” were identified was not available and DEQ adequately justified its 1 ppb threshold.

Although DEQ did not identify any emissions sources or activities within the state as “significantly” contributing to nonattainment or interfering with maintenance in another state, DEQ performed a cost analysis for NO_x emission reductions from the highest emitting sources in Arkansas. DEQ ultimately focused its evaluation of costs of potential control strategies on EGUs, but only after evaluating NO_x emissions from all elevated emission sources in Arkansas.

²⁰ DEQ chose to focus analysis on elevated stack sources because emissions from such sources are more likely to penetrate through the atmospheric mixing layer and thus be transported long distances.

²¹ According to the EPA 2014 National Emission Inventory, emissions from biogenic sources make up eighty-two percent of the Arkansas VOC emission inventory. Point sources contribute only two percent of total VOC emissions to Arkansas’s VOC emission inventory, thus VOCs were not further examined.

DEQ observed during evaluation a natural break between EGUs and non-EGUs when it examined the top NO_x emitting sources in the state. The highest-emitting non-EGU, Ash Grove Cement (829 tpy NO_x), emitted less than half of the emissions from the lowest-emitting EGU, Plum Point (1759 tpy NO_x). This was a reasonable breakpoint for emissions data. Additionally, DEQ focused the analysis in this manner using the framework EPA used for selecting sources for a reasonable progress analysis in their Regional Haze FIP for Arkansas.

For context, in the 2016 Arkansas Regional Haze FIP,²² now replaced by approved Arkansas SIP revisions, EPA performed a reasonable progress analysis to determine whether any additional control strategies were necessary to ensure reasonable progress towards natural visibility conditions in the 2008 – 2018 time period. In starting their analysis, EPA analyzed SO₂ and NO_x emissions inventories for point sources and identified three facilities, White Bluff, Independence, and Flint Creek, which the EPA determined were the largest contributors to these emissions. Collectively, these facilities were responsible for 84% of point SO₂ point source emissions and, more directly related to the Arkansas Transport SIP submittal, 55% of NO_x point source emissions in the state. EPA decided not to perform further evaluations of lower-emitting non-EGU sources. DEQ drew a similar line in the natural break between EGUs and non-EGUs in their contribution to NO_x emissions with consideration of the fact that the lowest-emitting EGU emits over double that of the highest emitting non-EGU facility in the state. If considerations of the largest emitters and natural break points are an adequate argument for source selection for emission reduction strategy analysis when provided by EPA, then such arguments should be equally adequate when provided by the state in which the argument applies.

DEQ did not define a bright line threshold for what control strategies the state considers cost-effective. DEQ did, however, note that its cost analyses showed that the cost-effectiveness values of controls greatly exceeded metrics that EPA used in past ozone transport federal implementation plans. In DEQ's most recent Regional Haze Planning Period II SIP draft²³, DEQ provides updated cost-effectiveness values in 2019 dollars for SCR and SNCR at Flint Creek and at Independence Units 1 and 2 with a calculated range of \$5,771 to \$24,084 for implementation of these controls. In consideration of the cost-effectiveness threshold of \$5,086 for EGUs in the Regional Haze context, the cost of implementing SCR and SNCR exceeds what the state considers reasonable, especially when considering the remaining life time of facilities such as White Bluff and Independence, which are set to cease coal-fired operations in 2028 and 2030, respectively. For comparison, EPA's proposed FIP costs of control averaging \$11,000 per ton (for coal-fired EGUs) and \$7,700 per ton (for oil- and gas-fired EGUs) is beyond excessive and

²² September 27, 2016. Promulgation of Air Quality Implementation Plans; State of Arkansas; Regional Haze and Interstate Visibility Transport Federal Implementation Plan; Final Rule <https://www.govinfo.gov/content/pkg/FR-2016-09-27/pdf/2016-22508.pdf>

²³ Regional Haze Planning Period II SIP, Chapter V <https://www.adeq.state.ar.us/air/planning/sip/regional-haze.aspx>

lacks consideration of factors known by EPA, such as scheduled facility closures.²⁴ This is much higher than costs considered reasonable for other Clean Air Act programs. For context, refer to EPA's Regulatory Impact Analysis for the Final Revised Cross-State Air Pollution Rule (CSAPR) Update for the 2008 Ozone NAAQS 2021,²⁵ Regulatory Impact Analysis of the Cross-State Air Pollution Rule (CSAPR) Update for the 2008 National Ambient Air Quality Standards for Ground-Level Ozone, 2016,²⁶ and DEQ's compilation of costs for the Regional Haze planning period two SIP.²⁷

VIII. Evaluation of EPA Newly-Identified Linkages

Although DEQ does not agree with EPA's use of new modeling or its 1% threshold, DEQ has performed a preliminary review of whether additional control measures for Arkansas are necessary to fulfill its interstate obligations for the 2015 ozone NAAQS based on the new EPA-identified linkages. The length of the comment period does not provide adequate time to perform HYSPLIT modeling, which based on EPA's proposal, would be dismissed without adequate consideration, or photochemical modeling. However, an initial review of the new EPA modeling data continues to support the decisions made by DEQ in its 2019 SIP submittal.

Four out of five of the newly-identified Arkansas linkages are projected maintenance receptors. These receptors are anticipated to attain the NAAQS based on existing control measures. Therefore, significant increases in emissions could interfere with attainment and maintenance of the NAAQS. However, DEQ's prevention of significant deterioration new source review process adequately prohibits emissions from a new source or modification to an existing source in an amount that could contribute to nonattainment or interfere with maintenance of the NAAQS. Therefore, asserting that additional control measures on existing sources are necessary to address EPA-identified linkages to those receptors is not reasonable.

EPA's modeling projects that the Harris County, TX monitor (482010055) will not attain the 2015 ozone NAAQS by 2023. Therefore, new control measures are necessary to bring Harris County into attainment. However, Arkansas's relatively small contribution to this monitor based on EPA's 2016v2 modeling does not indicate that new controls for Arkansas sources is an

²⁴ February 28, 2022. Pre-publication release of EPA's 2015 Ozone Transport FIP proposal

[https://www.epa.gov/csapr/good-neighbor-plan-2015-ozone-naaqs#:~:text=On%20February%2028%2C%202022%2C%20the,\(NAAQS\)%20in%20downwind%20states.](https://www.epa.gov/csapr/good-neighbor-plan-2015-ozone-naaqs#:~:text=On%20February%2028%2C%202022%2C%20the,(NAAQS)%20in%20downwind%20states.)

²⁵ March 2021. Regulatory Impact Analysis for the Final Revised Cross-State Air Pollution Rule (CSAPR) Update for the 2008 Ozone NAAQS, https://www.epa.gov/sites/default/files/2021-03/documents/revise_csapr_update_ria_final.pdf

²⁶ September 2016. Regulatory Impact Analysis of the Cross-State Air Pollution Rule (CSAPR) Update for the 2008 National Ambient Air Quality Standards for Ground-Level Ozone, 2016, https://www3.epa.gov/ttn/ecas/docs/ria/transport_ria_final-csapr-update_2016-09.pdf

²⁷ Compilation of costs for the Arkansas Regional Haze planning period two SIP, <https://www.adeg.state.ar.us/air/planning/sip/regional-haze.aspx>

effective means of bringing this area into attainment and that it is unlikely that a particular emission source or emission activity in Arkansas will significantly contribute to nonattainment or interfere with maintenance at that monitor.

