

APPENDIX H

Federal Land Manager Comments and Responses



File Code: 2580

Date: November 30, 2021

Kendal Stegmann
Director, Air Quality Division
Oklahoma Department of Environmental Quality
707 North Robinson, P.O. Box 1677
Oklahoma City, OK 73101-1677

Dear Ms. Stegmann:

On September 30, 2021, the State of Oklahoma submitted a draft Regional Haze State Implementation Plan describing your proposal to continue improving air quality by reducing regional haze impacts at mandatory Class I areas across the region. We appreciate the opportunity to work closely with your State through the initial evaluation, development, and subsequent review of this plan. Cooperative efforts such as these ensure that, together, we will continue to make progress toward the Clean Air Act's goal of natural visibility conditions at our Class I areas.

This letter acknowledges that the U.S. Department of Agriculture, U.S. Forest Service, has received and conducted a substantive review of your proposed Regional Haze State Implementation Plan. This review satisfies your requirements under the federal regulations 40 C.F.R. § 51.308(i)(2). Please note, however, that only the U.S. Environmental Protection Agency (EPA) can make a final determination about the document's completeness, and therefore, only the EPA has the authority to approve the document.

We have attached comments to this letter based on our review. We look forward to your response required by 40 C.F.R. § 51.308(i)(3). For further information, please contact Melanie Pitrolo (melanie.pitrolo@usda.gov) or Bret Anderson (bret.a.anderson@usda.gov).

Again, we appreciate the opportunity to work closely with the State of Oklahoma. The Forest Service compliments you on your hard work and dedication to significant improvement in our nation's air quality values and visibility.

Sincerely,

/s/ Lori Bell

Lori Bell
Acting Forest Supervisor
Ouachita National Forest

Enclosure



Cc: Melanie Foster, OK DEQ
Margrett Boley, USDA Forest Service
Melanie Pitrolo, USDA Forest Service

Enclosure

USDA Forest Service Technical Comments on Oklahoma Department of Environmental Quality (DEQ) Draft Regional Haze State Implementation Plan (SIP)

We appreciate the opportunity to work with your agency through the initial evaluation, development, and now, subsequent review of this plan. The below are items that are of interest to the USDA Forest Service (FS).

Consideration of NO_x and SO₂ sources

The DEQ segregated NO_x and SO₂ emissions when selecting sources for four-factor analysis (FFA). The USDA Forest Service greatly appreciates this approach as aggregating the contributions of these pollutants may exclude feasible, cost-effective control options for a single pollutant.

Selection threshold

The DEQ implemented two, independent thresholds for facility screening: Q/D (tons of NO_x or SO₂/km) > 5 or an individual source contribution threshold (% EWRT*Q/d) of 0.5%. If a facility met either criteria, it was further screened. This methodology resulted in the selection of 12 facilities for four-factor analysis. The USDA Forest Service finds this to be a reasonable approach and an acceptable number of facilities.

Facilities within Oklahoma modeled to impact Forest Service Class 1 Areas

There is one Class 1 area within Oklahoma (Wichita Mountains) and it is managed by the US Fish and Wildlife Service. The USDA Forest Service has no Class 1 areas within Oklahoma, however, there are three within proximity managed by the agency: Hercules Glades (HEGL), Upper Buffalo (UPBU), and Caney Creek (CACR). The Regional Haze Rule requires each state to develop a long-term strategy that includes the control measures necessary to make reasonable progress at each Class I area outside the state that may be affected by emissions from the state.¹ The USDA Forest Service greatly appreciates that the DEQ assessed facilities both within and outside the state and their impacts on Class 1 areas.

