UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
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April 28, 2022

Ms. Erika Droke
Arkansas Department of Energy and Environment
5301 Northshore Drive
North Little Rock, Arkansas 72118
droke@adeq.state.ar.us

RE: Proposed Regional Haze SIP Revision for the Second Planning Period

Dear Ms. Droke:

Thank you for the opportunity to review the proposed Arkansas Regional Haze State Implementation Plan (SIP) Revision for the second planning period. We appreciate Arkansas' continued work to address the regional haze requirements. We have reviewed the proposed SIP revision and are providing our comments and recommendations for your consideration.

If you have any questions or comments regarding this letter, please contact me at (214) 665-9793 or Dayana Medina of my staff at (214) 665-7241.

Sincerely,

MICHAEL FELDMAN

Digitally signed by MICHAEL FELDMAN
Date: 2022.04.28 10:50:11 -05'00'

Michael Feldman, Ph.D.
Section Chief
SO2 and Regional Haze Section (ARSH)

Enclosure

cc: airplancomments@adeq.state.ar.us

EPA Comments
On Proposed Arkansas RH SIP for Second Planning Period

Reasonable Progress Analysis

1. For each of the sources selected for evaluation in the four-factor analysis, and for each emission unit evaluated, we recommend that the SIP narrative identify existing emission limits for SO2 and NOx in addition to identifying where those limits are located (e.g., in the SIP, in a federal and/or state permit, or in a consent decree). It appears that ADEQ has done this for some, but not all sources evaluated in the four-factor analysis. In addition, we recommend that the SIP narrative discuss how these existing limits compare to the baseline emissions used in the four-factor analyses.

2. If ADEQ determines that no additional (i.e., new) measures are necessary to make reasonable progress for a particular source, the state must then determine whether the source's existing measures (for the pollutant(s) for which no new measures are being required) are necessary to make reasonable progress. *See* Section 4 (pages 8 – 12) of July 8, 2021 "Clarifications Regarding Regional Haze State Implementation Plans for the Second Implementation Period" Memorandum by EPA for information on determining when a source's existing measures are necessary to make reasonable progress (Clarifications Memo, herein). Generally, a source's existing measures are needed to prevent future emission increases and are thus needed to make reasonable progress. If ADEQ concludes that the existing controls at a selected source are necessary to make reasonable progress, ADEQ must adopt emissions limits based on those controls as part of its long-term strategy for the second planning period and include those limits in its SIP (to the extent they do not already exist in the SIP).[1]

   We recognize that it may take time to adopt additional emission limits identified as necessary to make reasonable progress and ensure implementation of existing measures. If Arkansas determines additional emission limits are necessary, one possibility might be to submit the SIP with a specific commitment to adopt the identified necessary measures into the SIP by a date certain. This approach might allow EPA to consider a conditional approval. We encourage ADEQ to discuss the conditions under which this option may be an appropriate path with EPA Region 6.

   Alternatively, if ADEQ can demonstrate that the source will continue to implement its existing measures and will not increase its emission rate, it may be reasonable for the State to conclude that the existing controls are not necessary to make reasonable progress. Such a demonstration should be supported by documentation, such as the data and analysis

[1] We note that the proposed SIP does not include any new SO2 or NOx control measures for the Domtar Ashdown Mill No. 3 Power Boiler, No. 2 Recovery Boiler, and No. 3 Recovery Boiler, and there are no existing emission limits for these units in the Arkansas SIP. Similarly, the proposed SIP does not include any new NOx control measures for FutureFuel's three boilers, and there are no existing NOx emission limits for these units in the Arkansas SIP.

described in the Clarifications Memo. In such case, the emission limits may not need to be adopted into the long-term strategy and SIP. We recommend that ADEQ clearly state its determination for each source evaluated in the four-factor analysis and explain whether it is including either existing or new emission limits for each source in the long-term strategy and SIP (or whether emission limits already exist in the SIP). *See* Guidance on Regional Haze State Implementation Plans for the Second Implementation Period at 43 and Clarifications Memo at 8-9.