As a snapshot illustration of this point, Arkansas's linked contribution to the Harris County nonattainment monitor is modeled at 1.00 ppb. The modeled contribution from Texas is 28.25 ppb, more than 28 times the contribution from Arkansas, and Louisiana's contribution is 5.39 ppb, more than 5 times the contribution from Arkansas (see Figure 5). When contributions from international, offshore, initial and boundary conditions, fires, and biogenics are included, Arkansas's contribution falls to 1% of total contributions at the Harris County monitor (see Figure 6). Figures 5 and 6 illustrate the relative contributions from all linked states and the relative contributions from all states as well as international, offshore, initial and boundary conditions, fires, and biogenics.

Figure 5: Modeled Contributions from All Linked States to Harris County, TX monitor (482010055)

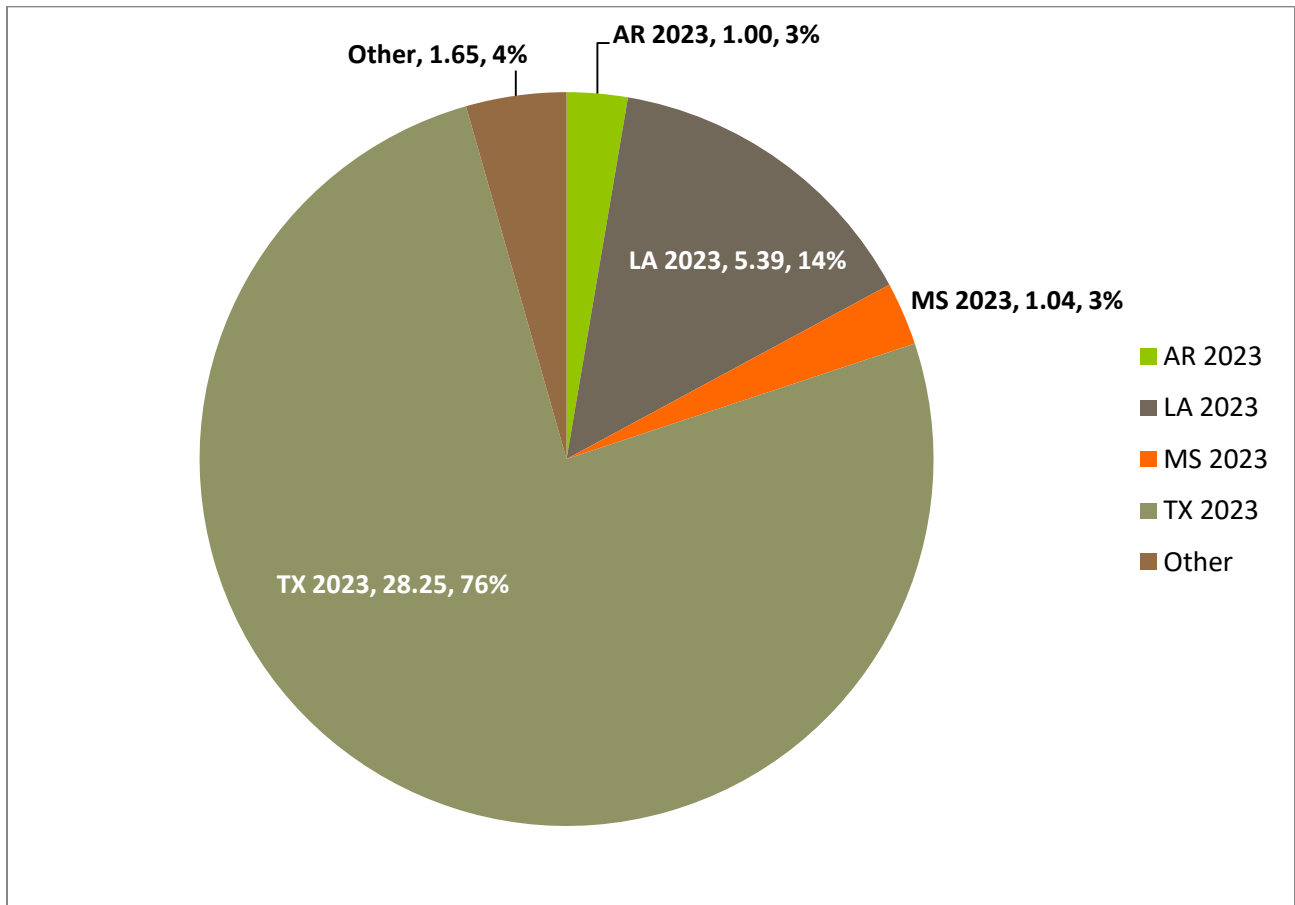
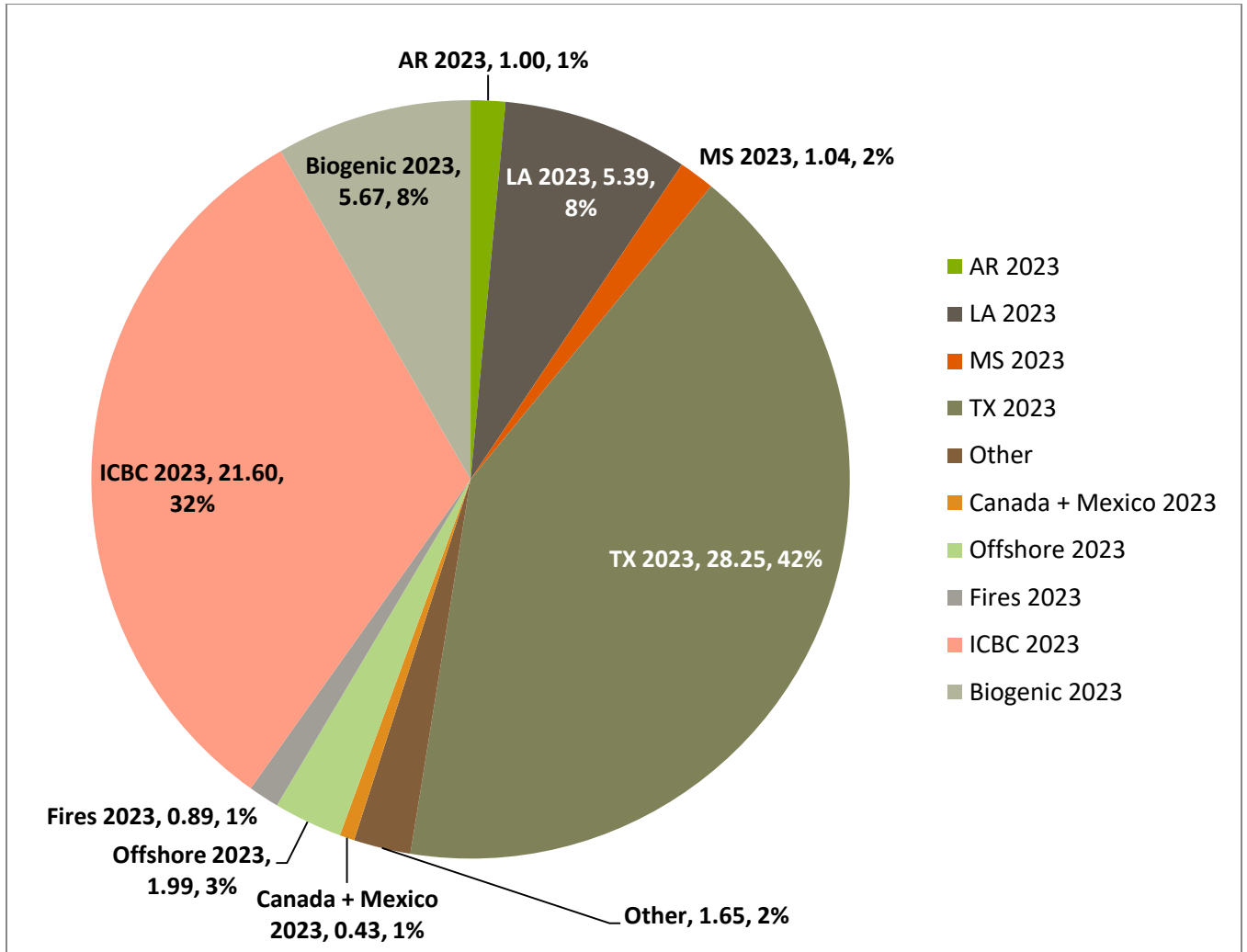