Four factor analysis

Of the facilities chosen for a four-factor analysis, the Forest Service is specifically concerned about Hugo Generating Station (operated and owned by Western Farmers Electric Cooperative). This facility was selected for FFA based on its SO₂ emissions. Using data provided by the Central States Air Resource Agencies (CenSARA), an analysis by the USDA Forest Service indicates this facility (of those within the regulatory jurisdiction of Oklahoma) contributes a **substantial** portion of the visibility impairment occurring at Caney Creek Wilderness. The four-factor analysis conducted by Western Farmers Electric Cooperative analyzed wet flue gas desulfurization (WFGD), dry flue gas sulfurization (DFGD), and dry sorbent injection (DSI) for potential to control SO₂ emissions. Of these technologies, DFGD was identified as possessing the lowest cost-effectiveness at ~ \$8,200 per ton of SO₂. While Oklahoma did

¹ See "Guidance on Regional Haze State Implementation Plans for the Second Implementation Period" (https://www.epa.gov/sites/default/files/2019-08/documents/8-20-2019_-_regional_haze_guidance_final_guidance.pdf)

not explicitly identify a cost-effectiveness threshold, it implicitly considered \$5,000 per ton resulting in no additional controls being recommended for this facility. This threshold appears to be based on controls implemented during the first planning period. Most sources selected for evaluation for controls during the first planning period were very high emitters, often the highest in their state. Over time, it is expected that additional facilities selected for controls have a higher cost-effectiveness value. The USDA Forest Service considers the utilization of the same cost-effectiveness threshold in the second period as that used in the first period inappropriate and requests that Oklahoma keep in mind the iterative nature of the Regional Haze Program. Additionally, the USDA Forest Service requests a more detailed assessment of the facility based on the interest rate (7% vs. the current prime rate of 3.25%²) and the removal efficiencies (87% for DFGD and 91% for WFGD while higher removal efficiencies are possible³). Adjustment of one or more of these inputs could increase the feasibility of control adoption. The USDA Forest Service feels these cost-effectiveness values (notwithstanding the previously identified inputs) are not unreasonable for this planning period, and if implemented, could result in significant visibility progress at nearby USDA Forest Service Class 1 Areas, specifically Caney Creek Wilderness.

Prescribed fire emissions

Fire plays an important role in shaping the vegetation and landscape in OK. Recurring fire has been a part of the landscape for thousands of years. Aggressive fire suppression, coupled with an array of other disturbances (e.g., logging and chestnut blight), has changed the historic composition and structure of the forests. Periodic prescribed burning and other vegetation management can recreate the ecological role of fire in a controlled manner. Fire and fuels management supports a variety of desired conditions and objectives across the Forests (e.g., community protection, hazardous fuels reduction, native ecosystems restoration, historic fire regimes restoration, wildlife openings, and open woodland creation, etc.). The 2017 Regional Haze Rule includes a provision to allow states to adjust the glidepath to account for prescribed fire. The draft OK RH SIP states that Oklahoma added an estimate of visibility impairment from prescribed fires to the estimate of natural conditions to calculate a new 2064 visibility target. The USDA Forest Service greatly appreciates this. Recent data on prescribed fire activity, especially within the USDA Forest Service, show that the number of acres burned in prescribed fires during 2011 were lower than all other recent years. For example, within the southern region of the Forest Service a total of 749,080 acres were treated with prescribed fire in 2011, while the average number of acres treated annually from the years 2007-2019 was 980,422. The 2021 target for treatment by prescribed fire within the USDA Forest Service southern region is well over 1 million acres. Furthermore, the Land Management Plans for each of the southern Forests call for a cumulative total of up to 2.1 million acres per year to be treated with prescribed fire in the future. While prescribed fire is currently a minor contributor to visibility impairment on the 20% most impaired days, the USDA Forest Service would like assurances that Oklahoma DEQ will continue to recognize the important ecological role of prescribed fire and in the future adjust the glidepath to account for prescribed fire emissions accordingly.

² Please see “Cost Estimation: Concepts and Methodology” (https://www.epa.gov/sites/default/files/2017-12/documents/epacmcostestimationmethodchapter_7thedition_2017.pdf)

³ Please see “SO₂ and Acid Gas Controls” (https://www.epa.gov/sites/default/files/2021-05/documents/wet_and_dry_scrubbers_section_5_chapter_1_control_cost_manual_7th_edition.pdf)

Grammar and citations

A minor typo was found indicating four-factor analyses were available in Appendix C. They were found in Appendix D.