3. We recommend that for each selected source, ADEQ consider whether the source can achieve, or is already achieving, a lower emission rate using its existing measures. If a source is capable of, or is already, operating at a lower emission rate than assumed either: (1) as the basis for not conducting a full four-factor analysis; or (2) as the baseline for the four-factor analysis; then that lower rate should be analyzed as a potential control measure. Similarly, we recommend that ADEQ consider whether equipment upgrades might be reasonable. If either more efficient use of existing measures or equipment upgrades are potentially reasonable control options, we recommend that ADEQ either evaluate these in the four-factor analysis or explain why it is reasonable to forgo doing so. *See* Clarifications Memo at 5, 7.

White Bluff Power Plant

4. The discussion in section V.C.2 of the proposed SIP explains that ADEQ considers the enforceable requirement to cease coal-fired operations at White Bluff by December 31, 2028, which is required under an Administrative Order that was approved into the SIP as a source-specific SIP requirement for the first planning period, to be sufficient reason not to perform a four-factor analysis for this source in the second planning period. While this approach is consistent with our guidance, to help strengthen the SIP, we encourage ADEQ to also consider evaluating certain SO2 controls that may be potentially cost-effective in the interim, even after taking into account the source's shortened remaining useful life, the time required for EPA to both review and act on the SIP, and the reasonable time required for the source to come into compliance.[2] For example, the capital costs associated with dry sorbent injection (DSI) are relatively low (compared to scrubber controls) and switching to coal with a lower sulfur content than currently used (to the extent lower sulfur coal is available) could be potentially cost effective.

FutureFuel Chemical Company

5. ADEQ's summary of the four-factor analysis for FutureFuel in section V.C.4 of the proposed SIP states that "FutureFuel explains that low NOx burner systems are not available and have not been adequately demonstrated for stoker boiler systems similar to the three coal-fired

[2] Guidance on Regional Haze State Implementation Plans for the Second Implementation Period at 20 and Clarifications Memo at 10.

boilers operated at FutureFuel. Therefore, low NOx burners are technically infeasible." Please provide further explanation regarding this statement, including what type of review was conducted in attempt to identify any existing low NOx burner controls on similar boiler types. It appears that footnote 49 may have been intended to provide a citation in support of the statement, but the citation actually refers to SNCR and SCR (not low NOx burners).

6. The long-term strategy in the proposed SIP includes the selection of 2% sulfur coal (and an associated SO2 emission limit of 3.9 lb/MMBtu) for the three boilers at FutureFuel, which has a cost-effective value of $2,171/ton. However, switching to 1.5% sulfur coal would result in greater SO2 reduction compared to switching to 2% sulfur coal (44% control efficiency compared to 27% control efficiency) and is estimated to cost $2,774/ton, which is also below ADEQ's selected cost-effective threshold for industrial boilers. Additionally, a spray dryer absorber (SDA) would result in 92% control efficiency and is estimated to cost slightly above ADEQ's cost-effective threshold (see more detailed comments on the cost threshold elsewhere in this document). Further explanation is needed on why more stringent controls (i.e., 1.5% sulfur coal and SDA) were not selected as measures that are necessary for reasonable progress at FutureFuel. The SIP narrative includes the statement that "The incremental cost-effectiveness between two percent sulfur coal and one and one-half percent sulfur coal is above DEQ's threshold for industrial boilers." To the extent this is part of ADEQ's rationale for dismissing 1.5% sulfur coal, we note that the $3,328/ton cost threshold selected by ADEQ is an *average* cost-effectiveness threshold rather than an *incremental* cost-effectiveness threshold. Therefore, this would not be a reasonable argument for dismissing 1.5% sulfur coal.

7. The SIP narrative should provide additional discussion on how the application of the cost-effective threshold selected by ADEQ is reasonable as it relates to the FutureFuel boilers evaluated in the four factor analysis, especially considering that SDA controls are estimated to cost $4,303/ton, which is not much higher than ADEQ's selected threshold of $3,328/ton for industrial boilers.