Figure 6: Modeled Contributions from All Linked States (Including Tribal, International, Offshore, Initial and Boundary Conditions, Fires, and Biogenics) to Harris County, TX Monitor (482010055)



EPA indicates in the Proposed Rule and their proposed FIP that any identified “linkage” to a downwind receptor at 1% or greater automatically means that every source or emissions activity in the upwind state has a “significant contribution,” and is thus ripe for control. In their proposed FIP, EPA did not identify specific sources or emissions activities in Arkansas that significantly contribute to downwind air quality problems (as the rule requires), but instead chose from a nationwide set of sources with available control technologies as being subject to emission reduction requirements in their proposed FIP. There was no further analysis provided by EPA to show that specific sources in Arkansas are actually contributing significantly to the Harris County monitor or interfering with maintenance of the NAAQS by other receptors, thus EPA is

effectively contending that a 1% linkage is the same as a significant contribution, which is not consistent with their guidance or Clean Air Act 110(a)(2)(D)(i).

Determination of linkages and significant contributions occurs at separate steps in the four-step analysis. DEQ does not agree that a 1% linkage to an entire state is the same as a significant contribution from a source or emissions activity. The state's obligation is not to eliminate an arbitrary threshold (or to reduce emissions such that a neighboring state that may be its own primary contributor to nonattainment is not overburdened by their own obligations), but to determine if any emissions sources or emissions activity in the state are significantly contributing to a downwind nonattainment receptor or interfering with maintenance of the NAAQS by a downwind state and respond accordingly to mitigate significant contributions.

DEQ agrees that some of the newly identified linkages now meet the state's threshold for further analysis of emissions sources in the state, and while EPA did not undertake this analysis before proposing a FIP with costly emissions reductions across broad sectors, Arkansas, now aware of a different set of linkages, is working on a new analysis based on the updated modeling results provided by EPA in the proposed disapproval.

DEQ does not believe that EPA has the information necessary to broad-stroke disapprove the Arkansas Transport SIP. DEQ requests that EPA take pause on final SIP and FIP actions for the state until DEQ (or EPA) has completed further analysis of linkages from emission sources and activities in the state to determine if there are sources or emissions activities in the state that significantly contribute to the newly identified nonattainment receptor or interfere with maintenance of the NAAQS in Texas, and if so, to adopt appropriate control strategies to prohibit the significant contribution(s).

IX. The Federal-State Partnership

One of the most important pillars of our federal-state regulatory framework under the Clean Air Act is the concept of cooperative federalism. One-size-fits-all policies are in direct conflict with cooperative federalism, as these policies do not reflect the nuances of a state's individual circumstances. By setting in place an overarching policy without attention to state individuality (such as EPA's 1% threshold or its control strategy under the proposed FIP), the federal government initiates an effort to coerce local and state entities into conformity with national policy. At minimum, if a federal agency ultimately decides to dismiss requested state input, then the federal government must take on a role in an advisory capacity and one with increasing collaboration and support, especially through provision of additional funding and technical resources.²⁸

²⁸ "The Evolution of Cooperative Federalism," April 15, 2021. <https://online.law.tulane.edu/blog/the-evolution-of-cooperative-federalism>

In this latest action by EPA, the agency attempts to set local policy goals by dismissing individual state analyses, and having a FIP waiting in the wings constitutes an “or else” coercive strategy by the EPA. EPA’s concurrent proposal of a FIP with their proposed disapprovals instead of providing states with the customary two years to submit a corrective SIP revision is clear evidence that EPA prefers a national policy in contravention of Congress’ intent that states be the primary policy makers with respect to implementing the NAAQS.

States have limited resources, and use what is at their disposal to meet requirements under the Clean Air Act. Suddenly, EPA is very specific about which tools states should use for policy assessment at the state-level, with no consideration of the resource constraints faced by state regulators. In the disapproval, EPA states that DEQ’s analysis “does not consider ...impacts on assessed controls at downwind receptors.” This type of analysis is only possible through photochemical modeling, a method that the state was unable to do in-house at the time of SIP development, is costly, and was seemingly not necessary based on the guidance in place during the time of SIP development. Much of the technical basis for states’ analyses comes from existing EPA modeling and guidance. It is not ideal, but it is what states are faced with, and historically, this has been acceptable methodology. DEQ acted in confidence, based on continued feedback from EPA at that time, that its alternative methods of analysis were sufficiently robust, and spent significant resources to reach the conclusions presented in the SIP submittal. For EPA to require an expensive modeling exercise for approvability, without providing the means to do so, is essentially creating an unfunded mandate.

DEQ discussed methodology, modeling, and rationale with EPA early in the process and throughout SIP development. EPA offered suggestions for refinement based on initial drafts, and provided additional input during the public comment period for the 2015 Ozone Transport SIP draft and associated rulemaking. There was at no point during this process any indication from EPA that this plan or DEQ’s rationale was not approvable as DEQ was developing it, as long as the state provided rational, science-based justification for the state’s decisions. DEQ did so.

In the Proposed Rule, EPA seeks comment on rescinding recommendations presented to states in EPA’s March 2018 Memorandum upon which many states relied in their analyses. By changing the rules so late in the game, EPA has left its partner states with no room for participation in the implementation process. Ultimately, a state that was unresponsive to obligations set in motion by the 2015 ozone NAAQS would be in the same position as any other state that submitted a well-supported Transport Plan.

With this proposal, EPA indicates that the agency does not support state-justified alternatives that differ from the arbitrary line drawn by EPA in the Proposed Rule. EPA’s discussion in the Proposed Rule indicates that the agency does not consider the recommendations that EPA presented to states in the EPA’s August 2018 guidance as viable alternatives to a one-size-fits-all

EPA implementation of policy in 2022.²⁹ The agency goes on to say they will "evaluate whether the state adequately justified the technical and legal basis" for any alternative compliance options that a state proposed.³⁰ But, then EPA states that the August 2018 memo and its Attachment A "do not constitute agency guidance," though the title of the document in question is "Preliminary List of Potential Flexibilities." At the time the memo was released, seven months before state plans were due to EPA, it was clearly intended by EPA to provide guidance to the states. (See sentences 6 and 10 of the memo.) Four years later, EPA now rejects its former position and is attempting to substitute the states' policy judgments with its own.

Ultimately, EPA is undermining the framework of the Clean Air Act as established by Congress, and has changed direction on states after conclusion of the SIP development process. The proposed disapproval of the Arkansas Transport SIP and the proposed FIP will force installation of costly controls that are unnecessary for addressing specific Clean Air Act interstate transport requirements for the 2015 ozone NAAQS. In its disapproval, EPA dismisses sound reasoning and science-based evidence presented by the state and makes a bid to wholesale replace state rationale and policy decisions with its own. In no way is this equitable, nor is it the type of collaboration that the Clean Air Act affords state and federal partners tackling such multi-jurisdictional issues.