June 1, 2022

Lori Bell, Acting Forest Supervisor
Ouachita National Forest
U.S. Department of Agriculture, U.S. Forest Service
P.O. Box 1270
Hot Springs, AR 71902

SUBJECT: Response to Comments on Oklahoma's draft Regional Haze State Implementation Plan

Dear Ms. Bell:

On November 30, 2021, the Oklahoma Department of Environmental Quality (DEQ) received comments from the U.S. Department of Agriculture, U.S. Forest Service regarding Oklahoma's draft Planning Period 2 Regional Haze (RH) State Implementation Plan (SIP). DEQ appreciates the thorough review and thoughtful comments supplied by the Forest Service during the 40 C.F.R. § 51.308(i)(2) Federal Land Manager (FLM) consultation. DEQ has revised the draft RH SIP to address these comments where appropriate. Attached, please find a Summary of Comments and Staff Responses document. This document will be included as an attachment to the Planning Period 2 RH SIP in accordance with 40 C.F.R. § 51.308(i)(3).

The Planning Period 2 RH SIP has been released for public comment as of June 1, 2022 and a public hearing has been scheduled for July 1, 2022. This satisfies the requirement in 40 C.F.R. § 51.308(i)(2) for the consultation to take place no less than 60 days prior to holding any hearing or other public comment opportunity on the Planning Period 2 RH SIP.

DEQ appreciates its relationship with the Forest Service and the other FLMs through this process. Should you have any questions on DEQ's responses or other portions of the Planning Period 2 RH SIP released for public comment, please do not hesitate to contact Melanie Foster, Rules & Planning Section Manager, by email at melanie.foster@deq.ok.gov or by phone at 405-702-4218.

Sincerely,



Kendal Stegmann

Enclosure: Summary of Comments & Staff Responses

cc: Melanie Pitrolo, USDA Forest Service (melanie.pitrolo@usda.gov)
Bret Anderson, USDA Forest Service (bret.a.anderson@usda.gov)
Charles Sams, USDA Forest Service (charles.sams@usda.gov)
Pleasant McNeel, USDA Forest Service (pleasant.mcneel@usda.gov)
Kirsten King, National Park Service (kirsten_king@nps.gov)
Melanie Peters, National Park Service (melanie_peters@nps.gov)
Debra Miller, National Park Service (debra_miller@nps.gov)
Don Shepherd, National Park Service (don_shepherd@nps.gov)
Tim Allen, Fish and Wildlife Service (tim_allen@fws.gov)

DEPARTMENT OF ENVIRONMENTAL QUALITY
SUMMARY OF COMMENTS AND STAFF RESPONSES
FROM FEDERAL LAND MANAGERS REGARDING
OKLAHOMA'S DRAFT REGIONAL HAZE SIP

COMMENTS RECEIVED DURING CONSULTATION
REQUIRED BY 40 C.F.R. § 51.308(i)(2)
SEPTEMBER 30, 2021 THRU NOVEMBER 30, 2021

Written Comments

United States Department of Agriculture, U.S. Forest Service – Submitted as an attachment to an email received on November 30, 2021, from Ms. Lori Bell, Acting Forest Supervisor, Ouachita National Forest.

1. **COMMENT: Consideration of NO_x and SO₂ sources** – The DEQ segregated NO_x and SO₂ emissions when selecting sources for four-factor analysis (FFA). The USDA Forest Service greatly appreciates this approach as aggregating the contributions of these pollutants may exclude feasible, cost-effective control options for a single pollutant.

RESPONSE: DEQ appreciates the Forest Service's support for Oklahoma's decision to evaluate NO_x and SO₂ emissions separately when selecting sources for four-factor analysis.

2. **COMMENT: Selection threshold** – The DEQ implemented two, independent thresholds for facility screening: Q/D (tons of NO_x or SO₂/km) > 5 or an individual source contribution threshold (% EWRT*Q/d) of 0.5%. If a facility met either criteria, it was further screened. This methodology resulted in the selection of 12 facilities for four-factor analysis. The USDA Forest Service finds this to be a reasonable approach and an acceptable number of facilities.