8. Additional discussion should be added to either section V.C.4 or section VI.C of the proposed SIP explaining in more detail how ADEQ calculated the SO2 emission limit of 3.9 lb/MMBtu associated with selection of 2% sulfur coal for the three boilers at FutureFuel. Appendix G-5 of the proposed SIP is an Excel spreadsheet that contains the data and calculations used to derive the 3.9 lb/MMBtu emission limit, but this spreadsheet appears to calculate an SO2 emission limit of 3.7 lb/MMBtu. The proposed SIP should explain the reasoning for the difference between the two numbers.

9. The draft Administrative Order for FutureFuel indicates that compliance with the proposed SO2 emission limit of 3.9 lb/MMBtu would be determined by calculating the daily SO2 emission rate by summing the pounds of sulfur fed to all three coal-fired boilers, multiplying the total sulfur by an SO2 conversion factor of 1.997, and then dividing the calculated SO2 emissions by the sum of the heat content from fuels burned across the three boilers. The SIP

narrative should explain the reasoning for determining compliance with the SO2 emission limit across all three boilers rather than for each boiler individually.

Domtar Ashdown Mill

10. The SIP narrative should provide additional discussion on how the application of the cost-effective threshold selected by ADEQ is reasonable as it relates to the Domtar boilers evaluated in the four-factor analysis, especially considering that no new controls or improvements to existing controls were selected for any of the boilers and considering that increased reagent usage at the existing scrubbers for the No. 2 Power Boiler is estimated to cost $3,590/ton, which is only slightly higher than ADEQ's selected cost threshold of $3,328/ton for industrial boilers. We provide additional comments related to ADEQ's selection of the cost-effective threshold elsewhere in this document.

11. As ADEQ is aware, EPA recently took final action to approve SO2 and NOx emission limits for the No. 2 Power Boiler in the Arkansas Regional Haze Phase III SIP Revision for the first planning period. ADEQ should consider these recently approved emission limits in establishing the SO2 and NOx baselines for the No. 2 Power Boiler in the four-factor analysis for the second planning period. EPA's guidance on regional haze SIP development for the second planning period explains that "Enforceable requirements are one reasonable basis for projecting a change in operating parameters and thus emissions" when selecting the baseline for the four-factor analysis. *See* Guidance on Regional Haze State Implementation Plans for the Second Implementation Period at 29.

12. As discussed above, if ADEQ determines that no additional (i.e., new) measures are necessary to make reasonable progress for Domtar, the state must then determine whether the source's existing measures (for the pollutant(s) for which no new measures are being required) are necessary to make reasonable progress.

Flint Creek Power Plant

13. The SIP narrative should provide additional discussion on how the application of the cost-effective threshold selected by ADEQ is reasonable as it relates to Flint Creek Boiler 1, especially considering no further controls were selected and that SNCR is estimated to cost $5,771/ton, which is not much higher than ADEQ's selected threshold of $5,086/ton for EGU boilers. We provide additional comments related to ADEQ's selection of the cost-effective elsewhere in this document.

Selected Cost-Threshold

14. We recommend that ADEQ consider additional analysis and justification for selecting a specific $/ton cost threshold. ADEQ compiled dollar per ton ($/ton) values from regional

haze controls required in the first planning period, escalated these to 2019 dollars using the Chemical Engineering Plant Cost Index (CEPCI), and selected the 98th percentile $/ton values for each emission unit type as the cost thresholds for reasonable progress in the second planning period. ADEQ's should consider whether the selection of the 98th percentile $/ton value from the first planning period is an appropriate approach. ADEQ indicates this approach is meant to "eliminate potential outliers that may have occurred once or twice while ensuring DEQ does not eliminate from further consideration cost/ton values that have been incurred multiple times at sources of a similar type."