X. Conclusion

EPA's disapproval of Arkansas's 2015 Ozone Transport SIP is an example of a failure in cooperative federalism. EPA failed to meet its statutory deadline to act on Arkansas's SIP submittal. Then, after being sued for this failure, EPA moves the goal post on what they believe is required to satisfy Clean Air Act Section 110(a)(2)(D) requirements by dismissing its previous guidance without revoking it and substituting data that EPA provided in 2017 for states to rely upon in their submittals with new data. EPA further dismisses the weight of evidence used as part of Arkansas's decision-making process with respect to how the state defines a "significant contribution," how the state selected sources for a cost analysis of NOx reduction strategies, and the state's decisions on whether the cost of additional controls are reasonable. EPA then proposes to substitute its own policies for those that the state has demonstrated are reasonable and consistent with the Clean Air Act. With this action and their proposed FIP for the State of Arkansas, EPA fails to acknowledge that Congress gave states, not EPA, the primary authority in establishing plans to protect air quality standards.

²⁹ August 31, 2018. P. Tsirigotis Memo: 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 https://www.epa.gov/sites/default/files/2018-09/documents/contrib_thresholds_transport_sip_subm_2015_ozone_memo_08_31_18.pdf

³⁰ February 22, 2022. Air Plan Disapproval; Arkansas, Louisiana, Oklahoma, and Texas; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards <https://www.govinfo.gov/content/pkg/FR-2022-02-22/pdf/2022-02961.pdf>

In terms of lateness, EPA had an obligation to finalize action on our SIP by no later than November 7, 2020; the proposed disapproval of Arkansas's September 2019 submission was published February 22, 2022. EPA should make a decision based on information available to states at the time of SIP development, as there is no method for states to predict what future modeling will reveal at the point in time when EPA gets around to fulfilling its responsibilities. It is especially so in this case, where EPA failed to act on SIPs in a timely manner, and is now attempting to move the proverbial goal post for state plan approval. Hindsight is always in perfect focus, yet states do not have this at their disposal when developing SIPs. It is improper for EPA to have taken this position so late in the process, as states were given no time to respond with any analysis or policy. This is why states rely so heavily on early consultations with EPA, so that they may adapt initial plans prior to public review and submission to EPA.

EPA offered guidance and comments to DEQ during SIP development and up to the point of submittal. It is perfectly reasonable that DEQ relied upon that guidance and EPA's comments in developing the Arkansas Transport SIP. EPA expects that its comments and guidance will be taken into consideration or would not devote the effort to produce it. Further, states are required to consider EPA's comments and to address these in the final SIP submittal. EPA, in an arbitrary and capricious about-face, now indicates that states cannot rely upon the federal partnership for sound advice. Nothing about EPA's disapproval is rational, reasonable, or based in sound scientific principle.

DEQ maintains that the existing SIP contains adequate provisions to prohibit any source or other type of emission activity from emitting NOx in amounts that will contribute significantly to nonattainment or interfere with maintenance by any other states with respect to the 2015 ozone NAAQS. DEQ requests that EPA perform a more thorough review of the robust evidence provided in the Arkansas Transport SIP submittal, withdraw its proposed disapproval, and instead approve the SIP submittal. If EPA maintains that it must consider newer data in its review, then DEQ requests that EPA correct its emissions inventories and rerun the model using the updated 2016v2 platform using source-specific and sector contribution tagging, and issue a Notice of Data Availability based on its updated modeling prior to finalizing action on the Arkansas Transport SIP.



Appendix A

2015 Ozone Transport SIP Comments and DEQ Responses

Division of Environmental Quality

Office of Air Quality

RESPONSIVE SUMMARY FOR STATE IMPLEMENTATION PLAN REVISION:

Arkansas State Implementation Plan Revision: 2015 Ozone National Ambient Air Quality
Standard–Interstate Transport

Pursuant to Arkansas Code Annotated (Ark. Code Ann.) § 8-4-317(b)(2)(B)(i), the Arkansas Department of Energy and Environment, Division of Environmental Quality (ADEQ or “Department”), must prepare a record of the public process in the form of a written response to each issue raised during the public comment period. A responsive summary groups public comments into similar categories and explains why ADEQ accepts or rejects the rationale for each category.

On April 14, 2019, ADEQ proposed a state implementation plan (SIP) revision to address Clean Air Act interstate obligations for the 2015 ozone national ambient air quality standard (NAAQS) and for transport of visibility impairing pollutants. This proposed SIP revision is hereinafter referred to as the “Proposed SIP.”

The public comment period for the Proposed SIP closed on May 20, 2019. A public hearing was held on May 20, 2019. ADEQ received two comment letters on the Proposed SIP: One from Entergy Arkansas, LLC (EAL) and one from the United States Environmental Protection Agency (EPA) Region 6 Office.

Comments received during the public comment period for the Proposed SIP are summarized and a response for each is provided below.

Comment 1:

EAL supports the Proposed SIP. EAL confirms that the company has installed cost-effective NO_x controls its coal-fired facilities in Arkansas to comply with the Cross-State Air Pollution Rule (CSAPR) during Ozone Season and to reduce nitrogen oxides (NO_x) emissions throughout the year, as is stated in the Proposed SIP. EAL recognizes and appreciates the thorough evaluation performed by ADEQ to ensure all provisions of the Clean Air Act are met.

Response 1:

ADEQ acknowledges and appreciates this comment. No changes to the Proposed SIP pursuant to this comment are necessary.

Comment 2:

EPA states that it would be helpful if Arkansas explained what each point in Figure 1 on page 8 of the Proposed SIP represents.

Response 2:

Arkansas added clarification to Figure 1 of the Proposed SIP that now reads that the data points represent “EPA updated 2011 CAMx model performance statistic: individual monitoring site-specific mean error” and provided the following footnote as additional information and the data source: “Data is from an EPA file (http://www.epa.gov/sites/production/files/2015-11/updated_2011_camx_performance_stats.xlsx.) that contains air quality model performance statistics for 8-hour daily maximum ozone for individual monitoring sites from the 2011eh base year model simulation performed by EPA in support of the updated ozone transport modeling for the 2008 ozone NAAQS.”

Comment 3:

EPA suggests that it would be helpful to provide data to support the statement “that the use of alternative modeling protocols, including base year and grid resolution, can cause considerable differences in design value projections and ozone contributions.” EPA provided the following table showing the base period and 2023 design values (DV) for the receptor in Allegan County, MI based on the modeling sets discussed in the Proposed SIP.

	Based on 2011 Meteorology							Based on 2012 Meteorology	
	2009-2013 Base Period	EPA 2023 12 km No Water	LADCO 2023 12 km No Water	EPA 2023 12 km 3x3	LADCO 2023 12 km 3x3	MOG 2023 12 km 3x3	MOG 2023 4 km 3x3	2010-2014 Base Period	TCEQ 2023 12 km 3x3
Average DVs (ppb)	82.7	69.0	68.7	69.0	68.8	69.0	70.3	84.3	71.0
Maximum DVs (ppb)	86	71.7	71.5	71.8	71.5	71.8	73.1	86	-

Response 3:

In response to EPA’s comment, a table showing greater and lesser differences in projected design values resulting from different modeling strategies will be added to the SIP narrative. Several monitoring sites in the Northeast as well as in Texas showed greater differences in design values than did the monitoring site in Allegan County, MI.