RESPONSE: DEQ appreciates the Forest Service's support for Oklahoma's facility screening criteria for source selection.

3. **COMMENT: Facilities within Oklahoma modeled to impact Forest Service Class 1 Areas** – There is one Class 1 area within Oklahoma (Wichita Mountains) and it is managed by the US Fish and Wildlife Service. The USDA Forest Service has no Class 1 areas within Oklahoma; however, there are three within proximity managed by the agency: Hercules Glades (HEGL), Upper Buffalo (UPBU), and Caney Creek (CACR). The Regional Haze Rule requires each state to develop a long-term strategy that includes the control measures necessary to make reasonable progress at each Class I area outside the state that may be affected by emissions from the state.¹ The USDA Forest Service greatly appreciates that the DEQ assessed facilities both within and outside the state and their impacts on Class 1 areas.

¹ See “Guidance on Regional Haze State Implementation Plans for the Second Implementation Period” (https://www.epa.gov/sites/default/files/2019-08/documents/8-20-2019_-_regional_haze_guidance_final_guidance.pdf)

RESPONSE: DEQ appreciates the Forest Service's recognition that Oklahoma reviewed possible impacts from Oklahoma sources on Class I areas outside the state as well as facilities outside the state that might be impacting the Wichita Mountains Wilderness Area.

4. **COMMENT: Four factor analysis** – Of the facilities chosen for a four-factor analysis, the Forest Service is specifically concerned about Hugo Generating Station (operated and owned by Western Farmers Electric Cooperative). This facility was selected for FFA based on its SO₂ emissions. Using data provided by the Central States Air Resource Agencies (CenSARA), an analysis by the USDA Forest Service indicates this facility (of those within the regulatory jurisdiction of Oklahoma) contributes a **substantial** portion of the visibility impairment occurring at Caney Creek Wilderness. The four-factor analysis conducted by Western Farmers Electric Cooperative analyzed wet flue gas desulfurization (WFGD), dry flue gas sulfurization (DFGD), and dry sorbent injection (DSI) for potential to control SO₂ emissions. Of these technologies, DFGD was identified as possessing the lowest cost-effectiveness at ~ \$8,200 per ton of SO₂. While Oklahoma did not explicitly identify a cost-effectiveness threshold, it implicitly considered \$5,000 per ton resulting in no additional controls being recommended for this facility. This threshold appears to be based on controls implemented during the first planning period. Most sources selected for evaluation for controls during the first planning period were very high emitters, often the highest in their state. Over time, it is expected that additional facilities selected for controls have a higher cost-effectiveness value. The USDA Forest Service considers the utilization of the same cost-effectiveness threshold in the second period as that used in the first period inappropriate and requests that Oklahoma keep in mind the iterative nature of the Regional Haze Program. Additionally, the USDA Forest Service requests a more detailed assessment of the facility based on the interest rate (7% vs. the current prime rate of 3.25%²) and the removal efficiencies (87% for DFGD and 91% for WFGD while higher removal efficiencies are possible³). Adjustment of one or more of these inputs could increase the feasibility of control adoption. The USDA Forest Service feels these cost-effectiveness values (notwithstanding the previously identified inputs) are not unreasonable for this planning period, and if implemented, could result in significant visibility progress at nearby USDA Forest Service Class I Areas, specifically Caney Creek Wilderness.

RESPONSE: Although the Regional Haze Program is iterative in nature, DEQ does not agree that subsequent planning periods should automatically assume a higher cost-effectiveness threshold for controls. As mentioned in the Forest Service's comment, many of the high emitting facilities during the first Regional Haze planning period reduced their emissions substantially so that when the source selection for four-factor analyses was conducted for this second planning period, new sources were brought under consideration. These new sources should not automatically have a higher cost-effectiveness threshold, absent a specific level of reductions identified as necessary to meet the required progress during the planning period. In addition, as each ten-year planning period is reached, it is likely that some technological advances will occur that affect emissions either through changes to

² Please see “Cost Estimation: Concepts and Methodology” (https://www.epa.gov/sites/default/files/2017-12/documents/epacmcostestimationmethodchapter_7thedition_2017.pdf)

³ Please see “SO₂ and Acid Gas Controls” (https://www.epa.gov/sites/default/files/2021-05/documents/wet_and_dry_scrubbers_section_5_chapter_1_control_cost_manual_7th_edition.pdf)

the industry, more effective controls, or replacement/retirements that can achieve visibility improvement without an automatic expectation of cost-threshold adjustment.