We remind ADEQ that the first planning period involved the evaluation of BART controls at sources that were older and mostly uncontrolled. Considering the iterative nature of the regional haze program, it is reasonable to expect that following the installation of controls at the largest sources during the first planning period, sources with lower emissions and thus potentially less cost-effective controls (i.e., higher $/ton figures) will likely be pulled in for evaluation in the second and subsequent planning periods. It may be a more appropriate approach to select cost thresholds for the second planning that are higher than the maximum $/ton value (after escalating to 2019 dollars) of controls required in the first planning period. Moreover, even during the first planning period, other states and EPA reasonably imposed controls with significantly higher $/ton costs than Arkansas, further suggesting that Arkansas has significant discretion to impose controls with higher costs. The approach taken by ADEQ in the proposed SIP imposes a less stringent cost-effectiveness threshold in the second planning period (i.e., the 98th percentile) relative to the first period (100th percentile). Ultimately, if a state applies a threshold for cost/ton to evaluate control measures, the selected cost threshold should be justified based on a review of the sources selected for evaluation and the available controls for this planning period.

With regard to Arkansas' application of different cost thresholds to different types of sources, Arkansas must provide a reasoned justification for this approach. ADEQ states that its decision to select different cost thresholds for different emission types is reasonable because certain aspects of the four factors have different implications for different facilities. Specifically, ADEQ notes there is a difference in how the costs of compliance are financed and explains that state statute allows investor-owned EGUs in Arkansas to pass on the cost of compliance to ratepayers while the ability of industrial sources to pass on the costs of compliance to consumers is a matter of the market for the goods or services the facility provides. However, this is also often the case in many other states, and these states are not applying different cost thresholds to different types of sources. We recommend that ADEQ discuss whether there are any circumstances that differentiate Arkansas from other states with regard to this issue and that would provide further support for Arkansas' decision to apply different cost thresholds to different types of sources.

The mere fact that some categories of sources complied with first planning period BART requirements with relatively more cost-effective controls does not mean that those categories of sources can per se reject relatively more expensive controls in the second planning period,

at least absent further explanation. For instance, Arkansas calculated the 98th percentile for EGU Boilers to be $5086/ton and Industrial Boilers to be $3328/ton for both SO2 and NOx. While these numbers reflect how states generally treated these sources in the first planning period (i.e., states generally required relatively more expensive controls at EGU Boilers than Industrial Boilers), this does not mean that Arkansas is automatically entitled to continue this approach in the second planning period. Since industrial boilers continue to have relatively more cost-effective control options available, Arkansas should consider increasing the cost threshold for industrial boilers. Alternatively, Arkansas should explain why continuing to use the selected cost threshold for industrial boilers remains appropriate, notwithstanding the iterative nature of the regional haze planning process which contemplates increasingly stringent controls over time.

We note that by taking the above comments into account, Arkansas could considerably strengthen its long-term strategy and secure significant additional emissions reductions and visibility benefits. For instance, were Arkansas to increase the cost effectiveness threshold for industrial boilers to the maximum aggregate cost effectiveness threshold in the first planning period ($5193/ton), then additional controls would be identified as cost effective. These include SDA at FutureFuel's three boilers ($4,303/ton) and increased scrubber reagent use at Domtar No. 2 Power Boiler ($3,590/ton).