Comment 4:

EPA disagrees with ADEQ on the applicability of the prevention of significant deterioration (PSD) significant impact level (SIL) to a one ppb threshold for assessing linkages to downwind receptors because EPA’s analysis for the SIL did not contain information that could be used to evaluate the collective contribution from upwind states at downwind receptors, a key element for consideration given the regional nature of ozone transport.

Response 4:

ADEQ disagrees with EPA’s opinion on the applicability of technical analysis behind the PSD SIL to linkage thresholds. Rather, ADEQ agrees with the assessment of other states, such as Georgia who states in support of its 2015 ozone NAAQS transport SIP that the PSD SIL is a conservative linkage threshold based on a statistical analysis of air quality variability that is independent of number of sources, location of sources, and size of sources in an area. See Appendix A to Georgia’s 2015 Ozone Transport SIP.¹ As Georgia states, the EPA guidance was

¹https://epd.georgia.gov/air/sites/epd.georgia.gov.air/files/related_files/document/9_APPENDIX_A_GAEPD_2015_Ozone_Transport_Summary_update.pdf

written for single source (consisting of multiple emission units), and the same approach can be applied for a single state (consisting of multiple emission sources) impacting ozone monitors located in other states. The fact that the SIL analysis does not provide information to be used to evaluate the collective contribution from upwind states at downwind receptors does not diminish the persuasive value of the remaining technical analysis that was performed in support of the SIL.

In addition, EPA Office of Air Quality Planning and Standards released a memo to Regional Air Division Directors providing guidance about what thresholds may be appropriate for use in SIP revisions addressing the good neighbor provision for the 2015 ozone NAAQS.² In the memo, EPA concludes that it may be appropriate for States to use the one ppb threshold in determining whether the States potentially contribute to downwind nonattainment and/or maintenance receptors because the contributions captured at the one percent and one ppb thresholds are generally comparable. In addition, a one ppb threshold is reasonable for other reasons, including monitoring capabilities and reporting requirements, as discussed in the Proposed SIP.

No changes to the Proposed SIP pursuant to this comment are necessary.

Comment 5:

EPA recommends that the Proposed SIP be revised to discuss the collective contribution captured at the following individual receptors by a one ppb threshold as compared to a 0.70 parts per billion (ppb) threshold:

- Texas Harris (482011039)
- Texas Brazoria (480391004)
- Texas Tarrant (48292003)

EPA further suggests that the Proposed SIP be revised to include a discussion of the degree to which these receptors are transport influenced.

² Memorandum from Peter Tsirigotis, Director of the Office of Air Quality planning and Standards, August 31, 2018, 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. https://www.epa.gov/sites/production/files/2018-09/documents/contrib_thresholds_transport_sip_subm_2015_ozone_memo_08_31_18.pdf

Response 5:

The information requested by EPA regarding collective contribution captured for these receptors is presented in Tables 2 and 3 of the 2015 ozone NAAQS memo referenced above. This memo is also referenced in the Proposed SIP.

For Texas Harris (482011039), 57.1% of the contribution captured with a one percent threshold is captured with a one ppb threshold and 57.1% is captured with a two ppb threshold. For Texas Brazoria (480391004), 64.2% of the contribution captured with a one percent threshold is captured with a one ppb threshold and 50.8% is captured with a two ppb threshold. For Texas Tarrant (48292003), 81.4% of the contribution captured with a one percent threshold is captured with a one ppb threshold and 0% is captured with a two ppb threshold.

All three receptors mentioned by EPA in this comment are primarily influenced by Texas rather than interstate transport from upwind states (See Table 1 of the 2015 ozone NAAQS Memo). For Texas Harris (482011039), total upwind state contributions make up eighteen percent of the projected 2023 projected average design value. For Texas Brazoria (480391004), total upwind state make up eighteen percent of the projected 2023 projected average design value. For Texas Tarrant (48292003), total upwind state make up 13.9% of the projected 2023 projected average design value.

Although, the percent of upwind state contributions captured by one ppb versus a 0.70 ppb threshold is lower than average, the three receptors identified by EPA are not primarily transport influenced. This further supports ADEQ's decision not to bring these receptors forward for further analysis.

No changes are necessary to the Proposed SIP pursuant to this comment.

Comment 6:

EPA recommends that the Proposed SIP be revised to discuss the collective contribution captured at the Michigan Allegan (260050003) monitor by one ppb and 2 ppb thresholds as compared to a 0.70 ppb (1%) threshold.

EPA further suggests that the Proposed SIP be revised to include a discussion of the degree to which the Allegan receptor is transport influenced.

Response 6:

The information requested by EPA regarding collective contribution captured for these receptors is presented in Tables 2 and 3 of the 2015 ozone NAAQS memo referenced above. This memo is also referenced in the Proposed SIP. For Michigan Allegan (260050003), 94.2% of the contribution captured with a one percent threshold is captured with a one ppb threshold and 81.6% is captured with a two ppb threshold.

The Michigan Allegan (260050003) receptor is much more transport influenced than the three Texas receptors EPA mentions in the comment above. Total upwind state contributions make up 62.2% of the projected 2023 projected average design value. This further supports ADEQ's decision to bring this receptor forward for further analysis as was done in the Proposed SIP.

No changes are necessary to the Proposed SIP pursuant to this comment.

Comment 7:

EPA suggests that additional perspective on the representativeness of EPA's modeling to examine the yearly frequency of back trajectories for which Arkansas emissions are found to contribute to the Allegan monitor. Specifically, EPA recommends comparing the frequency in 2011 to other years analyzed to determine whether 2011 was anomalous.

Response 7:

Table 6 of the Proposed SIP included "Linked Back-Trajectories and Days with Linked Back-Trajectories by Year" for 2008—2017. This table makes it easy to compare the frequency of linked back-trajectories and days per year.

No changes to the Proposed SIP pursuant to this comment are necessary.

Comment 8:

Regarding the HYSPLIT methodology, EPA requests that ADEQ clarify the source of mixing height data and whether the data was for the same hour as the start hour of the trajectory. EPA requests that ADEQ clarify how the start hour of the trajectory was selected.

Response 8:

Regarding the source of the mixing height data, ADEQ stated the following in the Proposed SIP under the heading “HYSPLIT Methods” on page 15: “ADEQ obtained meteorological data for the back-trajectory analysis using Eta Data Assimilation System (EDAS) data.” In addition, ADEQ also included an accompanying footnote: “EDAS is an intermittent data assimilation system that uses successive three-hour model forecasts to generate gridded meteorological fields that reflect observations covering the continental United States. EDAS is accessible at <http://ready.arl.noaa.gov/edas40.php>” as well as “ADEQ obtained meteorological data for the back-trajectory analysis using Eta Data Assimilation System (EDAS) data.”

In Section II.B.4.a HYSPLIT Methods, ADEQ will add three clarifying pieces of information (underlined here) to the above statements: “ADEQ obtained 40 km grid meteorological data...”, “...HYSPLIT calculates the mixing height for each hour along the trajectory...” and “...ADEQ filtered out back-trajectories that had a starting hour mixing height below the back-trajectory height...”.