Nonetheless, DEQ requested that Western Farmers Electric Cooperative (WFEC) provide clarification on several issues raised in comments submitted by the Forest Service and EPA Region 6. In response to our request, WFEC provided additional estimates of cost-effectiveness values utilizing the 3.25% interest rate. WFEC reiterated its belief that the estimated SO₂ emission rates it used in the FFA – 0.06 lb/MMBtu for DFGD and 0.04 lb/MMBtu for WFGD (which correspond to 87% and 91%, respectively) – are appropriate. A DEQ staff calculation using cost estimates based on the 3.25% interest rate and a removal efficiency range of 87% to 99% (corresponding to a range of 0.06 to 0.005 lb/MMBtu) yields cost-effectiveness values that were no lower than \$6,000 per ton of SO₂ removed. Thus, even the lowest value calculated with a 3.25% interest rate would represent a 20% increase over a \$5,000 per ton figure. DEQ recognizes that judgements may differ regarding precisely which factors, interpretations, and assumptions should be applied in developing cost estimates, and what represents a reasonable cost/cost-effectiveness for a particular situation.

Based on a review of the FFA originally submitted by WFEC, as supplemented by this information, DEQ believes a finding that no additional controls are required during the second planning period for the Hugo Generating Station is and remains a reasonable conclusion. The Regional Haze SIP has been updated to reflect this additional evaluation.

5. **COMMENT: Prescribed fire emissions** – Fire plays an important role in shaping the vegetation and landscape in OK. Recurring fire has been a part of the landscape for thousands of years. Aggressive fire suppression, coupled with an array of other disturbances (e.g., logging and chestnut blight), has changed the historic composition and structure of the forests. Periodic prescribed burning and other vegetation management can recreate the ecological role of fire in a controlled manner. Fire and fuels management supports a variety of desired conditions and objectives across the Forests (e.g., community protection, hazardous fuels reduction, native ecosystems restoration, historic fire regimes restoration, wildlife openings, and open woodland creation, etc.). The 2017 Regional Haze Rule includes a provision to allow states to adjust the glidepath to account for prescribed fire. The draft OK RH SIP states that Oklahoma added an estimate of visibility impairment from prescribed fires to the estimate of natural conditions to calculate a new 2064 visibility target. The USDA Forest Service greatly appreciates this. Recent data on prescribed fire activity, especially within the USDA Forest Service, show that the number of acres burned in prescribed fires during 2011 were lower than all other recent years. For example, within the southern region of the Forest Service a total of 749,080 acres were treated with prescribed fire in 2011, while the average number of acres treated annually from the years 2007-2019 was 980,422. The 2021 target for treatment by prescribed fire within the USDA Forest Service southern region is well over 1 million acres. Furthermore, the Land Management Plans for each of the southern Forests call for a cumulative total of up to 2.1 million acres per year to be treated with prescribed fire in the future. While prescribed fire is currently a minor contributor to visibility impairment on the 20% most impaired days, the USDA Forest Service would like assurances that Oklahoma DEQ will continue to recognize the important ecological role of prescribed fire and in the future adjust the glidepath to account for prescribed fire emissions accordingly.

RESPONSE: DEQ plans to continue to support prescribed fire as an important land management tool within Oklahoma. Language that reflects this support has been added in Section 6.10.1 *Smoke Management* of the Regional Haze SIP. In addition, DEQ plans to continue to request adjustments to the glidepath, as allowed by the Regional Haze Rule, to account for wildland prescribed fire emissions in future planning periods.

6. **COMMENT: Grammar and citations** – A minor typo was found indicating four-factor analyses were available in Appendix C. They were found in Appendix D.

RESPONSE: The Appendix references for the four-factor analyses have been corrected.