Administrative Order for Independence Power Plant

15. We appreciate Arkansas' work in addressing the regional haze requirements and also acknowledge the large emission reductions that are anticipated to take place in Arkansas as a result of the planned cessation of coal combustion at White Bluff Units 1 and 2 and Independence Units 1 and 2 by December 31, 2028 and December 31, 2030, respectively. Arkansas incorporated the requirement to cease coal combustion at White Bluff Units 1 and 2 in the Regional Haze SIP for the first planning period and the requirement is federally enforceable and permanent. We applaud Arkansas' decision to propose to incorporate the requirement to cease coal combustion at Independence Units 1 and 2 as a source-specific SIP requirement in the Regional Haze SIP for the second planning period and we agree that Arkansas' approach is consistent with our guidance, which provides that "To the extent such a requirement is being relied upon for a reasonable progress determination, the measures would need to be included in the SIP and/or be federally enforceable." *See* Guidance on Regional Haze State Implementation Plans for the Second Implementation Period at 33-34 and Clarifications Memo at 10. White Bluff Units 1 and 2 and Independence Units 1 and 2 are the two largest SO2 and NOx point sources in the state and together make up approximately 90% of the State's SO2 emissions from EGUs. The elimination of SO2 emissions at these four units represents a significant reduction in visibility impairing pollutants in Arkansas and will likely result in visibility improvements in Arkansas' Class I areas and areas in other states that are anticipated to be affected by emissions from Arkansas.

16. Provision number 5 of the draft Administrative Order for the Entergy Independence Power Plant includes the following sentence: "Any attempt to transfer ownership or operation of the Entergy facility without complying with this Paragraph constitutes a violation of this AO." For greater clarity, we recommend that this sentence be revised as follows: "Any attempt to transfer ownership or operation of the Entergy Independence facility without complying with this Paragraph constitutes a violation of this AO."

Five-Year Progress Report

17. In order to be more informative, we recommend that the entry for Lake Catherine in Table IV-1 in the "Chapter IV: Progress Report" section of the SIP narrative be revised to note that there is a prohibition on burning fuel oil at Entergy Lake Catherine Unit 4 until SO2 and PM BART determinations for the fuel oil firing scenario are approved into the SIP by EPA. As ADEQ is aware, this prohibition on burning fuel oil at Unit 4 was a requirement that was made state and federally enforceable through a source-specific Administrative Order that was submitted as part of a regional haze SIP revision for the first planning period.

18. We recommend that annual NOx emissions data for 2019 for Arkansas sources controlled in the first planning period be added to Figure IV-2 in the "Chapter IV: Progress Report" section of the SIP narrative. Figures IV-1 and IV-3 included SO2 and PM2.5 annual emissions data for the years 2011-2019 for Arkansas sources controlled in the first planning period, respectively. It is not clear why Figure IV-2 shows NOx annual emissions data for the years 2011-2018, leaving out 2019 data.

Environmental Justice

18. As discussed in the Clarifications Memo, states have discretion to consider environmental justice in determining the measures that are necessary to make reasonable progress and formulating their long-term strategies, as long as such consideration is reasonable and not contrary to the regional haze requirements. *See* Clarifications Memo at 16. We encourage Arkansas to consider whether there may be equity and environmental justice impacts in the development of its regional haze strategy for the second planning period. *Id.* We also encourage Arkansas to describe any outreach to communities with environmental justice concerns or underserved communities that the State conducted, the opportunities Arkansas has provided for communities to give feedback on its proposed strategy, and the consideration Arkansas gave environmental justice in its technical analyses.

Energy Efficiency Program

19. We appreciate the implementation of energy efficiency programs by Arkansas investor-owned electric utilities. As shown in Tables VI-1 and VI-2 of "Chapter VI: Long-Term

Strategy for Planning Period II" of the proposed SIP, the implementation of these energy efficiency programs is projected to result in emission reductions of haze causing pollutants (SO2, NOx, and PM2.5) as a result of avoided generation in the second planning period. Additionally, it can reasonably be assumed that the implementation of these energy efficiency programs will also result in some reduction of CO2 emissions as a result of avoided generation and will thus result in climate change benefits. We applaud efforts on behalf of Arkansas and Arkansas investor-owned electric utilities in the implementation of these energy efficiency programs.

FLM Consultation

20. The Regional Haze Rule at 40 CFR 51.308(i)(4) requires that the plan (or plan revision) provide procedures for continuing consultation between the State and Federal Land Manager on the implementation of the visibility protection program. The proposed SIP revision does not appear to specifically address this requirement. The final SIP submittal must address this requirement at 40 CFR 51.308(i)(4).