For determining the HYSPLIT back-trajectory start hour, in Section II.B.4. HYSPLIT Back-Trajectories (page 14) of the Proposed SIP ADEQ stated: “To further evaluate the potential linkage of Arkansas to Allegan County, MI, ADEQ assessed wind patterns on elevated ozone days—days with a maximum daily average eight-hour (MDA8) greater than 70.9 ppb...” and “...ADEQ identified the maximum eight-hour value within these elevated ozone days.” and “...ADEQ ran seventy-two-hour back trajectories using the hour of the maximum eight-hour value for each elevated day as the back-trajectory start time.” In addition, an associated footnote stated that “If the same maximum eight-hour value for the elevated ozone day occurred multiple times a day, ADEQ evaluated all incidences of the value for that day.”

In reviewing the HYSPLIT back-trajectory start hours to evaluate this comment and its response, it was determined that a Eastern Time to Universal Time conversion error was made for the 2008 start times and ADEQ corrected this error and re-ran the 2008 back-trajectories using the corrected start times. The results of correcting the 2008 time conversions increased the total number of re-ran 2008 back-trajectories from seven to eight, with only one 2008 back-trajectory not being filtered out. In that case, the mixing height was higher than the 100 m trajectory height and there was also a path through Arkansas.

As a result of the identified 2008 time conversion errors, Figures 2, Figure 53, and 68, as well as the accompanying discussion of those figures in the Proposed SIP will be revised to correctly indicate the elevated ozone day at the Allegan, MI monitor.

Comment 9:

EPA notes that ADEQ's methodology for dropping back trajectories that had mixing heights below the starting height of the HYSPLIT run is not a standard technique and was not used by EPA in trajectory analyses, such as in Appendix E of the CSAPR Update Air Quality Modeling Technical Support Document.

Response 9:

Mixing height (also known as mixing depth), where the layer adjacent to the ground of varying heights contains wind turbulence that will mix a transported air parcel with the ground-level ambient air, has an effect on ground-level ambient air pollutant concentrations and is well understood concept. Above the mixing height, a transported air parcel will not mix with ground-level ambient air and the transported air parcel will continue on its trajectory above the mixing height and not reach ground-level ambient air at that particular location. ADEQ is unaware of any EPA or NOAA document that precludes using HYSPLIT-generated mixing height data as a "standard technique" to evaluate whether transport winds will mix with ground-level winds.

ADEQ acknowledges that this concept and an evaluation of when transport winds reach ground level were not considered in the CSAPR Update trajectory analyses. Instead, EPA produced line density plots to evaluate the frequency with which a trajectory passed through the atmosphere over a geographic area at a height above ground level up to 1500m regardless of the mixing

height outputs produced by the HYSPLIT model. ADEQ is unaware of any EPA or NOAA document that precludes using HYSPLIT-generated mixing height data as a “standard technique” to evaluate whether transport winds will mix with ground-level ambient air and ADEQ believes the approach of considering mixing height when evaluating whether transported winds would mix with ground-level ambient air is reasonable.

No changes to the Proposed SIP pursuant to this comment are necessary.

Comment 10:

EPA suggests that the location of the forty-kilometer (40 km) meteorological grid cell containing the Allegan monitor being substantially over water may influence the mixing heights used in filtering back trajectories.

Response 10:

For the HYSPLIT back-trajectory analyses included in the Proposed SIP, ADEQ used a North American Mesoscale (NAM) Eta Data Assimilation System (EDAS) 40 km meteorological grid when evaluating air parcel trajectories. ADEQ agrees that the 40 km grid cell that includes Allegan, MI is approximately 50% over Lake Michigan. Therefore, ADEQ performed a sensitivity analysis to determine whether the mixing heights for the 40 km grid cell containing the Allegan monitor were significantly different from the mixing heights for a 12 km grid cell containing the Allegan monitor that is not over water.

To evaluate for any effect on the grid cell mixing height data that may be caused by the grid cell being partially over water, ADEQ compared the mixing heights at the Allegan, MI monitor on elevated ozone days (2008–2017) for the NAM EDAS 40 km grid cell and the NAM EDAS 12 km grid cell, where the 12 km grid cell for Allegan, MI does not include Lake Michigan. The results of a two-tailed t-test comparison indicate no significant difference in the mixing heights of the 40 km grid cell and the 12 km grid cell for any of the four trajectory heights used in the original HYSPLIT analyses: 100 m (P = 0.353), 500 m (P = 0.362); 1000 m (P = 0.349), and 1500 m (P = 0.341).

Some researchers³ have found that any potential effects on mixing height caused by large bodies of water “may reach more than 30 km inland.” This finding supports ADEQ’s finding of no difference in mixing heights on a given day and time between the 40 km grid cell and the 12 km grid cell that includes the Allegan, MI monitor, because the Allegan, MI monitor is within 30 km of Lake Michigan.⁴

No changes to the Proposed SIP pursuant to this comment are necessary.

Comment 12:

EPA points out that Arkansas’s proposed conclusion regarding the states’ share of emission reductions obligations is not necessarily prohibited by statute, but is also not mandated. EPA cites to the D.C. Circuit’s decision in *EME Homer City Generation, LP v EPA*, 696 F.3d 7 (2012), which held that upwind emission reductions obligations should be allocated in proportion to the size of the upwind states’ contribution, that was overturned by Supreme Court in 2014. *EME Homer City Generation, L.P.*, 572 U.S. 489 (2014). The Supreme Court held that the statute does not require a particular allocation method and upheld EPA’s methodology in CSAPR.

Response 12:

ADEQ agrees with EPA that the Supreme Court’s held that the “Good Neighbor Provision does not dictate the particular allocation of emission among contributing states.” *E.P.A. v. EME Homer City Generation, L.P.*, 572 U.S. 489, 518 (2014). However, the Supreme Court did consider the reasonableness of the EPA approach, which was embodied in the Transport Rule in that case. The Court concluded that EPA’s approach, which “considered both the magnitude of the upwind States’ contributions and the cost associated with eliminating them”, was reasonable.

Obligated to eliminate those amounts of ozone that contribute to nonattainment or interfere with maintenance of the NAAQS in downwind States, ADEQ must decide how to determine the Arkansas contribution in the context of multiple upwind states potentially contributing to a single monitoring site’s nonattainment status. Similar to EPA in the context of the Transport Rule,

³ E. Wendell Hewson & Lars E. Olsson (1967) Lake Effects on Air Pollution Dispersion, *Journal of the Air Pollution Control Association*, 17:11, 757-761.

⁴ The Allegan monitor is 5 km east of Lake Michigan.

ADEQ has determined that the magnitude of the Arkansas contribution, both in relation to other contributing states and in absolute magnitude, is a reasonable approach. For example, ADEQ notes “that 0.01 ppb is two orders of magnitude lower than the lowest significant digit reported for the 2015 ozone NAAQS.” Similar to EPA’s consideration of costs, ADEQ also concludes that it reasonable to consider costs associated with certain potential reductions and considers those costs on pages 94 through 103 in section I.C.3. Cost Analysis of NO_x Emission Reductions.

In the case of the Transport Rule, EPA proposed unit-specific allowance allocations to be made on the basis of each unit receiving its proportional share of a state budget based on that unit’s share of state emissions assumed in that budget. The EPA approach focused on a proportional allocation at the unit level. ADEQ does not have the regulatory authority to prescribe an inter-state trading program focused on the unit level and faces a decision regarding state-level responsibility. More specifically, ADEQ is facing the decision of how to allocate responsibility in relation to other states that may have a substantially higher impact on downwind monitors. In this context, ADEQ has determined that it is reasonable to allocate its own impact proportionally at the state level in a manner not unlike the unit-level proportional allocation that EPA used in the case of the Transport Rule. Whether at the unit level or the state level, the concept of proportionality is a reasonable method of determining responsibility for reductions.

Comment 13:

EPA questions why Arkansas concludes that the state’s share of the downwind air quality problem is sufficiently small as to be “two orders of magnitude lower” than the lowest significant digit reported for the 2015 Ozone NAAQS. EPA asks Arkansas to explain the state’s rationale for why it is appropriate to consider (a) Arkansas’s proportional impact relative to other upwind states and (b) only a fraction of the total Arkansas contribution when modeling indicates Arkansas’ total impact is larger.

Response 13:

Arkansas’s proportional impact relative to other upwind states is a reasonable and relevant factor to consider in determining its own obligation under the Good Neighbor provision. As discussed above in Response 12, this approach is analogous to the one EPA chose and that the Supreme

Court upheld in *Homer City* in certain key aspects: (1) consideration of the magnitude of reductions, (2) consideration of costs, and (3) the use of concept of proportionality to allocate responsibility for potential reductions (whether at the unit level in the Transport Rule or by State in the case of this Transport SIP).

The proportional impact relative to other states is reasonable for ADEQ to other upwind states is reasonable for Arkansas to consider for reasons that are best illustrated by two examples. If Arkansas has a much smaller impact relative to another state such as Illinois on a monitor in a state such as Michigan, then emission reductions in Arkansas would have a much smaller absolute impact than those states with a larger impact at a monitor in Michigan. If Arkansas and Illinois reduced emissions by the same absolute amounts, then the downwind impact from reducing emissions in Arkansas would simply be less effective than reducing emissions in Illinois in reducing concentrations at the Michigan monitor. In other words, achieving the same impact at a specific downwind monitor in Michigan would require substantially greater reductions and greater costs for Arkansas than it would for Illinois for example to achieve the same reductions at the downwind monitor.

In addition, upwind states are not obligated to reduce their emissions such that their impact on all out of state receptors is zero. Instead, upwind states must not interfere with attainment or maintenance of the NAAQS. Therefore, it is reasonable and appropriate to consider the degree to which ambient air concentrations of ozone are projected to exceed the level of the NAAQS.

ADEQ defines the projected “downwind air quality problem” to be the amount by which the average and/or maximum design value for Allegan exceeds the level of the NAAQS. For the Allegan Michigan monitor, the projected 2023 average design value is below the NAAQS and the projected 2023 maximum design value is above the NAAQS. Therefore, the Allegan Michigan monitor is projected to be a maintenance monitor. However, some emission reductions from upwind states may help ensure that the monitor attains and maintains the NAAQS as projected. ADEQ calculated the fraction attributable to Arkansas of the amount by which the Allegan Michigan monitor 2023 projected maximum design value exceeds the level of the NAAQS to determine whether reducing Arkansas’s share of the “downwind air quality problem” would be meaningful. Based on ADEQ’s analysis, proportionate share of the “downwind air quality problem” is 0.01 ppb. The fact that this value is two orders of magnitude lower than the

lowest significant digit reported for the 2015 ozone NAAQS illustrates that Arkansas's share of the "downwind air quality problem" is not meaningful.

ADEQ will revise the Proposed SIP to add additional explanation of Arkansas's proportional share of the "downwind air quality problem" consistent with this response.

Comment 14:

EPA asks that Arkansas more fully explain how the comparative analysis of emissions trends in states linked to the Allegan County, MI monitor informs Arkansas's conclusions regarding the Allegan County, MI monitor and Arkansas's good neighbor obligation.

Response 14:

ADEQ intends the comparative analysis of emissions trends in states linked to the Allegan County, MI monitor to be evidence that supports EPA's conclusions based on their photochemical modeling that Allegan County, MI will be a maintenance receptor by 2023. ADEQ notes that there is a consistent trend in NO_x emissions reductions in the two states (Illinois and Indiana) with the largest modeled contributions to 2023 projected design values in Allegan County, MI. ADEQ discusses this in more detail on pages 66 and 67 of the Proposed SIP.

No changes are necessary to the Proposed SIP pursuant to this comment.

Comment 15:

EPA suggests adding the most recent ozone-season emissions in Table 8 of the Proposed SIP, and adding actual emission rates for the sources to the table along with the most stringent NO_x emission rate limit that applies to that unit, if any. EPA asserts that this will help Arkansas speak to the current operation of existing low NO_x burners (LNB) and selective catalytic reduction (SCR), as well as their future emission potential. EPA suggests that such an explanation is useful for demonstrating no risk of emission reductions being impermanent. Furthermore, if Arkansas determines that there is some risk of emissions increases at the units in Table 8, then the requested additional data could be used as grounds to discuss the state's approach to ensure reductions through enforceability of current emission levels.

Response 15:

Table 8 of the Proposed SIP includes the top ten Arkansas NOx elevated point sources for 2016, which includes both EGUs and non-EGUs. At the time of the proposal, 2016 was the most recent year that included emissions for all facilities listed in Table 8. The non-EGU sources in Table 8, Ash Grove Cement Company and Georgia-Pacific LLC — Crossett Paper, do not have separate ozone-season emission rates that could be added to the SIP. The most recent ozone-season emission rates for the EGUs were already included in Table 10 (page 91) of the Proposed SIP.

ADEQ will amend Table 8 as follows to reflect permitted emission rates as well as NOx control technologies employed at each elevated point source.

Source	2016 NOx Actual Emissions (tons)	Permitted Emission Rates (Potential to Emit)		NOx Control Technologies
		Pounds per Hour	Tons per Year	
White Bluff Unit 2	5,100	6090	26.674.2	Low NOx Burners with Over-Fire Air ⁵
Independence Unit 1	4,594	6090	26.674.2	Low NOx Burners with Over-Fire Air ⁶
Independence Unit 2	4,910	6090	26.674.2	Low NOx Burners with Over-Fire Air ⁷
White Bluff Unit 1	4,619	6090	2674.2	Low NOx Burners with Over-Fire Air ⁸
Flint Creek Boiler	3,055	-	5733.7	Low NOx Burners with Over-Fire Air ⁹
Plum Point Energy Station Unit 1 Boiler	1,750	602	2635	SCR, Low NOx Burners with Separated Over Fire Air ¹⁰

⁵ Permit # 0263-AOP-R14

⁶ Permit # 0449-AOP-R14

⁷ Permit # 0449-AOP-R14

⁸ Permit # 0263-AOP-R14

⁹ Permit # 0276-AOP-R8

Ash Grove Cement Company	829	685.9	2978.6	SNCR operated continuously on kiln component (1.5 lbs NOx/ton clinker) Emergency Generator operations restricted to 500 hrs/year Portable Crusher has an hourly limit is for a combination of NOx and VOC per EPA Tier III emission standards
Georgia-Pacific LLC – Crossett Paper (8R Recovery Furnace)	744	276	1208.6	Combustion control pursuant to BACT analysis. Staged Combustion with Four levels of combustion air ¹¹
John W Turk Power Plant (Main Boiler)	688	420.0	1314.0	Low-NOx Burners with Over-Fire air, Selective Catalytic Reduction ¹²
Domtar Ashdown Mill (No. 3 Recovery Boiler)	589	270	1182.6	None identified in permit ¹³

Figure 51 (Annual EGU NOx Emissions for 2008–2017) and Figure 52 (Total Ozone Season EGU NOx Emissions for 2008–2017) in the Proposed SIP provide trend data as a predictor of these EGU’s future emissions, which is a more reliable predictor of future emissions than permitted potential to emit limits that have not been achieved in years. Furthermore, ADEQ anticipates further emission reductions from four EGU units listed in the table above. Entergy-

¹⁰ Permit # 1995-AOP-R9

¹¹ 0597-AOP-R18

https://cfpub.epa.gov/rblc/index.cfm?action=PermitDetail.PollutantInfo&Facility_ID=26915&Process_ID=106897&Pollutant_ID=149&Per_Control_Equipment_Id=147682

¹² Permit # 2123-AOP-R7

¹³ Permit # 0287-AOP-R21

owned White Bluff units 1 and 2, Arkansas' first and fourth largest NO_x emitting elevated point sources based on 2016 data, have an enforceable requirement to cease coal-fired operations by the end of the year 2028. Entergy has also included in their integrated review plans filed with the Arkansas Public Service Commission plans to cease coal-fired operations at both Independence units by the end of 2030.¹⁴

See Response 19 for further discussion of the NO_x emissions rates, sources/units, and reductions potentials.

Comment 16:

EPA suggests that Arkansas speak to the emission rate, potential reduction, and corresponding \$/ton cost for potential additional EGU mitigation technologies, such as state-of-the-art combustion control installation.

Response 16:

In the Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS, EPA considered costs associated with optimizing existing SCRs, turning on idled existing SCRs, installing new SCRs, installing state-of-the-art NO_x combustion controls, turning on idled existing SNCRs and installing new SNCRs. In its cost analyses using EPA's cost calculation spreadsheet tools, ADEQ considered facilities that did not already have post-combustion controls (SCR and SNCR), while state-of-the-art combustion controls (low-NO_x burners and over-fire air) were already installed on all coal-fueled EGUs considered in the analyses. In addition, Arkansas' Plum Point Energy Station and John W. Turk, Jr. Power Plant both already operate SCRs and were not included in the cost analyses. Therefore, ADEQ evaluated emission rates, potential reductions, and corresponding costs for the installation of new SCRs and SNCRs for the remaining EGUs evaluated in the Proposed SIP.

The NO_x emissions rates, sources/units, and reductions potentials are further discussed in Response 19.

Comment 17:

¹⁴ https://www.entergy-arkansas.com/userfiles/content/IRP/2018/07-016-U_60_1.pdf

EPA questions how NO_x removed was calculated in Table 10. Were different efficiencies used in Table 10 than were used in Table 9? Table 10 appears to have a superscript indicative of a footnote in the second to last column header; however, there is no accompanying explanation in the footer. EPA encourages Arkansas to verify the ozone-season \$/ton calculations.

Response 17:

ADEQ re-examined the \$/ton cost and NO_x removal for ozone season cases per EPA's suggestion. ADEQ identified errors in the mentioned tables and footnotes as discussed below. Tables 10–12 contain typographical errors and some efficiency assumptions were omitted.

ADEQ identified typographic errors for the cost-effectiveness and amount of NO_x removed for Pine Bluff Energy Center and Thomas Fitzhugh in Table 9 and for Flint Creek in Table 11. ADEQ will also add more accurate descriptions for the “NO_x control(s) installed” column of these tables.

Consistent with EPA's Menu of Control Measures, ADEQ used a SCR efficiency of 90% for coal-fired power plants and 80% for natural gas-fired powered plants, as well as a SNCR efficiency of 35% for Flint Creek, Independence and White Bluff and an efficiency of 50% for Lake Catherine, Pine Bluff, and Thomas Fitzhugh for both annual and ozone season scenarios. ADEQ will correct the tables where necessary and added footnotes that identify the efficiencies used and the reference for the efficiencies.

To the description of the cost-effectiveness methods, ADEQ will add the sentence: “For SCR/SNCR operating time, ADEQ used the same number of SCR/SNCR operating days and boiler operating days in the annual scenario, but revised the SCR/SNCR operating days to May 1 through September 30 for the ozone season scenario.”

The superscript in Table 10 was a typographical error will be removed.

These errors will be corrected and further explanation of efficiency assumptions will be added in final SIP.

Comment 18:

EPA suggests that additional justification be provided for why the high costs of post-combustion control retrofits demonstrated in the Proposed SIP would be unreasonable.

Response 18:

Although ADEQ did not draw a bright line for cost-effectiveness in the Proposed SIP, ADEQ did compare the cost-effectiveness estimates for post-combustion controls to the uniform EGU NOx cost threshold EPA used for determining budgets under CSAPR. The comparison illustrates that the cost to install such controls would be considerably higher than the uniform cost that EPA thought was reasonable for addressing the 2008 ozone NAAQS. This is described on pages 93, 94, and 95 of the Proposed SIP.

No changes are necessary to the Proposed SIP pursuant to this comment.

Comment 19:

EPA encourages Arkansas to elaborate on its assessment of all NOx emitting non-EGU facilities, including their NOx emissions, sources/units, reduction potential, and cost of any potential control options. EPA asserts that showing that no further cost-effective reductions are available for non-EGU sources, if that is the case, will bolster the strength/approvability of the approval.

Response 19:

ADEQ describes its rationale for focusing on EGUs on page 89 of the Proposed SIP. In reviewing this data in response to comments, ADEQ identified that Table 8 only listed nine elevated point sources instead of ten. Therefore, ADEQ will add the tenth highest elevated point source to the table. Out of the top ten NOx emitting elevated point sources in the State, three were located at non-EGU facilities: Ash Grove Cement Company, Georgia-Pacific LLC—Crossett Paper, Domtar Ashdown Mill.

ADEQ notes that Georgia-Pacific LLC has recently announced a permanent shutdown of equipment and processes supporting bleached board operations at the Crossett Paper facility in October of 2019.¹⁵

In the Proposed SIP, ADEQ noted the relative emissions of these three non-EGU elevated point sources as compared to the others on the list. The smaller emissions relative to the other top emitters in and of itself is a well-reasoned basis for not focusing further analysis on these sources or any other elevated point sources with even lower emissions. ADEQ notes that EPA, in its interstate transport federal implementation plans for the 1997 ozone NAAQS and 2008 ozone NAAQS drew a similar conclusion regarding which source category to evaluate for emission reductions to address interstate transport.

ADEQ will revise Table 8 and the discussion below on page 89 of the Proposed SIP to include information about permitted emission rates and control technologies employed at the elevated point sources.

Comment 20:

EPA notes that Arkansas EGUs regularly emit above the CSAPR budget level using the allowances below the \$1400/ton price level. The EPA states that ADEQ may want to comment on whether additional emission limitations are needed or appropriate to discourage regular seasonal operation above the budget level.

Response 20:

ADEQ does not find that additional emission limitations are needed or appropriate to discourage regular seasonal operation above the budget level so long as Arkansas EGUs purchase enough allowances (meaning emission reductions are occurring in other states) to ensure compliance with CSAPR requirements. ADEQ included the CSAPR budget level in the Proposed SIP as a reference point for comparing the anticipated costs of controls from installation of SCR and SNCR on EGUs in Arkansas.

Comment 21:

¹⁵ <https://www.gp.com/news/2019/06/georgia-pacific-bleach-board-and-particleboard-operations>

EPA suggests that ADEQ add a statement on page 105–106 of the Proposed SIP that clarifies that “in addition to having demonstrated that emissions within Arkansas do not interfere with measures required to be included in other states’ Regional Haze plans; Arkansas will have a fully approved Regional Haze program once these two submittals are finalized and approved by EPA. A fully approved regional haze plan further ensures that emissions from Arkansas sources are not interfering with measures required to be included in other air agencies’ plans to protect visibility.”

Response 21:

ADEQ will add a statement consistent with EPA’s suggestion.